Australian Government

Department of Infrastructure, Transport, Regional Development, Communications and the Arts

Western Sydney International (Nancy-Bird Walton) Airport – Airspace and flight path design

Environmental Impact Statement

Submissions Report

October 2024

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Contents

Contents (continued)

Contents (continued)

Contents (continued)

Contents (continued)

Contents (continued)

Contents (continued)

Contents (continued)

Contents (continued)

Contents (continued)

Contents (continued)

Contents (continued)

List of tables

List of figures

Appendices

Terms and acronyms

Terms

Term	Definition
05/23	The proposed runway orientation. Refers to a generally north-east/south-west orientated runway at 50 degrees north-east and 230 degrees south-west
2016 EIS	The earlier Western Sydney Airport Environmental Impact Statement
Airport	Western Sydney International (Nancy-Bird Walton) Airport
Airport lessee Company (ALC)	The company that is granted a lease over the Airport Site. The ALC is WSA Co
Airport Plan	The Western Sydney Airport – Airport Plan, published in 2016 and updated in 2020 and 2021
Airport Site	The site for Sydney West Airport as defined in the Airports Act *Note: Sydney West Airport is the name used in the Airports Act*
Airports Act	*Airports Act 1996* (Commonwealth)
Airports Act amendment	*Airports Amendment Act 2015* (Commonwealth)
Air Services Act	*Air Services Act 1995* (Commonwealth)
Airshed	The volume of atmosphere over the area of interest
Airspace	Term used for the 3-dimensional space in which aircraft fly
Airspace Act	*Airspace Act 2007* (Commonwealth)
Air traffic control	Service provided by ground-based air traffic controllers who direct aircraft on an airport and through a given section of controlled airspace. Can also provide advisory services to aircraft in uncontrolled airspace
Air traffic control procedures	Specific operating procedures or rules that apply to all aircraft flights within controlled airspace. The rules may vary under differing operational circumstances including time of day, traffic demand (the number of arriving or departing aircraft) and the prevailing weather conditions
Air traffic management	Aviation term encompassing all systems that assist aircraft to depart from an aerodrome, transit airspace and land at a destination aerodrome. The purpose of air traffic management is safe, efficient and expeditious movement of the aircraft in the airspace
Assessment years or scenarios	• **2033** – representing the early years of airport operation, when single runway operations handle up to 10 million annual passengers and around 81,000 air traffic movements per year • **2040** *(noise assessment only)* – representing an interim year of operation, when single runway operations handle around 15 million annual passengers and around 107,000 air traffic movements per year • **2055** – representing aircraft noise impacts as the single runway approaches capacity, when single runway operations handle around 37 million annual passengers and around 226,000 air traffic movements per year

Term	Definition
Australian noise exposure concept (ANEC)	Noise exposure contours produced for a hypothetical future airport usage pattern used, for example, in the process of examining flight path options around an airport
Australian noise exposure forecast (ANEF)	Official forecasts of future noise exposure patterns around an airport. They constitute the contours on which land use planning authorities usually base their controls
Background levels	Existing concentration of pollutants in the ambient air
Central City District	Encompasses the local government areas of Blacktown, Cumberland, Parramatta and The Hills
Civil Aviation Act	*Civil Aviation Act 1988* (Commonwealth)
CO_{2e}	Cardon dioxide equivalent - used for describing different GHGs in a common unit
Continuous climb operations	Involves an aircraft maintaining a steady angle of departure
Continuous descent approaches	Involves an aircraft maintaining a steady angle of arrival
Control area	Volume of airspace that exists in the vicinity of an airport, with defined upper and lower altitude bands, within which aircraft movements are subject to a defined level of control
Controlled airspace	Generic term for airspace with defined dimensions and within which air traffic control services are provided to aircraft
Control zone	Volume of airspace surrounding major airports down to ground level within which all aircraft movements are subject to a defined level of control
Danger areas	Declared where an activity is considered by CASA to pose a potential danger to aircraft
dB(A)	A-weighted noise level – an expression of the relative loudness of sounds in air perceived by the human ear (A) is an adjusted dB reading (A-weighted sound level) to account for the varying sensitivity of the human ear to different frequencies of sound
Decibel (dB)	A unit of sound. The loudness of a sound depends on its sound pressure level, which is expressed in decibels (dB)
Detailed design	The final airspace and flight path design
Direct impact	Direct impacts are caused by an action and occur at the same time and place
Dispersion modelling	Modelling by computer to mathematically simulate the effect on plume dispersion under varying atmospheric conditions; used to calculate spatial and temporal fields of concentrations and particle deposition due to emissions from various source types
EIS guidelines	Guidelines for the EIS as issued by the delegate for the Minister for the Environment and Water on 26 April 2022 under the EPBC Act
Environmental assessment	A formal process of evaluating significant short term, long term and cumulative effects or impacts a project will have on the environment

Term	Definition
Expert Steering Group (ESG)	Expert Steering Group - led by the Australian Government Department of Infrastructure, Transport, Regional Development, Communications and the Arts and involving Airservices Australia, CASA, the Department of Defence and Western Sydney Airport Company (the Airport operator). This group was established to guide the development of the airspace and flight path design. It would continue to be involved for the remainder of the project
Forecast schedules	Projections which provide the break down each movement by the type of aircraft, operation type (arrival or departure), time of operation and port of origin or destination
General aviation	Civil aviation aircraft operations other than large-scale commercial air transport (passenger or freight)
Hazard	The potential or capacity of a known or potential risk to cause adverse effects
Hours of operation	Day-time operations occur between 5.30 am and 11 pm Night operations are between 11 pm and 5.30 am
International Civil Aviation Organisation (ICAO)	A specialised agency of the United Nations which codifies the principles and techniques of international air navigation and fosters the planning and development of international air transport to ensure safe and orderly growth
International Civil Aviation Organisation (ICAO) Standards	Standards and recommended practices concerning air navigation, its infrastructure, flight inspection, prevention of unlawful interference and facilitation of border-crossing procedures for international civil aviation
Impact	A change in the physical, natural or cultural environment brought about by an action. Impacts can be direct or indirect
Indirect impact	As defined in the EPBC Act Significant impact guidelines 1.2, indirect impacts include downstream or downwind impacts, such as impacts on wetlands or ocean reefs from sediment, fertilisers or chemicals which are washed or discharged into river systems; upstream impacts, such as those associated with the extraction of raw materials and other inputs which are used to undertake the action; and facilitated impacts which result from further actions (including actions by third parties) which are made possible or facilitated by the action, such as urban or commercial development of an area made possible by a project. However, in order to qualify as an indirect impact, the relevant impact must be within the contemplation of the proponent or must be a reasonably foreseeable consequence of the proposed action
Instrument landing system	Allows a pilot to attempt to approach an airport in reduced visual conditions
L_{Aeq}	L_{Aeq} is used for both the intrusiveness noise level and the amenity noise level. This metric represents the level of average noise energy for each assessment period (day/evening/night) and takes account of noise peaks and fluctuations
L_{Amax}	L_{Amax} is the highest noise level from an aircraft noise event, measured in A-weighted decibels (dB(A))
Major Development Plan (MDP)	Major development plan prepared and approved in accordance with the Airports Act
Manual of Standards	Standard procedures for the operation of airports issued by the Civil Aviation Safety Authority
Master plan	Master plan prepared and approved in accordance with the Airports Act
Mitigation	The action of reducing the severity, seriousness, or harm of something

Term	Definition
N60	N60 contours represent the number of aircraft noise events with L_{Amax} that exceed 60 dB(A) Night-time sleep disturbance potential is often assessed with N60-night-time contours
N70	N70 contours represent the number of aircraft noise events with L_{Amax} that exceed 70 dB(A) The N70 contours are typically used to assess day-time noise impacts
North District	Encompasses the local government areas of Ryde, Willoughby, Hornsby, Hunter's Hill, Lane Cove, Ku-ring-gai, North Sydney and the Northern Beaches
'Number (N)-above' contour levels	'Number (N)-above' contour levels (for example N70 and N60) are used to map noise 'zones' around an airport. They describe aircraft-noise impacts by the number of noise events that exceed a certain noise level (threshold)
Performance-based navigation	Requires that aircraft be capable of meeting navigation performance requirements for accuracy, integrity, continuity, availability and functionality
Plan for Aviation Airspace Management (PAAM)	The PAAM outlines the decisions and processes followed to develop a preliminary airspace and flight path concept design for single runway operations at the Airport
Preliminary airspace design	Design and assessment process for the next phase of the airspace design
RAAF Base Richmond	Royal Australian Air Force (RAAF) Base Richmond Airport
Radar vector	Happens when a plane is visible to an air traffic controller on a radar screen, and the controller tells the pilot to fly specific navigation parameters
Reciprocal Runway Operations (RRO)	Aircraft arrive and take-off in opposing directions (or nose-to-nose) (for example, all aircraft arrive from the southwest and take-off to the southwest)
Residual risk	Residual risk is the level of risk that remains after proposed mitigation and management measures are implemented
Restricted airspace	Airspace that has restrictions placed on its use and aircraft movements are confined to those with certain specified permissions
Reverse thrust	A temporary redirection of aircraft engines so that the direction of exhaust is reversed, usually to provide a breaking effect during landings. Reverse thrusting generally produces an increase in noise during landing
Runway Modes of Operation	Refers to the direction in which aircraft take off and land. Operating modes are informed by assessing runway orientation and availability against factors such as current and forecast and actual meteorological conditions (especially wind direction and strength), runway surface status, aircraft profile and capability, demand and traffic volumes, airspace management procedures, and potential impacts on surrounding communities, such as noise
Sensitive receiver	Land uses which are sensitive to noise and vibration; this may include a dwelling, school, hospital, office or public recreational area. Also termed sensitive receptor
SIDs and STARs	These are types of instruments that is, programmable) flight procedures that set defined departure or arrival routes to facilitate safe and efficient flow of air traffic
Significant impact	As defined in the EPBC Act Significance impact guidelines 1.2, a 'significant impact' is an impact which is important, notable, or of consequence, having regard to its context or intensity. Whether or not an action is likely to have a significant impact depends upon the sensitivity, value, and quality of the environment which is impacted, and upon the intensity, duration, magnitude and geographical extent of the impacts

Term	Definition
So far as is reasonably practicable	Used in defining an obligation under the relevant safety legislation, whereas in related guidance and in the practical implementation of this legislation reference is often made to a requirement that risks are managed to be 'as low as reasonably practicable'
South District	Encompasses the local government areas of Georges River, Canterbury-Bankstown and Sutherland
Stage 1 Development	A single runway and terminal facility capable of initially handling up to 10 million passengers per year
Sydney Basin	Sydney Basin encompasses airspace that extends out to Katoomba to the west, the Hawkesbury River to the north, the southern boundary of the Royal National Park to the south and the coastline to the east
The project	The project consists of the development and implementation of preliminary flight paths and a new controlled airspace volume for single runway operations at WSI. The project also includes the associated air traffic control and noise abatement procedures for eventual use by civil, commercial passenger and freight aircraft
Threatened species	Species of animals or plants which is a "listed threatened species" under the *Environment Protection and Biodiversity Conservation Act 1999* (Commonwealth) or a critically endangered species, an endangered species or a vulnerable species listed in Schedule 1 of the *Biodiversity Conservation Act 2016* (NSW)
Uncontrolled airspace	Has no supervision by air traffic control. No clearance is required by aircraft to operate in uncontrolled airspace
Waypoint	Specified location used to define positions along an air navigation route. They are identified as either fly over or fly by
Western City District (Blue Mountains)	Encompasses the Blue Mountains local government area and parts of the Hawkesbury local government area
Western City District (excluding Blue Mountains)	Encompasses the local government areas of Camden, Campbelltown, Fairfield Liverpool, Penrith and Wollondilly as well as parts of the Hawkesbury LGA

Acronyms

Acronyms	Definition
%	Percent
%HA	Percentage of highly annoyed
%HSD	Percentage of highly sleep disturbed
24/7	24-hour, 7 days a week
ABS	Australian Bureau of Statistics
ACI	Airport Council International
ACP	Airspace Change Proposal
AEDT	Aviation Environmental Design Tool
AEPR	*Airports (Environmental Protection) Regulation 1997* (Commonwealth)
AGL	Above Ground Level
AHIMS	Aboriginal Heritage and Information Management System
AIP	Aeronautical Information Publication
AIRAC	Aeronautical Information Regulation and Control
ANEC	Australian noise exposure concept
ANEF	Australian noise exposure forecast
ANO	Aircraft Noise Ombudsman
ANSP	Air Navigation Services Provider
APAR	*Airports (Protection of Airspace) Regulations 1996* (Commonwealth)
ARPANSA	Australian Radiation Protection and Nuclear Safety Agency
AS	Australian Standard
ASA	Airservices Australia
ATC	Air Traffic Control
ATM	Air Traffic Movements
ATSB	Australian Transport Safety Bureau
BODP	Biodiversity Offset Delivery Plan
CACG	Community Aviation Consultation Group
CASA	Civil Aviation Safety Authority
CASR	Civil Aviation Safety Regulations
CBD	Central Business District
CCO	Continuous Climb Operations

Acronyms	Definition
CDO	Continuous Descent Operations
CO	Carbon monoxide
CO_2	Cardon dioxide
CO_{2e}	Cardon dioxide equivalent
CTA	Control Area
CTAF	Common Traffic Advisory Frequency
Cth	Commonwealth of Australia
dB	Decibels
dB(A)	A-weighted decibel
DCCEEW	Australian Department of Climate Change, Energy, the Environment and Water
DEOH	Defence Establishment Orchard Hills
DfT	Department for Transport
DIRD	the former Australian Department of Infrastructure and Regional Development
DITRDCA	Australian Department of Infrastructure, Transport, Regional Development, Communications and the Arts
DPE	the former NSW Department of Planning and Environment
Draft EIS	Draft Environmental Impact Statement
draft NIPA	Draft Noise Insulation and Property Acquisition Policy
ECZ	Environmental Conservation Zone
EIS	Environmental Impact Statement
ENR	En Route
EP&A Act	*Environmental Planning and Assessment Act 1979* (NSW)
EPA	NSW Environment Protection Authority
EPBC Act	*Environment Protection and Biodiversity Conservation Act 1999* (Commonwealth)
FAA	Federal Aviation Administration (United States)
FAQ	Frequently Asked Questions
FOWSA	Forum on Western Sydney Airport
ft	Feet
GBMA	Greater Blue Mountains Area
GBMWHAAC	Greater Blue Mountains World Heritage Area Advisory Committee
GDP	Gross Domestic Product

Acronyms	Definition
GHG	Greenhouse Gas
GPS	Global Positioning System
ha	Hectares
IAF	Initial Approach Fix
IAP2	International Association of Public Participation
ICAO	International Civil Aviation Organisation
IFR	Instrument Flight Rules
ILS	Instrument Landing System
IPCC	Intergovernmental Panel on Climate Change
IUCN	International Union for Conservation of Nature
JCOEW	Joint Concept Option Evaluation Workshop
km	Kilometres
L_{Aeq}	Equivalent Sound Level
L_{Amax}	Maximum Sound Level
LALC	Local Aboriginal Land Council
LCZ	Landscape Character Zone
LEP	Local environmental plan
LGA	Local Government Area
LL	Lower Level
LTO	Landing Take-off
LTOP	Long Term Operating Plan
m	Metres
MDP	Major Development Plan
MET	Meteorological Conditions
MNES	Matters of National Environmental Significance
MP	Member of Parliament
MRA	Metropolitan Rural Area
mW	Milliwatts
N_2O	Nitrous Oxide
N-above	Noise Level Threshold
NAP	Noise Abatement Procedure

Acronyms	Definition
NASF	National Airports Safeguarding Framework
NCIS	Noise Complaints and Information Service
NDB	Non-Directional Beacon
NEPC	National Environment Protection Council
NEPM	National Environment Protection Measure
NFPMS	Noise Flight Path Monitoring System
NIPA	Noise Insulation and Property Acquisition Policy
nm	Nautical Miles
NO_2	Nitrogen Dioxide
NO_x	Nitrogen Oxide
NOS	National Operating Standard
NPD	Noise-Power-Distance
NPWS	NSW National Parks and Wildlife Service
NS	Northern Summer
NSW	New South Wales
NW	Northern Winter
O_3	Ozone
OAR	Office of Airspace Regulation
OLS	Obstacle Limitation Surfaces
PAAM	Plan for Aviation Airspace Management
PANS-OPS	Procedures for Air Navigation Services – Aircraft Operations
PBN	Performance-based Navigation
PM	Airborne Particulate Matter
PM_{10}	Airborne Particulate Matter with an aerodynamic diameter of less than 10 µm
$PM_{2.5}$	Airborne Particulate Matter with an aerodynamic diameter of less than 2.5 µm
pphm	Parts Per Hundred Million
ppm	Parts Per Million
Q&A	Question and Answer
RAAF	Royal Australian Air Force
RAWSA	Residents Against Western Sydney Airport
RBL	Rating Background Level

Acronyms	Definition
RFS	NSW Rural Fire Service
RMO	Runway Modes of Operation
RNP	Required Navigation Performance
RNP-AR	Required Navigation Performance Authorisation Required
RRO	Reciprocal Runway Operations
RWY05	Runway 05
RWY23	Runway 23
SACL	Sydney Airport Corporation Ltd
SAF	Sustainable Aviation Fuels
SAL	Suburbs and Localities
SEIFA	Socio-Economic Index for Areas
SEPP	State Environmental Planning Policy
SHR	State Heritage Register
SID	Standard Instrument Departure
SO_2	Sulfur Dioxide
SO_x	Sulfur Oxides
SRTM	Shuttle Radar Topography Mission
STAR	Standard Instrument Arrival
SWGA	South West Growth Area
TIS	Translating and Interpreting Service
TLS	Target Level of Safety
TOR	Terms of Reference
µg/m³	Mass in micrograms per cubic metre
UN	United Nations
UNESCO	United Nations Educational, Scientific and Cultural Organization
US FAA	United States Federal Aviation Administration
USGS	United States Geological Survey
VFR	Visual Flight Rules
VOC	Volatile Organic Compounds
WHMC	Wildlife Hazard Management Committee
WHMP	Wildlife Hazard Management Plan

Acronyms	Definition
WHO	World Health Organization
WSA Co	Western Sydney Airport Company Limited (airport lessee company)
WSI	Western Sydney International (Nancy-Bird Walton) Airport
WSROC	Western Sydney Regional Organisation of Councils

Executive summary

Overview

In 2016 the then Australian Minister for Urban Infrastructure approved development for a new airport for Western Sydney, now known as the Western Sydney International (Nancy-Bird Walton) Airport (WSI), under the *Airports Act 1996* (Airports Act). The site of the new WSI airport (the Airport Site) covers approximately 1,780 hectares at Badgerys Creek.

The Western Sydney Airport – Environmental Impact Statement (2016 EIS) provided for the on-ground infrastructure for the Stage 1 Development and depicted an indicative airspace concept for the preliminary flight paths associated with single runway operations at WSI. Following the finalisation of the 2016 EIS, the Western Sydney Airport – Airport Plan (Airport Plan) (DITRDC, 2021a) was approved in December 2016. The Airport Plan authorised the construction and operation of the Stage 1 Development of WSI, being a single runway and terminal facility capable of initially handling up to 10 million passengers per year.

Condition 16 of the Airport Plan established the requirements for the further development and assessment of the preliminary flight paths and airspace design for WSI. This included the future airspace design principles and the establishment of an Expert Steering Group ESG to guide the development of the preliminary flight paths and airspace design. Led by the Australian Government Department of Infrastructure, Transport, Regional Development, Communications and the Arts (DITRDCA), the Expert Steering Group developed the preliminary flight paths and airspace design for the project.

In accordance with the Airport Plan and the *Environment Protection and Biodiversity Conservation Act 1999* (the EPBC Act), the project was referred to the Australian Minister for the Environment and Water for advice. In doing so, the delegate for the Australian Minister for the Environment and Water determined that an EIS would be required and DITRDCA the nominated proponent.

The project

The project consists of the development and implementation of the 24-hour preliminary flight paths and a new controlled airspace volume for single runway operation at WSI. The project also includes the associated air traffic control and noise abatement procedures for eventual use by civil, commercial passenger and freight aircraft. The airspace and flight paths would be managed by the Air Navigation Services Provider, Airservices Australia.

The project involves preliminary flight paths for all-weather operations on Runway 05 and Runway 23 during the day (5:30 am to 11 pm) and night (11 pm to 5:30 am), as well as head-to-head Reciprocal Runway Operations (RRO) during night-time periods (when meteorological conditions and low flight demand permit) to minimise the number of residences subjected to potential noise disturbance.

To maintain the safety assurance of flight operations in the Sydney Basin while meeting the requirements of efficiency, capacity and environment, adjustments to airspace are required for Sydney (Kingsford Smith) Airport, Bankstown Airport, Camden Airport and the Royal Australian Air Force Base Richmond Airport (RAAF Base Richmond). For the Sydney (Kingsford Smith) Airport, this includes adjustments to existing arrival and departure routes. These changes need to occur prior to the opening of WSI in 2026.

Consultation on the Draft EIS

The Draft EIS was publicly exhibited for 14 weeks between 24 October 2023 and 31 January 2024, and an extensive program of community and stakeholder consultation activities took place.

During the exhibition period the community and stakeholders were able to review the Draft EIS. It was made available online alongside the online Aircraft Overflight Noise Tool, and hard copies of the Draft EIS were accessible at libraries and council buildings across Sydney (including the Blue Mountains).

A number of methods were available to make a submission to DITRDCA:

- online submissions portal https://www.wsiflightpaths.gov.au/
- dedicated submission email address eis.submissions@infrastructure.gov.au
- hard copy submission posted to the WSI airspace and flight path design team.

The Draft EIS exhibition was complemented by the release of the preliminary flight path design via the online Aircraft Overflight Noise Tool on 27 June 2023. This occurred 4 months prior to the exhibition of the Draft EIS to provide the community time to view and understand the preliminary flight path information.

DITRDCA held a number of community information and feedback sessions, community information stalls and stakeholder briefings during the exhibition period. The programme of activities was designed to provide consistent and accurate information and answer questions. Posters and information brochures that explained the project, the draft Noise Insulation and Property Acquisition Policy (NIPA) and facilitated changes were also developed.

A summary of the activities during the exhibition period is provided in Figure ES.1. Further detail on the engagement activities and an analysis of the submissions received is provided in Chapter 2 (Summary of engagement) and Chapter 3 (Submissions analysis) of this Submissions Report.

Figure ES.1 Activities during exhibition period

Following the conclusion of the public exhibition period, a Submissions Report (this document) has been prepared for the project to address the issues raised in community and stakeholder submissions.

Purpose of this Submissions Report

This Submissions Report considers the issues raised in all submissions received from the community and stakeholders during the exhibition period of the Draft EIS. This report provides:

- a summary of opportunities the community and stakeholders had to engage during the exhibition period
- details of how many submissions were made during the exhibition period
- a summary of issues raised and responses to issues
- identification of changes made to the preliminary flight path design
- new information in response to issues raised from the submissions received.

This report has been structured into 3 parts:

- Part A (Chapters 1 to 3) Summary of public exhibition activities and submissions received – this section provides an introduction to the report, outlines the activities taken during the exhibition of the Draft EIS, and provides a breakdown of the submissions received during public exhibition
- Part B (Chapters 4 to 23) Response to submissions – this section provides a detailed analysis of the issues raised in submissions, including specific environmental issues, and a response to those submissions
- Part C (Chapters 24 to 26) Refinements to the project and conclusions – this section outlines the refinements made to the project since the exhibition of the Draft EIS, provides a conclusion to the Submissions Report, and outlines next steps in the approval process following the submissions process.

This Submissions Report forms part of the finalised EIS and will be submitted to the Australian Minister for the Environment and Water in accordance with sections 104 and 163 of the EPBC Act.

Overview of submissions

In response to the exhibition of the Draft EIS, a total of 8,477 submissions were received by DITRDCA. Some submitters made multiple submissions. Submissions were received via the online submissions portal, email and postal mail. Of the 8,477 submissions received (rounded to the nearest number):

- 79 per cent submissions were received through the online submissions portal
- 18 per cent submissions were received by email
- 3 per cent submissions were received by post
- Less than one per cent submissions were received through a local member of the state or federal government.

All submissions made by community and stakeholders were reviewed and categorised according to the key issues (for example aircraft noise, heritage, social etc) and sub-issues raised.

75 different form letters were received as submissions during the exhibition period which raised a range of different key issues and sub-issues. These were treated as individual submissions, noting some form letters had added minor individualised changes.

The 8,477 submissions received comprised:

- 8,398 community member submissions (including 3,945 standardised letters or form letters)
- 79 key stakeholder submissions:
  - 6 from government agencies or organisations
  - 15 from councils and council organisations
  - 5 from federal Members of Parliament (MPs)
  - 4 from state MPs
  - 3 from airport operators
  - 15 from general aviation
  - 31 from special interest and community groups.

Of the submissions received (rounded to the nearest number):

- less than 0.5 per cent of submissions clearly expressed support for the project
- 68 per cent submissions clearly expressed an objection to the project
- 32 per cent submissions did not clearly state a position or provided comment only on the project.

Submissions were received from locations across Australia. The majority of the submissions can be attributed to a location within the Sydney Basin. The distribution of submissions within the Sydney Basin and surrounds is provided in Figure 3.3.

Following the exhibition of the Draft EIS, the International Union for Conservation of Nature (IUCN) submitted a technical review of the Draft EIS to the Australian Department of Climate Change, Energy, Environment and Water (DCCEEW). The feedback from the IUCN has been taken into account in the submissions review and considered in the finalisation of the EIS.

A breakdown of the key issues raised in submissions is provided in Figure ES.2 and described in detail in Chapters 4 to 23 of this Submissions Report.

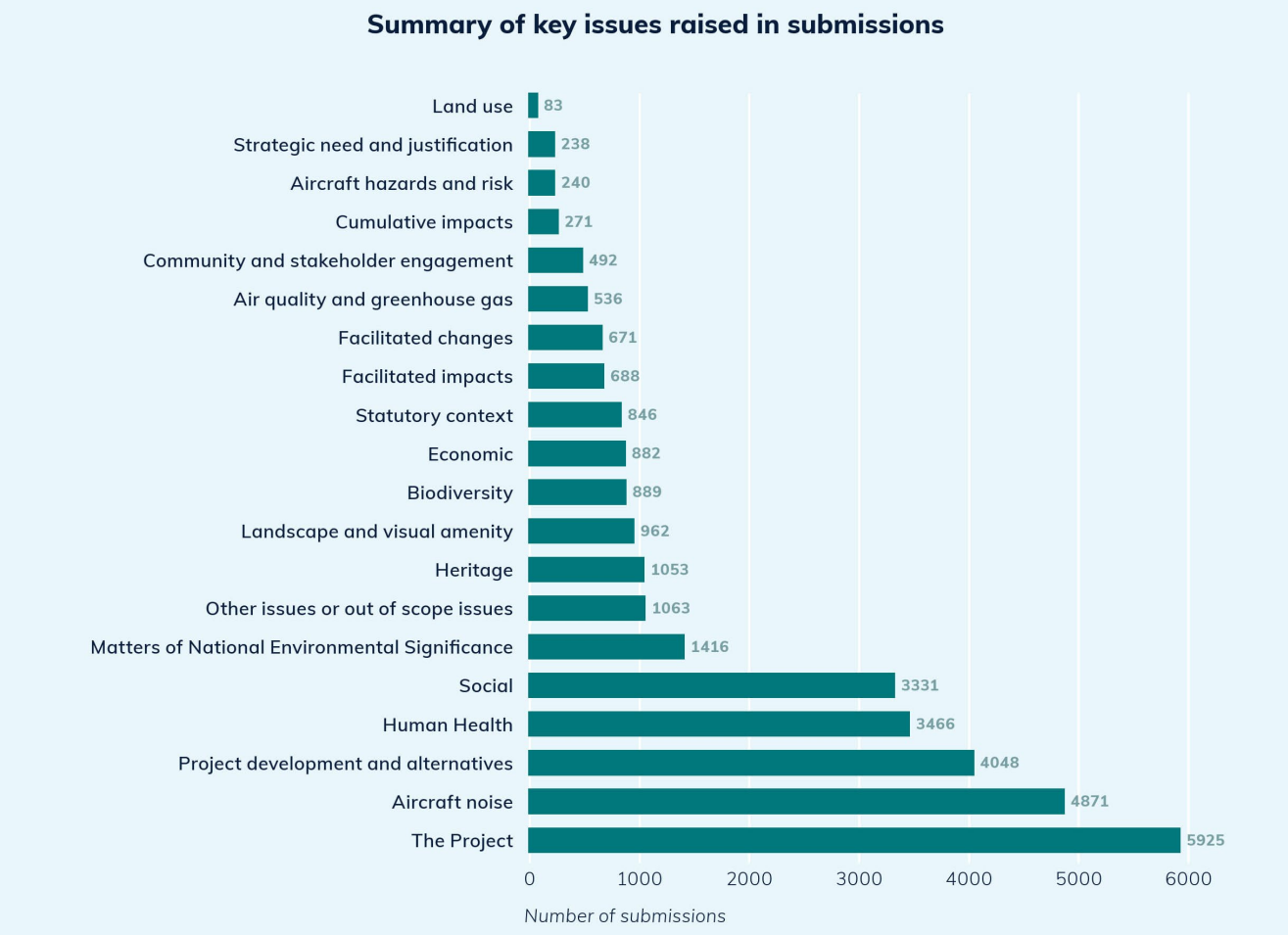


Figure ES.2 Key issues raised in submissions

The top 5 key issues identified in submissions are:

- the project, including the preliminary flight paths and flight path design, hours of operation, aircraft movements and aircraft type
- aircraft noise, including the impact assessment approach, ambient noise monitoring, the noise impacts of the project (including sleep disturbance), and the mitigation, management and monitoring of aircraft noise
- project development and alternatives, including the preliminary flight path design process, changes since the 2016 EIS and suggested alternatives identified in submissions
- human health, including the impact assessment approach, the human health impacts of the project such as noise (in particular sleep disturbance), air quality and water quality, and the mitigation of these impacts
- social, including impacts of the project on the way of life, surroundings, quality of life, equity, health and wellbeing. Impacts on the Linden Observatory and Dark Skies were also captured under this key issue.

Design refinements to the project

A series of refinements to the preliminary flight paths have been identified as part of ongoing development and following submissions received during the public exhibition of the Draft EIS. These refinements provide functional improvements to the preliminary flight path designs and can be safely implemented within the existing and proposed airspace.

The key refinements proposed are:

- minor refinement to preliminary flight path D10 to provide a more westerly alignment north of Linden (refer to Section 24.1.2)
- removal of Required Navigation Performance – Approval Required approach (A13) south of Linden (refer to Section 24.1.3)
- minor refinement to preliminary flight path A21 (RRO night approach to Runway 05) to provide a more southerly alignment (refer to Section 24.1.4)
- refinements to the RRO runway mode of operation (refer to Section 24.1.5) as follows:
  - the withdrawal of preliminary flight path D28 for jet operations and the reallocation of those aircraft to preliminary flight path D32 (refer to Section 24.1.5.1)
  - the introduction of a new RRO mode noise abatement procedure (RRO-NAP) (refer to Section 24.1.5.2).

The revised flight path designs have been made to the project and are described in more detail in Chapter 24 (Refinements to the project since exhibition) of this Submissions Report.

DITRDCA consulted with relevant communities on the refinements to the RRO runway mode of operation in August 2024. An overview of the consultation, feedback received and response to feedback is set out in Chapter 24 (Refinements to the project since exhibition)) of this Submissions Report.

Next steps

This Submissions Report forms part of the finalised EIS, which will be provided to the Australian Minister for the Environment and Water along with copies of all comments received on the Draft EIS. Following the receipt of the finalised EIS, the Australian Minister for the Environment and Water will provide advice (including any recommended conditions) to DITRDCA, Airservices Australia and Civil Aviation Safety Authority (CASA) under section 163 of the EPBC Act before any approval is given for the airspace design. Airservices Australia will submit the Airspace Change Proposal to CASA for approval. This would need to consider the advice provided by the Australian Minister for the Environment and Water.

The finalisation of the EIS will also enable the detailed design phase of the project to progress. The detailed design phase will include further evaluation and refinement of the proposed selected airspace design for implementation based on feedback received from the community and other technical stakeholders such as airlines and industry bodies.

Once the Airspace Change Proposal has been approved, the procedures associated with the preliminary flight paths and changes to the Sydney Basin airspace will be published. A process of training and testing the procedures would occur before runway operations commence.

Part A

Summary of public exhibition activities and submissions received

Chapter 1 Introduction

This Submissions Report has been prepared in response to the submissions received during the public exhibition of the Draft EIS for the proposed airspace and preliminary flight path design for Western Sydney International (Nancy-Bird Walton) Airport (the project). This report is to be read in conjunction with the finalised EIS.

This chapter provides an overview of the background to the project, the exhibition of the Draft EIS and the status of the approvals process for the project. It also describes the purpose and structure of this Submissions Report.

1.1 Western Sydney International (Nancy-Bird Walton) Airport

1.1.1 Background

In 2016, the then Australian Minister for Urban Infrastructure approved development for a new airport for Western Sydney, now known as the Western Sydney International (Nancy-Bird Walton) Airport (WSI), under the *Airports Act 1996* (Cth) (Airports Act). The site of the new WSI airport (the Airport Site) covers approximately 1,780 hectares (ha) at Badgerys Creek. The Airport Site is located within the Liverpool local government area (LGA).

WSI would be a 24-hour international airport and:

- would cater for ongoing growth in demand for air travel, particularly in the rapidly expanding Western Sydney region, as well as providing additional aviation capacity in the Sydney Basin more broadly
- provide a more accessible and convenient international and domestic airport facility for the large and growing population of Western Sydney
- provide long term economic and employment opportunities in the surrounding area
- accelerate the development of critical infrastructure and urban development.

The Australian Government has committed to develop and deliver WSI to be ready for scheduled flight operations by the end of 2026.

The Western Sydney Airport – Environmental Impact Statement (2016 EIS) provided for the on-ground infrastructure for the Stage 1 Development and depicted an indicative airspace concept for the flight paths associated with single runway operations at WSI. The indicative flight paths in the 2016 EIS represented one possible airspace design (referred to as the 'proof of concept') and included a preliminary assessment of key issues such as potential aircraft noise and air quality impacts. The proof of concept flight paths demonstrated that WSI could operate safely and efficiently in the Sydney Basin along with other airspace movements in the Sydney Basin.

Following the finalisation of the 2016 EIS, the Western Sydney Airport – Airport Plan (Airport Plan) (DITRDC, 2021a) was approved in December 2016. The Airport Plan authorised the construction and operation of the Stage 1 Development of WSI, being a single runway and terminal facility capable of initially handling up to 10 million passengers per year.

Condition 16 of the Airport Plan also established the requirements for the further development and assessment of the preliminary flight paths and airspace design for WSI. This included the future airspace design principles and the establishment of an Expert Steering Group to guide the development of the preliminary flight paths and airspace design. Key to these design principles was the need to minimise the impact on the community and other airspace users while maximising safety, efficiency and capacity of WSI and the Sydney Basin airspace. The airspace design must also meet the requirements of Airservices Australia and Civil Aviation Safety Authority (CASA) regulatory standards.

Led by the Australian Government Department of Infrastructure, Transport, Regional Development, Communications and the Arts (DITRDCA), the Expert Steering Group has developed the preliminary flight paths and airspace design for the project. Further detail on the development of the project is provided in Chapter 6 (Project development and alternatives) of the finalised EIS.

1.1.2 The project

The project consists of the development and implementation of the 24-hour preliminary flight paths and a new controlled airspace volume for single runway operation at WSI. The project also includes the associated air traffic control and noise abatement procedures for eventual use by civil, commercial passenger and freight aircraft. The airspace and flight paths would be managed by the Air Navigation Services Provider (ANSP), Airservices Australia.

The project involves preliminary flight paths for all-weather operations on Runway 05 and Runway 23 during the day (5:30 am to 11 pm) and night (11 pm to 5:30 am), as well as head-to-head Reciprocal Runway Operations (RRO) during night-time periods (when meteorological conditions and low flight demand permit) to minimise the number of residences subjected to potential noise disturbance.

Further information on the project, including a depiction of the preliminary flight paths is provided in Chapter 7 (The project) of the finalised EIS.

1.1.3 Facilitated changes

To maintain the safety assurance of flight operations in the Sydney Basin while meeting the requirements of efficiency, capacity and environment, adjustments to airspace are required for Sydney (Kingsford Smith) Airport, Bankstown Airport, Camden Airport and the Royal Australian Air Force (RAAF) Base Richmond Airport (RAAF Base Richmond). For the Sydney (Kingsford Smith) Airport, this includes adjustments to existing arrival and departure routes. These changes need to occur prior to the opening of WSI in 2026.

Further information on these facilitated changes are provided in Chapter 8 (Facilitated changes) of the finalised EIS.

1.2 Statutory context and exhibition of the Draft EIS

The Australian airspace is governed by Commonwealth legislation, specifically the *Airspace Act 2007* (Airspace Act), the *Civil Aviation Act 1988* (Civil Aviation Act) and their associated regulations, whereas the on-ground development of certain airports and protection of the airspace is primarily governed by the Airports Act (and its regulations, in particular the *Airports (Protection of Airspace) Regulations 1996*).

In the case of WSI, the approval provisions of the *Environment Protection and Biodiversity Conservation Act 1999* (the EPBC Act) do not apply and the approval for the construction of Stage 1 Development was given by approval of Part 3 of the Airport Plan in 2016 by the then Australian Minister for Urban Infrastructure under the Airports Act. Condition 16 of the Airport Plan requires the project be progressed in accordance with section 160 of the EPBC Act as a Plan for Aviation Airspace Management (PAAM).

In accordance with the Airport Plan and the EPBC Act, the project was referred to the Australian Minister for the Environment and Water for advice. In doing so, the delegate for the Australian Minister for the Environment and Water determined that DITRDCA is the nominated proponent and that an EIS would be required that addressed the EIS Guidelines issued for the project.

The Draft EIS, which addressed these requirements, was publicly exhibited for 14 weeks between 24 October 2023 and 31 January 2024. This exceeded the minimum 20 day statutory timeframe for consultation under the EPBC Act. During the exhibition period the community and stakeholders were able to review the Draft EIS and make a submission to DITRDCA via the online submissions portal, email or by post.

The Draft EIS was made available online alongside the Digital Draft EIS and online Aircraft Overflight Noise Tool, and hard copies of the Draft EIS were accessible at libraries and council buildings across the Sydney Basin (including the Blue Mountains) during the exhibition period. DITRDCA also held a number of community information and feedback sessions, community information stalls and stakeholder briefings in support of the exhibition period.

Posters and information brochures that explained the project, the draft NIPA and facilitated changes were also developed to support the public exhibition of the Draft EIS. These were made available on the Online Community Portal and hard copies were distributed to numerous locations.

In response to the exhibition of the Draft EIS, a total of 8,477 submissions were received by the DITRDCA. Further detail on the engagement activities and an analysis of the submissions received is provided in Chapter 2 (Summary of engagement) and Chapter 3 (Submissions analysis) of this Submissions Report.

1.3 Refinements to the project since exhibition of the Draft EIS

Since the exhibition of the Draft EIS, a series of refinements have been made to the preliminary flight path designs as a part of ongoing development. These refinements have been made in response to concerns raised by the community and stakeholders, and in response to further development of the project design. The refinements provided functional improvements to the preliminary flight path designs.

These changes as described in the finalised EIS are collectively referred to in this report as the 'revised flight path designs'. The key refinements proposed are:

- minor refinement to preliminary flight path D10 to provide a more westerly alignment north of Linden (refer to Section 24.1.2 of Chapter 24 (Refinements to the project since exhibition) of this Submissions Report)
- removal of Required Navigation Performance – Approval Required approach (A13) south of Linden (refer to Section 24.1.3 of Chapter 24 of this Submissions Report)
- minor refinement to preliminary flight path A21 (RRO night approach to Runway 05) to provide a more southerly alignment (refer to Section 24.1.4 of Chapter 24 of this Submissions Report))
- refinements to the RRO runway mode of operation (refer to Section 24.1.5 of Chapter 24 of this Submissions Report)) as follows:
  - the withdrawal of preliminary flight path D28 for jet operations and the reallocation of those aircraft to preliminary flight path D32 (refer to Section 24.1.5.1 of Chapter 24 of this Submissions Report)
  - the introduction of a new RRO mode noise abatement procedure (RRO-NAP) (refer to Section 24.1.5.2 of Chapter 24 of this Submissions Report).

These changes have been incorporated into the project description as presented in Chapter 7 (The project) of the EIS.

The revised flight path designs have been made to the project and are described in more detail in Chapter 24 (Refinements to the project since exhibition) of this Submissions Report.

DITRDCA consulted with relevant communities on the refinements to the RRO runway mode of operation in August 2024. An overview of the consultation, feedback received and response to feedback is set out in Chapter 24 (Refinements to the project since exhibition)) of this Submissions Report.

1.4 Purpose of this report

This Submissions Report has been prepared to summarise the submissions received from the community and stakeholders during the exhibition period and details how these issues have been addressed. It also describes the changes made to the preliminary flight path design in response to the submissions received on the Draft EIS and as presented in the finalised EIS.

This report forms part of the finalised EIS and will be submitted to the Australian Minister for the Environment and Water in accordance with sections 104 and 163 of the EPBC Act.

1.4.1 Structure of this report

The structure and content of this report is outlined in Table 1.1.

Table 1.1 Structure of the Submissions Report

Chapter	Description
Part A	**Summary of public exhibition activities and submissions received**
Chapter 1	**Introduction** Provides an overview WSI and the project, the statutory context, the exhibition of the Draft EIS and the purpose and structure of this report.
Chapter 2	**Summary of engagement** Identifies the engagement activities taken during the exhibition of the Draft EIS.
Chapter 3	**Submissions analysis** Provides a breakdown of the submissions received during public exhibition including the number of submissions, types of submitters and issues raised.
Part B	**Response to submissions**
Chapter 4	**Strategic need and justification** Identifies issues raised related to strategic need and justification and provides reposes to those submissions.
Chapter 5	**Statutory context** Identifies issues raised related to statutory context and provides reposes to those submissions.
Chapter 6	**Project development and alternatives** Identifies issues raised related to project development and alternatives and provides reposes to those submissions.
Chapter 7	**The project** Identifies issues raised related to the project and provides reposes to those submissions.
Chapter 8	**Facilitated changes** Identifies issues raised related to the facilitated changes and provides reposes to those submissions.
Chapter 9	**Community and stakeholder engagement** Identifies issues raised related to the community and stakeholder engagement and provides reposes to those submissions.
Chapter 10 to Chapter 22	Describes the issues raised to **specific environmental issues** and provides a response to those submissions.
Chapter 23	**Other issues** Identifies issues raised related to issues that are beyond the scope of the project and provides reposes to those submissions.

Chapter	Description
Part C	**Refinements to the project and conclusions**
Chapter 24	**Refinements to the project since exhibition** Presents the refinements to the project since the exhibition of the Draft EIS.
Chapter 25	**Conclusion** Provides a conclusion to the Submissions Report and outlines next steps in the approval process following the submissions process.
Chapter 26	**References** Provides a list of all references used to inform the Submissions Report.
Appendix A	**Response to Linden Observatory matters** Provides a detailed response to comments made concerning the implications to operations at the Linden Observatory.
Appendix B	**Human health** Provides a detailed response to submissions concerning sleep disturbance.

1.5 Next steps

Following the receipt of the finalised EIS, the Australian Minister for the Environment and Water will provide advice including any recommended conditions to DITRDCA, Airservices Australia and CASA under section 163 of the EPBC Act before any approval is given for the airspace design. Airservices Australia will submit the Airspace Change Proposal to CASA for approval. This would need to consider the advice provided by the Australian Minister for the Environment and Water.

Chapter 2 Summary of engagement

This chapter outlines the community and stakeholder engagement undertaken during and following the exhibition of the Draft EIS, and complements the detail provided in Chapter 9 (Community and stakeholder engagement) of the finalised EIS.

2.1 Engagement activities during the Draft EIS exhibition

Following the release of the preliminary flight paths on 27 June 2023, the Draft EIS was placed on public exhibition from 24 October 2023 through to 31 January 2024. Given the timing of consultation over the Christmas holiday period, the Draft EIS was subject to an extended consultation period of 14 weeks or 66 business days. This exceeded the minimum statutory timeframe of 20 business days for consultation under the EPBC Act.

The Draft EIS exhibition was complemented by the release of the preliminary flight path design via the online Aircraft Overflight Noise Tool on 27 June 2023. This occurred 4 months prior to the exhibition of the Draft EIS to provide the community with as much time as possible to view and understand the preliminary flight path information.

To support the public exhibition of the Draft EIS, an extensive community engagement program used a number of different methods to inform the community and key stakeholders about the release of the Draft EIS, the key topics of interest and how to make a submission on the project.

The Draft EIS was made available via the Online Community Portal and hard copies were accessible at libraries and council buildings across the Sydney Basin, with a focus on Western Sydney locations. This was complemented with a number of online resources, briefings and information sessions. This is detailed further in the following sections and summarised in Section 9.5 of the finalised EIS.

2.1.1 Consultation activities

2.1.1.1 Stakeholder briefings

Stakeholder briefings with supporting presentation materials were held with key stakeholders, including:

- local councils
- state and federal members of parliament
- aviation stakeholders
- NSW Government agencies
- business groups
- community groups.

2.1.1.2 Draft Noise Insulation and Property Acquisition Policy landowner meetings

During the EIS public exhibition, the Department of Infrastructure, Transport, Regional Development, Communications and the Arts (DITRDCA) contacted 124 landowners and residents located partly or fully within the Australian Noise Exposure Concept (ANEC) 20 composite contour for the 2040 assessment year (by doorknocking and/or leaving of a letterbox flyers) offering one-on-one meetings. Following this engagement, 33 meetings were held with landowners who were interested in receiving further information on the draft Noise Insulation and Property Acquisition Policy (NIPA).

2.1.1.3 Community Information and Feedback Sessions

During the exhibition period, 21 in-person and online Community Information and Feedback Sessions were held. DITRDCA held 12 in-person sessions and hosted one online. The in-person sessions were held in community spaces and provided an opportunity for community members to ask detailed questions of technical experts and to sit with a project team member to understand the information presented in the online Aircraft Overflight Noise Tool. Airservices Australia also held 7 supplementary community information and feedback sessions.

These sessions were attended by over 400 community members.

For a full list of locations, see Section 9.4.1.1 of the finalised EIS.

2.1.1.4 Community information stalls

Twelve (12) community information stalls were held during the public exhibition period across the Sydney Basin. DITRDCA held 11 of the stalls and Airservices Australia held one additional stall. These sessions were held in areas of high pedestrian activity such as shopping centres and local markets, and were used to build awareness of the project amongst the community. More than 1,400 community members were spoken with at community information stalls.

For a full list of locations, see Section 9.4.1.1 of the finalised EIS.

2.1.2 Engagement tools and materials

2.1.2.1 Online Community Portal

An Online Community Portal was developed to provide community members with a single source of information. In total, there has been over 528,000 visits to the site between late June and early February, of which almost 173,000 visits occurred during the Draft EIS exhibition period.

Information accessed via the Online Community Portal included:

- digital Draft EIS
- online submissions portal
- online Aircraft Overflight Noise Tool
- digital copies of all project collateral (current and previous). All animations and the 4 principal project brochures were also translated in the 5 most frequently spoken languages other than English in Western Sydney (Arabic, Chinese (Simplified), Vietnamese, Tagalog, and Hindi)
- all upcoming and past community information events
- all hard copy Draft EIS viewing locations
- how to request translation services
- contact details.

2.1.2.2 Online Aircraft Overflight Noise Tool

The development of an online Aircraft Overflight Noise Tool allowed community members to input specific addresses and view any potential impacts, aircraft movements and aircraft altitudes.

In total, there have been more than 310,000 visits to the online Aircraft Overflight Noise Tool since the release of the preliminary flight paths in June 2023, of which 64,000 visits occurred during the Draft EIS exhibition period.

2.1.2.3 Train station engagement

More than 4,300 postcards notifying residents of the release of the preliminary flight paths and Draft EIS were handed out at train stations during the morning peak-hour across 21 suburbs. For a full list of suburbs, see Section 9.4.1.1 of the finalised EIS.

2.1.2.4 Posters

More than 150 posters notifying residents of the release of the preliminary flight paths and Draft EIS were distributed across community noticeboards, supermarkets, cafes and public venues in 18 LGAs. For a full list of LGAs, see Section 9.4.1.1 of the finalised EIS.

2.1.2.5 Information brochures

New brochures were developed to explain the changes required to the preliminary flight paths for other airports and the draft NIPA. Updated versions of existing brochures and fact sheets were also produced to provide more information about the public exhibition period and the formal submissions process.

More than 26,000 copies of brochures were distributed to MP offices, local councils and WSA Co for display. A full list of local councils who received brochures is provided in Section 9.4.1.1 of the finalised EIS.

2.1.2.6 Newspaper notices and social media advertisements

Notices and social media advertisements were used to promote the release of the Draft EIS and the preliminary flight paths. Notices were published in national, state, and local newspapers, which included:

- national newspapers:
  - The Weekender Australian
- state newspapers:
  - Sydney Morning Herald
  - The Daily Telegraph
- local newspapers:
  - Bankstown Canterbury Torch
  - Blue Mountains Gazette
  - Hawkesbury Gazette
  - Parramatta News
  - St George and Sutherland Leader
  - The District Reporter
  - The Post Hornsby Ku-ring-gai
  - Western Weekender.

Social media advertising has also achieved more than 900,000 impressions.

2.1.3 Community contact and information points

2.1.3.1 Community 1800 number

A community 1800 number was set up to answer enquiries and to provide technical support for community members using the online Aircraft Overflight Noise Tool.

Over 200 calls were received through the 1800 line during the public exhibition of the Draft EIS.

2.1.3.2 Project email

A project email was established to allow the community to send enquiries directly to the project team.

More than 350 emails were received via the project email address during the public exhibition of the Draft EIS.

2.1.3.3 Email updates

Notifications were sent out via emails to key stakeholders and community members who had signed up to receive email updates.

More than 2,000 community members have subscribed to the email updates list.

2.1.3.4 Hard copy Draft EIS locations

Hard copies of the Draft EIS were provided to local councils and exhibited in 23 locations across the Sydney Basin for community members to access.

Chapter 3 Submissions analysis

This chapter provides a summary of the submissions received, including a breakdown of the types of submitters, the number of submissions received and the key issues raised.

3.1 Submissions received

A total of 8,477 submissions were received by the Department of Infrastructure, Transport, Regional Development, Communications, and the Arts (DITRDCA) in response to the public exhibition of the Draft Environment Impact Statement (EIS). In some instances, submitters made multiple submissions.

Submissions to DITRDCA were invited from any member of the public or organisation, including the community, government agencies and other key stakeholders. DITRDCA accepted submissions received via the online submissions portal, email and postal mail. This included submissions referred to DITRDCA by local councils, the Prime Minister's office, and state and federal Members of Parliament (MP). The breakdown of submission types (rounded) is as follows:

- 79 per cent submissions were received through the online submissions portal
- 18 per cent submissions were received by email
- 3 per cent submissions were received by post
- less than one per cent of submissions were received through a local member of the state or federal parliament.

The submissions received have been made available to be viewed on the DITRDCA website (https://www.wsiflightpaths.gov.au/submissions). This excludes confidential submissions.

The total number of submissions in the breakdown of submissions by submitter type is provided in Table 3.1.

Table 3.1 Breakdown of submissions received during the Draft EIS exhibition by submitter type

Submitter type	Number of submissions
Community submissions	
Community members	8,398
Subtotal	**8,398**
Key stakeholders	
Government agencies or organisations	6
Councils and council organisations	15
Federal Members of Parliament (MPs)	5
State MPs (NSW)	4
Airport operators	3
General aviation	15
Special interest and community groups	31
Subtotal	**79**
Total	**8,477**

Following the exhibition of the Draft EIS, the International Union for Conservation of Nature (IUCN) submitted a technical review of the Draft EIS to the Australian Department of Climate Change, Energy, Environment and Water (DCCEEW). The feedback from the IUCN has been taken into account in the submissions review and considered in the finalisation of the EIS.

3.1.1 Community submissions

A total of 8,398 submissions were received from members of the community. As shown in Table 3.1, community submissions included those from individual community members/ residents, businesses, and industry.

Of the 8,398 submissions, 3,945 were standardised letters or form letters. There were 75 different form letters identified which raised a range of different key issues and sub-issues. These were treated as individual submissions, noting some form letters had added minor individualised changes.

3.1.2 Government agencies, local councils, and key stakeholders

A total of 79 submissions were received from government agencies, local councils, and other key stakeholders during the exhibition of the Draft EIS.

A number of stakeholders requested to remain anonymous and as such, are not included in the list below.

Submissions were received from the following stakeholders during the Draft EIS exhibition:

- Government agencies or organisations
  - Greater Blue Mountains World Heritage Property Advisor Committee
  - NSW Small Business Commission
  - Botanic Gardens of Sydney
  - General Aviation Advisory Network
- Federal Members for Parliament
  - the Hon. Angus Taylor MP, Member for Hume (Federal)
  - Julian Leeser MP, Member for Berowra (Federal)
  - Melissa McIntosh MP, Member for Lindsay (Federal)
  - Sally Sitou MP, Member for Reid (Federal)
  - Susan Templeman MP, Member for Macquarie (Federal)
- State Members for Parliament (NSW)
  - the Hon. Jo Haylen MP, Member for Summer Hill (NSW)
  - Judy Hannan MP, Member for Wollondilly (NSW)
  - Stephen Bali MP, Member for Blacktown (NSW)
  - Trish Doyle MP, Member for the Blue Mountains (NSW)
- Local councils and council organisations
  - Bayside Council
  - Blacktown City Council
  - Blue Mountains City Council
  - Burwood Council
  - Camden Council
  - Campbelltown City Council
  - Canterbury-Bankstown Council
  - City of Parramatta
  - Cumberland City Council
  - Fairfield City Council
  - Inner West Council
  - Penrith City Council
  - The Hills Shire Council
  - The Parks – Sydney Parklands Councils
  - Western Sydney Regional Organisation of Councils (WSROC)

- Airport operators
  - Sydney Airport Corporation Limited
  - Aeria Management Group
  - WSA Co Limited
- General aviation
  - Air Sport Australia Confederation
  - Air Spurzem Pty Ltd
  - Australian Aerobatic Academy Pty Ltd
  - Blue Mountains Soaring Club
  - CFI Bathurst Soaring Club
  - Gliding Australia (2 submissions)
  - Gliding NSW
  - New South Wales Hang Gliding and Paragliding Association
  - Southern Cross Gliding Club Incorporated (3 submissions)
  - Sydney Gliding
  - Sydney Recreational Flying Club
- Special interest and community groups
  - Australian International Council on Monuments and Sites
  - BAPS Swaminarayan Sanstha Australia Ltd
  - Blue Mountains Conservation Society
  - Blue Mountains Union and Community
  - Blue Mountains World Heritage Institute
  - Cooks River Valley Association
  - Cumberland Land Conservancy
  - Fitzgerald Creek Catchment Group
  - Friends of Fernhill and Mulgoa Valley Inc
  - Glenbrook Chamber of Commerce
  - Homebush Residents' Group, Inc
  - Inner West Residents and Mums Group
  - Luddenham Progress Association Inc
  - Mt Tomah and Berambing Community Association
  - Mt Wilson Progress Association Inc and Mt Irvine Progress Association
  - Mulgoa Valley Landcare Group Inc
  - Rainforest Conservancy Inc
  - Residents Against WSA Inc (RAWSA)
  - Social Justice Commission – Holy Spirit Catholic Church, St Clair
  - Sporting Shooting Association of Australia Sydney Branch Inc
  - Sydney Flight Paths Action Group
  - The Trustees of Linden Observatory
  - Varuna, The National Writers' House
  - Wallacia Progress Association
  - Western Sydney Amateur Astronomy Group Inc
  - Wilderness Australia
  - Yanama Budyari Gumada Aboriginal Corporation.

As identified earlier within this section, the IUCN submitted a technical review of the Draft EIS to DCCEEW, which has been captured in this report.

3.1.3 Expression of support, objection or comment on the project

Submitters raised a range of issues within submissions. Some submissions indicated a clear position on the project. The breakdown of support/objections received (presented as rounded percentages) are as follows:

- less than 0.5 per cent of submissions clearly expressed support for the project
- 68 per cent of submissions clearly expressed an objection to the project
- 32 per cent of submissions did not clearly state a position or only provided comments on the project.

The issues raised in submissions were the key consideration for DITRDCA. Each submission was reviewed and summarised, and the issues raised responded to in this Submissions Report irrespective of whether a position was clearly expressed on the project or not.

3.2 Analysis of submissions

3.2.1 Issue categorisation

Each submission was analysed to group the issues raised across the 8,477 submissions into 'key' issue and a 'sub-issue' categories. Submissions typically raised more than one key issue and sub-issue within an individual submission.

The 'key' issues reflected the overarching topic raised in the submission and included:

- strategic need and justification
- statutory context
- project development and alternatives
- the Project
- facilitated changes
- community and stakeholder engagement
- aircraft noise
- air quality and greenhouse gas
- aircraft hazards and risks
- land use
- landscape and visual amenity
- biodiversity
- heritage
- social
- economic
- human health
- facilitated impacts
- cumulative impacts
- Matters of National Environmental Significance
- other issues.

Each key issue was then broken down further into sub-issues according to common themes associated with the particular key issue. Sub-issues were typically grouped according to 3 broad themes: the impact assessment approach, the impacts of the project, and the environmental mitigation and management of the identified impacts. For example, a submission relating to the suitability of the assessment criteria applied in the aircraft noise impact assessment was categorised into the 'Aircraft noise' key issue, and the 'impact assessment approach' sub-issue.

An example of this categorisation process is displayed in Figure 3.1.

I wish to voice my submission on the unfairness and no community consultation of the new flight path for WSI. We were not advised nor consulted of the change of flight path to the original one. My community and myself are very concerned of the huge amount of flight routes and flights above us at low altitude that will emit large amounts of noise and air pollution.

The original flight path was to an extent acceptable but this new flight path not at all acceptable. It is very unfair that the majority of Penrith and regional suburbs re heavily impacted, and we demand a new environmental impact plan and some changed made to flight paths and flight numbers to reduce noise and air pollution.

- **Issue 1:** Engagement – during the preparation of the preliminary flight path design and Draft EIS
- **Issue 2:** Project design and development – Comparison between 2016 and 2024 flight paths
- **Issue 3:** Project design and development – Alternative flight paths
- **Issue 4:** The project – flight paths
- **Issue 5:** Aircraft noise – Aircraft noise impacts
- **Issue 6:** Air quality and greenhouse gas emissions – Air quality impacts

Figure 3.1 Example of categorisation process

3.2.2 Review of submissions

Following the categorisation of each submission, the issues were summarised and grouped according to the key issue and sub-issue categories. The intent of the issues raised has been captured and a response has been provided to each grouped issue summary in this Submissions Report. Where relevant, input was sought from the technical specialists who assisted with the preparation of the Draft EIS. This is presented in Chapters 4 through to Chapter 23 of this Submissions Report.

3.3 Summary of issues raised

3.3.1 Key issues raised

3.3.1.1 Summary by key issue

A breakdown of the key issues raised in submissions is provided in Figure 3.2. The number of issues identified is greater than the total number of submissions received as most submissions raised more than one key issue.

The top 5 key issues identified in submissions are:

- the Project, which captured issues concerning the proposed flight paths and flight path design, hours of operation, aircraft movement and aircraft type
- aircraft noise, which captured issues concerning the impact assessment approach, ambient noise monitoring, the impact assessment outcomes (including sleep disturbance), and the mitigation, management and monitoring of aircraft noise
- project development and alternatives, which captured issues around the preliminary flight path design process, comments on the changes since the 2016 EIS and suggested alternatives identified in submissions

- human health, which captured issues concerning the impact assessment approach, the impact assessment outcomes on matters such as noise (particularly sleep disturbance), air quality and water quality, and the mitigation of these impacts
- social, which captured issues concerning impacts of the project on the way of life, surroundings, quality of life, equity, health and wellbeing. Impacts on the Linden Observatory were also captured under this key issue.

A breakdown of each key issue to sub-issue categories is provided in Chapter 4 to Chapter 23 of this Submissions Report.

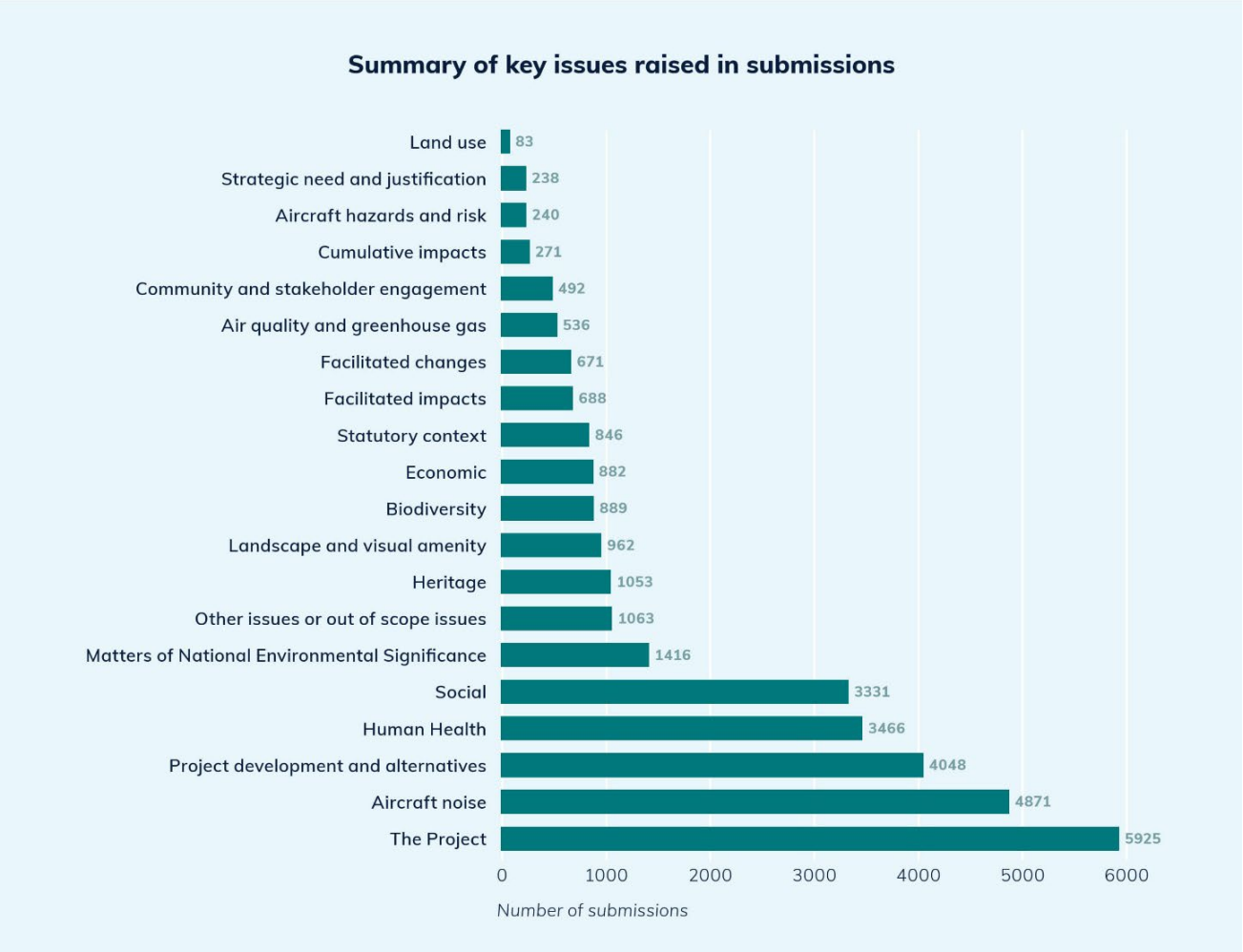


Figure 3.2 Key issues raised in submissions

3.3.1.2 Summary by location

Submissions were predominately received from locations across Australia. However, the majority of the submissions can be attributed to a location within the Sydney Basin. For the purposes of this report, the Sydney Basin encompasses airspace that extends to Katoomba to the west, the Hawkesbury River to the north, the southern boundary of the Royal National Park to the south and the coastline to the east.

Location information is based on postcodes. Submitters were encouraged to identify suburbs and postcodes in their submissions. However most submissions provided postcode information only (around 85 per cent).

Where postcode data was available, they were grouped into one of 10 districts. Within the Sydney Basin, these were grouped as follows:

- Western City District (excluding Blue Mountains) which includes the local government areas (LGAs) of Camden, Campbelltown, Fairfield, Liverpool, Penrith and Wollondilly as well as parts of the Hawkesbury LGA
- Western City District (Blue Mountains only) which includes the LGA of the Blue Mountains and parts of the Hawkesbury LGA
- Central City District which includes the LGAs of Blacktown, Cumberland, Parramatta and The Hills
- North District which includes the LGAs of Ryde, Willoughby, Hornsby, Hunters Hill, Lane Cove, Ku-ring-gai, North Sydney and the Northern Beaches
- South District which includes the LGAs of Georges River, Canterbury-Bankstown and Sutherland
- Eastern City District which includes the LGAs of Bayside, Burwood, Canada Bay, Inner West, Randwick, Strathfield, Woollahra, Waverley and City of Sydney

Elsewhere, submissions were grouped as follows:

- Central Coast LGA
- South East Tablelands which includes the LGAs of Goulburn Mulwaree, Kiama, Upper Lachlan Shire and Wingecarribee
- Central West and Orana which includes Bathurst, Cabonne, Lithgow, Cowra, Lachlan and Oberon
- Illawarra Shoalhaven which includes Shellharbour, Shoalhaven, Wollongong and Kiama.

In some instances, a postcode boundary can extend across multiple LGAs. In this instance, the submission was captured only once and typically assigned to the LGA where the majority of the postcode was located.

Around 47 per cent of the total 8,477 submissions originated from the Western Sydney District (Blue Mountains) followed by the Western Sydney District (excluding Blue Mountains) at around 17 per cent. This is consistent across most of the key issues outlined in Figure 3.2. The Western City District (Blue Mountains only) typically produced more submissions than the Western City District (excluding Blue Mountains). Around 8 per cent of the total submissions originated from the Central City District and Eastern City District each. Around one per cent of the submissions originated from the North District and South District each.

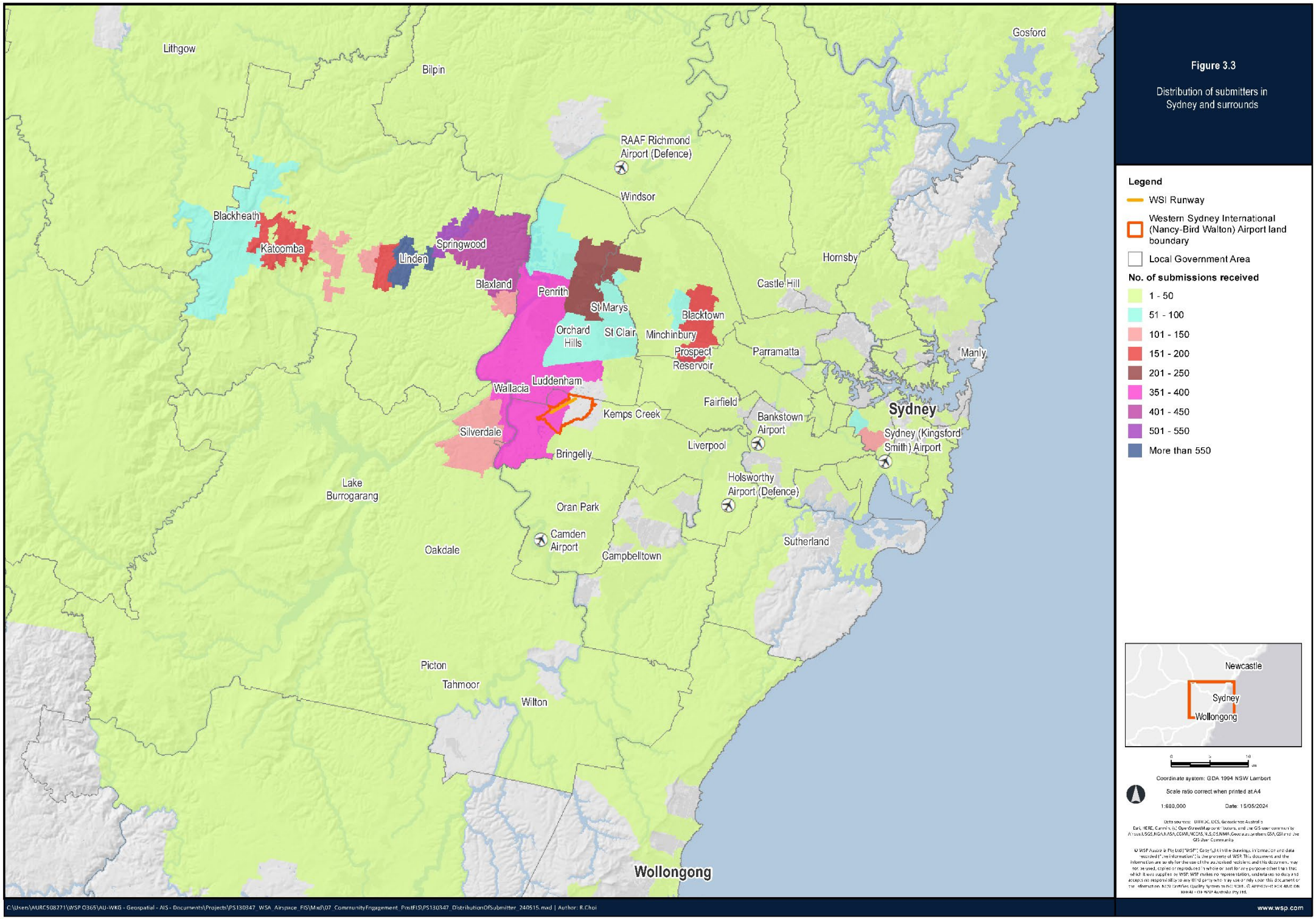
Some key issues were raised more often by the Western City District (Blue Mountains only) community. These key issues included Matters of National Environmental Significance (which captured issues around the Greater Blue Mountains World Heritage Area), landscape character and visual amenity, and heritage impacts. For these 3 sub issues, the Central City District contributed submissions at either the same frequency or greater than the Western City District (excluding Blue Mountains). The only key issue where the Western City District (excluding Blue Mountains) produced significantly more submissions than the Western City District (Blue Mountains only) concerned land use.

The Central City District was often the third most prominent district producing submissions across each of the key issues. These key issues included project development and alternatives, the project, aircraft noise, social impacts, health impacts, heritage impacts and other issues. Submissions that were concerned with other issues, particularly those relating to the Stage 1 Development of WSI, originated predominantly from Central City District.

Submissions from the Eastern City District featured more heavily within the key issues concerning facilitated changes and facilitated impacts.

Submissions from other regions of NSW accounted for around one per cent of submissions, as did submissions originating from interstate locations (such as Queensland, Victoria, Tasmania, Western Australia and the ACT). For submissions beyond the Sydney Basin from intrastate or interstate locations, similar issues to those of the Sydney Basin were raised.

The distribution of submissions within the Sydney Basin and surrounds is provided in Figure 3.3.


Lithgow
Bilpin
Gosford
RAAF Richmond Airport (Defence)
Windsor
Blackheath
Katoomba
Springwood
Linden
Blaxland
Penrith
St Marys
Orchard Hills
St Clair
Minchinbury
Blacktown
Prospect Reservoir
Castle Hill
Hornsby
Parramatta
Manly
Wallacia
Luddenham
Kemps Creek
Fairfield
Bankstown Airport
Sydney
Sydney (Kingsford Smith) Airport
Liverpool
Silverdale
Bringelly
Holsworthy Airport (Defence)
Lake Burrogarang
Oran Park
Camden Airport
Oakdale
Campbelltown
Sutherland
Picton
Tahmoor
Wilton
Wollongong
Figure 3.3
Distribution of submitters in Sydney and surrounds
Legend
WSI Runway
Western Sydney International (Nancy-Bird Walton) Airport land boundary
Local Government Area
No. of submissions received
1 - 50
51 - 100
101 - 150
151 - 200
201 - 250
351 - 400
401 - 450
501 - 550
More than 550
Newcastle
Sydney
Wollongong
Coordinate system: GDA 1994 NSW Lambert
Scale ratio correct when printed at A4
1:800,000
Date: 15/05/2024
www.wsp.com

Part B

Response to submissions

Chapter 4 Strategic need and justification

This chapter provides a response to the issues raised in submissions specific to Chapter 2 (Strategic context and need) and Chapter 25 (Conclusion) of the Draft EIS.

Submissions objected to or raised concerns with WSI and/or the preliminary flight path design (the project) on the basis that a second airport within the Sydney Basin was not required or justified. This included a criticism that 24-hour operations at WSI was not justified. Submissions also questioned the justification for WSI and/or the project when considering the distribution of benefits that would arise from WSI and the impacts to surrounding communities. A few submissions expressed support for the project. Other submissions expressed support for WSI, separate from the project.

WSI would be a major catalyst for investment and jobs growth in the Western Sydney region and would deliver benefits to the Australian economy more broadly. The need and justification for an airport in Western Sydney was established in the 2016 EIS. WSI has always been planned to operate on a 24-hour, 7 days a week curfew-free basis and was approved to operate on a 24-hour, 7 days a week basis in 2016. Operating without a curfew will enable WSI to deliver more jobs and economic benefits to Western Sydney.

The project will achieve the overall objectives for WSI by enabling single runway operations to commence through the introduction of new flight paths. The preliminary airspace design has been developed to comply with all relevant national and international practices and regulations for safe and efficient air navigation and aircraft operation. However, the project has also been designed to minimise community impacts as much as possible through the incorporation of flight path design principles intended to avoid, manage or otherwise minimise the unavoidable residual impacts, including aircraft noise.

Residual impacts would remain for communities close to WSI subject to high levels of aircraft noise and/or the visual presence of aircraft (and the associated amenity impacts) due to the location of the communities and the aircraft operations. Mitigation measures set out in the EIS aim to minimise and manage impacts for affected communities. Separately, the residual impacts of the project need to be considered within the context of the overall objectives of the project and the significant benefits WSI would provide over the short to longer term and particularly for future generations.

4.1 Submission overview

4.1.1 Number and origin of submissions

A total of 239 submissions raised matters concerning the strategic need and justification of the project. The majority of these submissions originated from the Sydney Basin and surrounds. The distribution of submitters by postcode is shown in Figure 4.1. Around 17 per cent of submissions did not provide a postcode when making a submission.

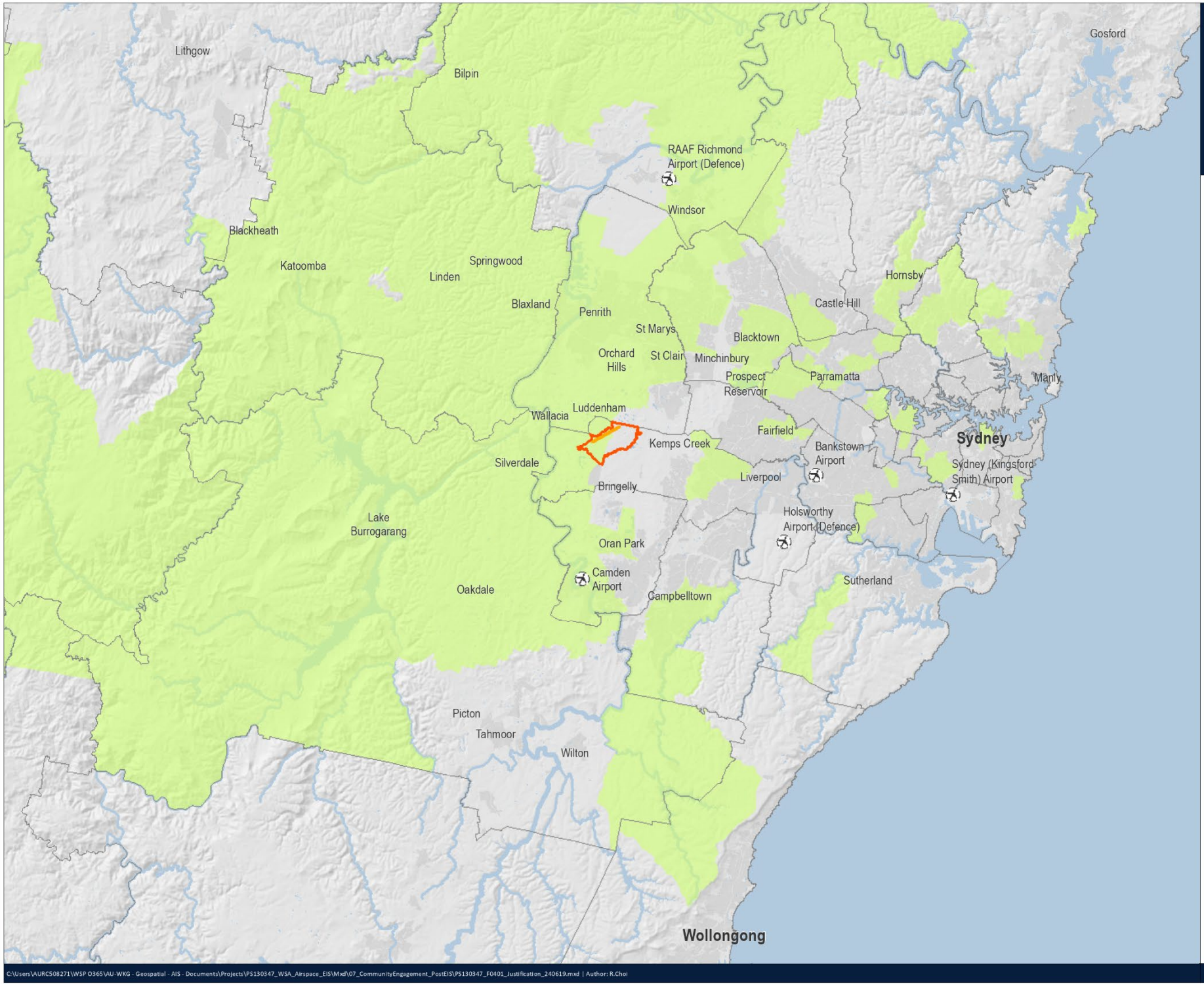


Figure 4.1

Origin of submission in relation to need and justification of the project

Legend

- WSI Runway
- Western Sydney International (Nancy-Bird Walton) Airport land boundary
- Local Government Area

Number of submissions by postcode

- 1 - 50
- 51 - 100
- 101 - 150
- 151 - 200
- 201 - 250
- 251 - 300
- 301 - 350
- 351 - 400
- 401 - 450
- 451 - 500
- 501 - 550
- More than 550

0 5 10 km

Coordinate system: GDA 1994 NSW Lambert

Scale ratio correct when printed at A4

1:600,000 Date: 20/06/2024

Data sources: - DITRDC, DCS, Geoscience Australia
Esri, HERE, Garmin, (c) OpenStreetMap contributors, and the GIS user community
Airbus,USGS,NGA/NASA,CGIAR,NCEAS,NLS,OS,NMA,Geodatastyrelsen,GSA,GSI and the GIS User Community

C:\Users\AURC508271\WSP O365\AU-WKG - Geospatial - AIS - Documents\Projects\PS130347_WSA_Airspace_EIS\Mxd\07_CommunityEngagement_PostEIS\PS130347_F0401_Justification_240619.mxd | Author: R.Choi

4.1.2 Key issue breakdown

Of the 239 submissions that commented on this key issue and provided a location, around 33 per cent originated from the Western City District (excluding Blue Mountains) followed by the Western City District (Blue Mountains) and Central City District at 31 per cent and 8 per cent respectively.

Around 21 per cent of submissions originated from other districts in the Sydney Basin (Eastern City, North and South districts). Around one per cent of the submissions originated from intrastate outside of the Sydney Basin.

4.2 Need and justification

4.2.1 General

4.2.1.1 Issue raised

Raised by

Community, Blue Mountains City Council, Fairfield City Council, Hills Shire Council, Julian Leeser MP – Member for Berowra (Federal), Inner West Council, Mount Wilson Progress Association and Mount Irvine Progress Association, Penrith City Council, Residents Against WSA Inc (RAWSA)

Issue

Submissions objected to or questioned the need for additional aviation capacity in the Sydney Basin or generally, in addition to WSI specifically and the location selected for the Airport Site. Submissions stated that the growth in passenger demand is an untested assumption and that the development of WSI would negatively affect a large population while only benefiting a few. These objections primarily stated that the need and justification for a second international airport in the Sydney Basin is overstated considering Sydney (Kingsford Smith) Airport does not currently operate at full capacity.

In stating these objections, submissions suggested that:

- the project be abandoned, and its funding be reallocated to other infrastructure projects or regional airports
- the capacity constraint at Sydney (Kingsford Smith) Airport could be solved by using larger aircraft, increasing capacity and/or lifting the curfew at that airport
- Sydney (Kingsford Smith) Airport should close.

Submissions stated that the Draft EIS has overstated the need for a 24-hour airport in the Sydney Basin. Submissions also questioned:

- why WSI was pursued if the economic viability of WSI is reliant on 24-hour operations
- the economic benefits of 24-hour operations given operations would be limited by meteorological conditions (such as fog) or smoke from bushfires, or as a result of higher labour costs due to night penalty rates
- if Sydney (Kingsford Smith) Airport would be sold to increase the need for WSI.

Submissions questioned how the government would ensure the net benefits outlined in the Draft EIS are achieved, and further stated that:

- economic objectives of WSI are unambitious
- there is a lack of guiding principles relating to the environment, World heritage values and sustainability
- the economic benefits of the project have been overstated given:
  - increased tourism and reduced fuel costs will not counteract negative consequences of WSI
  - WSI would not necessarily generate more jobs for Western Sydney residents, or that advancement in technology may reduce workforce demand
  - increased capacity to distribute freight does not directly benefit Western Sydney residents
  - Sydney (Kingsford Smith) Airport is likely to remain the priority for freight distribution given its central location
  - the project undermines the vision outlined in the National Sustainability Framework for the Visitor Economy
- the economic justification of WSI fails to accurately find a balance with social and environmental values
- the location of WSI as it is no longer compatible with the surrounding land use compared to when the site was initially zoned given current and projected increases in population
- Western Sydney residents are less likely to travel by air and have no need for an airport so close
- negative impacts of WSI would limit population growth due to the loss of amenity from aircraft operations.

The submissions that expressed support for WSI did so primarily on the basis of the economic benefits and increased travel accessibility generated by a second airport in the Sydney Basin. Submissions supported the location of the Airport Site and suggested that it would reduce commute times and costs for Western Sydney residents. Submissions stated that these employment opportunities would outweigh the potential negative impacts of WSI. Submissions commented on the benefits of a 24-hour airport, including it would provide for a larger range of airlines, greater capacity for cargo and increased accessibility for passengers. Other submissions expressed support for WSI while noting that the development of preliminary flight paths and operation of WSI need to be done so in a sustainable manner at no expense to residents.

The submissions that expressed support for the preliminary flight paths stated they were well designed given they would share the Sydney Basin Airspace, avoid flying over densely populated areas and do not further impact residents affected by Sydney (Kingsford Smith) Airport flight paths. Submissions that supported the facilitated changes to Sydney (Kingsford Smith) Airport did so for the same reasons.

4.2.1.2 Response

The need and justification for an airport in Western Sydney was established in the 2016 EIS. To ensure that Sydney meets the demand for aviation services and stays an international commercial and financial centre, as well as one of Australia's foremost tourist destinations, there needs to be efficient access to air services for travel by passengers and freight.

The *2012 Joint Study on Aviation Capacity in the Sydney Region* (the Joint Study) identified growing airport capacity constraints in the Sydney Basin (Department of Infrastructure and Transport, 2012). The Joint Study found that while Sydney (Kingsford Smith) Airport would remain an important airport for the Sydney Basin and Australia, it would be unable to meet the increasing demand in the Sydney Basin and an additional airport would be required by around 2030 (Department of Infrastructure and Transport, 2012). The Joint Study found that without significant additional aviation capacity in the Sydney Basin, the domestic airline sector would become increasingly constrained and new services from international markets could not be accommodated (Department of Infrastructure and Transport, 2012).

The more recent 2024 Australian Aviation Forecasts – 2024 to 2050 (Australian Aviation Forecasts) has reported that the total (domestic and international) passenger numbers travelling through the Sydney Basin Airspace are projected to increase from 44.1 million passengers in 2018–2019 to 88.2 million passengers in 2050 (DITRDCA 2024).

The physical constraints at Sydney (Kingsford Smith) Airport limit the ability to handle further passenger growth. Any further extension to Sydney (Kingsford Smith) Airport is limited by existing urban development, Botany Bay, Port Botany and the Cooks River. Further, the size of the Airport Site limits the ability for any significant upgrade or reconfiguration of the runways, taxiways and apron systems that would be required to respond to aviation demand.

These limitations are apparent at peak times and are likely to become more noticeable in the future. Demand for aviation services in the Sydney Basin is forecast to double from 2015 to 2035 (Department of Infrastructure and Transport, 2012). Even if operational restrictions were removed at Sydney (Kingsford Smith) Airport, it could not meet Sydney's long term aviation needs (Department of Infrastructure and Transport, 2012). The consideration of strategic alternatives to WSI was provided in the 2016 EIS and further response to this comment has been provided in Chapter 6 (Project development and alternatives) of this Submissions Report.

WSI has always been planned to operate on a 24-hour, 7 days a week curfew-free basis and was approved to operate on a 24-hour, 7 days a week basis in 2016. Operating without a curfew will enable WSI to deliver more jobs and economic benefits to Western Sydney.

Weather phenomena that may adversely affect operations at WSI have been considered in detail in the Western Sydney Airport Usability Report (Bureau of Meteorology, 2015). The report focuses on the operational implications of meteorological conditions at WSI, based on recent historical weather records and concludes:

- the runway configuration would be usable approximately 99.5 per cent of the time based on crosswinds alone
- other weather phenomena, such as fog, low cloud and low visibility conditions, may lower the usability of WSI but that these impacts could be mitigated through navigational systems and aids
- WSI would be less susceptible to turbulence and wind shear than Sydney (Kingsford Smith) Airport and identifies no particular concerns about these weather phenomena
- the proximity (11 nm (around 20 km)) of the Airport Site to the Great Dividing Range (Blue Mountains) means that a short lead time for thunderstorm aerodrome warnings would be available and recommended that an Automated Thunderstorm Alert Service is implemented at WSI to improve the accuracy of thunderstorm forecasting.

There is expected to be an increase in the demand for aviation services to meet the needs of population growth, as well as the growth in business activities, generally within the Sydney Basin.

The development and operation of WSI would support the population and economic growth in the Western Sydney region and broaden employment opportunities. There are several key industries in Western Sydney that depend on air transport services, such as wholesale trade. Industries that depend on air transport services are expected to grow in Western Sydney with the delivery of WSI.

It is estimated that an airport in Western Sydney would generate $24.6 billion in direct expenditure by 2060 and contribute a $23.9 billion increase in Gross Domestic Product (GDP) to the national economy (DITRDC, 2021). More than 5,000 direct jobs have already been created by the construction of WSI and more than half of this workforce is from Western Sydney. This figure is projected to increase to more than 28,000 direct and indirect jobs by 2031 and around 47,000 direct and indirect jobs by 2041 (Ernst and Young, 2017). These job opportunities would span aviation, supporting services and non-aviation industries (DITRDC, 2021).

The project is providing opportunities for apprenticeships and other learning to enable workers to advance their skillset and experience. More than 250 Western Sydney-based businesses have been engaged across construction, catering, security and other sectors. Over $400 million in contracts has been awarded to Western Sydney businesses, including small and medium enterprises, family and First Nations businesses (DITRDCA 2023).

WSI will act as an anchor for the Western Economic Corridor, broadening employment opportunities for the region. In addition, the *Western City District Plan – connecting communities* (Greater Sydney Commission, 2018) seeks to build on the opportunities provided by WSI and the associated Aerotropolis which will deliver a new proposed economic and commercial precinct within Western Sydney centring on aerospace and defence, manufacturing, healthcare, freight and logistics, agribusiness, education and research industries.

The Airport Plan sets out the objectives for WSI and the 12 Airspace design principles that the design process is required to follow (presented in Figure S.8 of the Draft EIS). The principles were informed by and reflect community and industry feedback on the 2016 EIS. Key to these design principles was the need to minimise the impact on the community, the environment and other airspace users while maximising safety, efficiency and capacity of WSI and the Sydney Basin airspace.

A suite of mitigation measures has been developed to further minimise and mitigate operational impacts, where safe and feasible. This includes a range of operational measures that will mitigate the impacts of aircraft noise and the Noise Insulation and Property Acquisition policy (NIPA) to ameliorate residual noise impacts where applicable. Land use planning controls are also in place to safeguard the operations of WSI while protecting future communities from aircraft noise.

It is acknowledged that residual impacts would remain for communities close to WSI subject to high levels of aircraft noise and/or the visual presence of aircraft (and the associated amenity impacts) given these are an unavoidable consequence of aircraft operations. The residual impacts of the project need to be considered within the context of the overall objectives of the project and the significant benefits WSI would provide over the short to longer term and particularly for future generations. The NIPA forms a key mitigation measure to address the aircraft noise impacts for these communities close to WSI.

Chapter 5 Statutory context

This chapter provides a response to the issues raised in submissions specific to Chapter 5 (Statutory context) of the Draft EIS.

Submissions raised concerns regarding the planning approval process for WSI and the project, including the relationship with the Airport Plan and the 2016 EIS, and the duration of the Draft EIS exhibition. Submissions also criticised the adequacy of the Draft EIS and the level of detail presented in the Draft EIS.

The regulatory process undertaken for the project has followed statutory and regulatory requirements, notably the Airport Plan and the EPBC Act.

The Draft EIS has been prepared in accordance with the EIS Guidelines as defined by the Australian Department of the Climate Change, Energy, the Environment and Water (DCCEEW), as delegate for the Minister for the Environment and Water. Prior to public exhibition, the Draft EIS was assessed to have satisfied the EIS Guidelines by DCCEEW as delegate for the Minister for the Environment and Water.

The Draft EIS' exhibition period exceeded the statutory minimum period set out in the EPBC Act.

The Draft EIS is required to consider the 'whole of the environment' and has been structured to provide consideration to a range of environmental, social and economic impacts. The content of the Draft EIS was necessary to satisfy the requirements of the EIS Guidelines and the complexity of the project, as well as other relevant guidelines as outlined within the supporting technical papers. Additional engagement tools were prepared to assist the community, such as the online Digital EIS and online Aircraft Overflight Noise Tool. These were further supported by community engagement activities held following the release of the preliminary flight paths and during the exhibition period.

5.1 Submission overview

5.1.1 Number and origin of submissions

A total of 846 submissions were received that made comment or raised issues concerning the planning approval process, the adequacy of the Draft EIS or the level of detail provided in the Draft EIS. The majority of these submissions originated from the Sydney Basin and surrounds. The distribution of submitters by postcode is shown in Figure 5.1. Around 9 per cent of submissions did not supply a postcode.

Of the 846 submissions, around 75 per cent originated from the Western City District (Blue Mountains) followed by the Western City District (excluding Blue Mountains) at 7 per cent. The remainder came from other Sydney Basin districts (Central City District, the Eastern City District, North District and South District), intrastate or interstate locations.

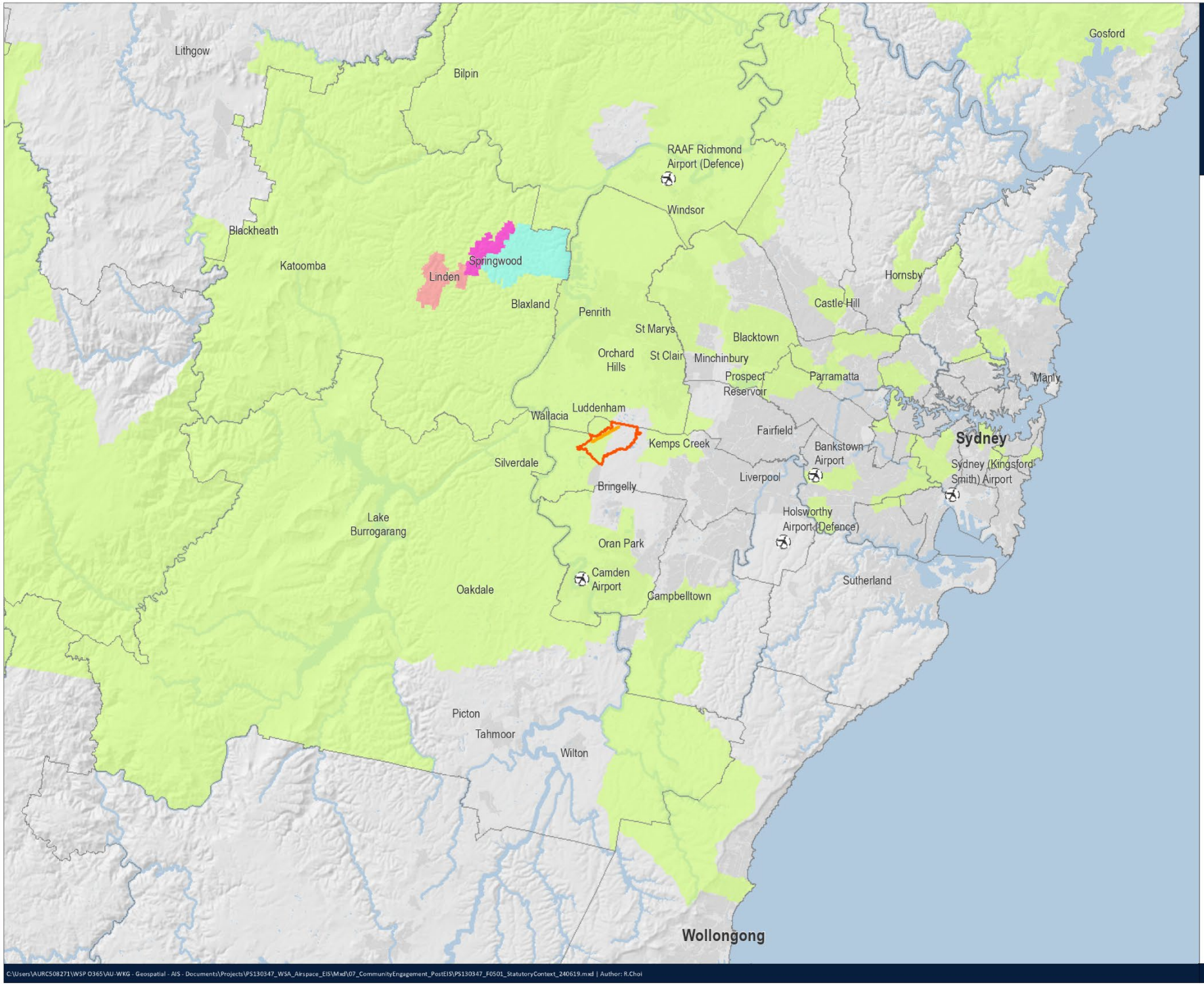


Figure 5.1

Origin of submission in relation to the statutory context of the project

Legend

- WSI Runway
- Western Sydney International (Nancy-Bird Walton) Airport land boundary
- Local Government Area

Number of submissions by postcode

- 1 - 50
- 51 - 100
- 101 - 150
- 151 - 200
- 201 - 250
- 251 - 300
- 301 - 350
- 351 - 400
- 401 - 450
- 451 - 500
- 501 - 550
- More than 550

0 5 10 km

Coordinate system: GDA 1994 NSW Lambert

Scale ratio correct when printed at A4

1:600,000 Date: 20/06/2024

5.1.2 Key issue breakdown

A breakdown of the sub-issues within this key issue and the percentage of total submissions that raised each of these sub-issues is outlined in Table 5.1.

Table 5.1 Breakdown of sub-issues in relation to the statutory context of the project

Sub-issue	Number of submissions that raised the sub-issue	Percentage of submissions that raised the sub-issue
Planning approval process	300	4%
Adequacy of the Draft EIS	369	4%
Detail in the Draft EIS	387	5%

Each sub-issue was raised most often by the Western City District (Blue Mountains) followed by the Western City District (excluding Blue Mountains). The remaining districts in the Sydney Basin typically accounted for around 5 per cent or less each within each sub-issue.

Submissions from intrastate or interstate locations typically represented one per cent or less within each sub-issue. Up to 10 per cent of submissions in each sub-issue did not provide a location.

5.2 Planning approval process

5.2.1 Approvals framework

5.2.1.1 Issue raised

Raised by

Community, Australian International Council of Monuments and Sites, Blue Mountains City Council, Canterbury-Bankstown Council, Friends of Fernhill and Mulgoa Valley Inc, General Aviation Advisory Network

Issue

Submissions made comment in relation to the application of the EPBC Act, specifically:

- that the project should be a controlled action under the EPBC Act and that a referral to the Australian Minister for the Environment and Water under the EPBC Act is required
- the approval provisions of the EPBC Act are not fit for purpose, noting the current reforms being proposed by the Australian Government, or that the EPBC Act was amended to fast-track this project.

Submissions expressed the view that the project should not be approved.

Submissions expressed the view that Condition 16 of the Airport Plan has not been met, for example Condition 16(5) and 16(6), which sets out additional design principles and requires the design to be supported by noise modelling for a range of realistic airport capacity and meteorological conditions.

Some submissions expressed concern that the preliminary flight paths were already operating without approval.

5.2.1.2 Response

The project has been progressed in accordance with legislative and regulatory requirements. The Australian airspace is governed by Commonwealth legislation, specifically the *Airspace Act 2007* (Cth) (the Airspace Act), the *Civil Aviation Act 1988* (Cth) (the Civil Aviation Act), and their associated regulations. The on-ground development of certain airports and protection of the airspace is primarily governed by the *Airports Act 1996* (the Airports Act) and its regulations, in particular the Airports (Protection of Airspace) Regulation 1996.

Condition 16 of the Airport Plan provides that the project is to be progressed pursuant to the process set out in section 160 of the EPBC Act by making clear that, once the airspace design is developed, it is to be progressed as a Plan for Aviation Airspace Management (PAAM) under that section of the EPBC Act.

Under section 160 of the EPBC Act, a Commonwealth agency or authority must consider advice from the Minister for the Environment and Water before authorising specified actions with a significant impact on the environment.

In accordance with Condition 16 of the Airport Plan and section 160 of the EPBC Act, the then Minister for Communications, Urban Infrastructure, Cities and the Arts, Airservices Australia and the Civil Aviation Safety Authority (CASA) jointly referred the PAAM for WSI airspace design to the then Minister for the Environment in December 2021. In response, a delegate for the Minister for the Environment decided that the proposed action is to be assessed by EIS. DCCEEW subsequently issued guidelines for the preparation of the EIS in 2022.'

The requirements of Condition 16 of the Airport Plan regarding the airspace design process have been satisfied in the Draft EIS. This includes 3 different assessment years to reflect different levels of capacity at WSI over time (2033, 2040 and 2055). Further, the operating scenarios considered in the assessment accounts for the influence of different meteorological conditions on the selection of the runway mode of operation. Further detail on how condition 16(5) has been satisfied through the design of the project is detailed in Chapter 6 (Project development and alternatives) of the finalised EIS.

In response to submissions raising concerns about the preliminary flight paths being already in operation, the operation of the project has not commenced as there are a number of additional regulatory steps required before flights can commence on the preliminary flight paths.

Further detail on the approvals framework is provided in Chapter 5 (Statutory context) of the Draft EIS.

5.2.2 Relationship with the 2016 EIS and Airport Plan

5.2.2.1 Issue raised

Raised by

Community, Blue Mountains City Council, The Hon Angus Taylor MP – Member for Hume (Cth)

Issue

Submissions expressed the view that the assessment for the project process was flawed. Submissions stated that the approval process for the preliminary flight paths should have occurred before the Stage 1 Development for WSI was approved and construction started. Submissions were critical that construction commenced for WSI prior to the release of the preliminary flight paths and that this limited the ability to address concerns about the impacts of the project.

The time taken to prepare and release the preliminary flight path design and the Draft EIS for the project to the public was criticised in submissions, and that the design and/or Draft EIS conflicted with earlier information. Submissions requested greater transparency between the Australian Government and the general public.

Some submissions stated that the Draft EIS was an amendment to the 2016 EIS.

5.2.2.2 Response

Flight path design in Australia generally starts with developing proof of concept designs. This first step was completed as part of the 2016 EIS, which included scope to assess indicative proof of concept flight paths based on a south-west/ north-east runway orientation. This process demonstrated that WSI could operate safely along with all other airspace movements in Greater Sydney. It also provided an opportunity for the community and stakeholders to provide feedback early in the airspace design process.

In response to feedback received during public exhibition of the Draft EIS for the WSI Stage 1 Development in 2015, the Airport Plan set out 12 Airspace Design Principles that the design process is required to follow. The preliminary design of flight paths has also been informed by a comprehensive, methodological approach to ensure all relevant safety, environmental and community issues were taken into account. This included an iterative process of design and validation testing with oversight from an Expert Steering Group.

The Forum on Western Sydney Airport (FOWSA) was established as a requirement of the Airport Plan to ensure transparency between the Australian Government and the public. FOWSA has provided a mechanism for representatives to inform their communities about the planning and progress of the WSI and the project, and to raise community concerns to the forum and government. Submissions made on the Draft EIS have also been considered in the finalisation of the EIS and will be considered in the detailed design phase of the project.

The project and Draft EIS is not an amendment to the 2016 EIS. The project is the subject of an EIS process that is separate to the 2016 EIS.

Further discussion regarding the comparison between the 2016 and 2023 preliminary flight paths is provided in Section 6.3 of this Submissions Report.

5.2.3 Draft EIS exhibition

5.2.3.1 Issue raised

Raised by

Community

Issue

Submissions expressed the view that the Draft EIS exhibition was insufficient or were critical about the submissions process. Specific comments raised about the process included:

- the view that the time to review the Draft EIS was inadequate, in particular over the December-January period, with submissions requesting an extension of the timeframe to make a submission
- the view that submissions would not be considered.

Other submissions expressed appreciation for the opportunity to provide feedback during the Draft EIS process. Some submissions commented that the Draft EIS had been conducted professionally and to a high standard of completeness, with multiple opportunities for consultation.

Submissions stated that a report should be published that includes the concerns and recommendations raised in submissions, including:

- the number of recommendations or suggestions received in submissions
- a list and description of the recommendations or suggestions adopted from submissions
- an explanation why recommendations or suggestions were not adopted.

An immediate response to submissions was also requested.

5.2.3.2 Response

The exhibition period for the Draft EIS exceeded the statutory minimum requirement and the length of exhibition was consistent with the consultation period for similar projects. Section 103(3) of the EPBC Act sets a minimum timeframe of 20 business days for the exhibition of an EIS. DCCEEW considered 60 business days public exhibition for the Draft EIS to be sufficient given the project's scope and complexity. The Department of Infrastructure. Transport, Regional Development, Communications and the Arts (DITRDCA) chose a period of 67 business days for the Draft EIS exhibition from 24 October 2023 to 31 January 2024. This period is consistent with consultation for similar projects, such as the Melbourne Airport third runway Major Development Plan (72 business days), the Perth Airport second runway Major Development Plan (60 business days), and the Brisbane Airport second runway Major Development Plan (63 business days).

The Draft EIS exhibition was preceded by the release of the preliminary flight path design via the online Aircraft Overflight Noise Tool on 27 June 2023. This occurred 4 months prior to the exhibition of the Draft EIS to provide the community with as much time as possible to view and understand the preliminary flight path information.

This Submissions Report has been prepared to satisfy the requirements of the EPBC Act. It provides transparency by providing a summary of the issues raised and how these matters have been responded to. It is not intended to provide a response to each individual submission, noting over 8,400 submissions were received during the public display period. Further, DITRDCA has published all submissions made during the exhibition period, excluding those that were confidential.

5.2.4 Request for public inquiry

5.2.4.1 Issue raised

Raised by

Community, Blue Mountains Conservation Society

Issue

Submissions called for a public inquiry or royal commission.

5.2.4.2 Response

A decision to hold an assessment by public inquiry is a matter for the Minister for the Environment and Water (or delegate) when considering a referral. The delegate for the Minister determined that the project would be assessed by an EIS under Division 6 in accordance with Section 87 of the EPBC Act.

The decision to hold a Royal Commission is a matter decided by the Australian Parliament and is beyond the approvals framework for the project.

5.2.5 Amendments to the project

5.2.5.1 Issue raised

Raised by

Community

Issue

Submissions expressed concern that the project may be subject to change in the future without further approval. In particular, submissions questioned if the number of flight movements at WSI could increase over time, or at other airports as a result of the project.

5.2.5.2 Response

The WSI Stage 1 Development is for a single runway operations and will be capable of handling up to 49 aircraft movements per hour at full capacity. The assessment year of 2055 in the Draft EIS represents the year that the single runway operation at WSI is approaching capacity.

The development of a second runway to increase capacity at WSI would be subject to separate regulatory approvals in accordance with the *Airports Act 1996* (Cth), including any required environmental assessment.

Changes to the capacity of other airports in the Sydney Basin is beyond the scope of the Draft EIS.

5.3 Adequacy of the Draft EIS

5.3.1 General

5.3.1.1 Issue raised

Raised by

Community, Blacktown City Council, Blue Mountains City Council, Residents Against WSA Inc (RAWSA)

Issue

Submissions expressed the view that the Draft EIS was not adequate, specifically that it did not adequately address the EIS Guidelines, the EPBC Act or the Rio Declaration on Environment and Development (the Rio Declaration 1992) with respect to the precautionary principle. Submissions stated that the Draft EIS should be revisited to address these concerns. Submissions expressed the view that the Draft EIS, including the modelling, should be peer reviewed or verified by an independent audit.

Submissions included concerns that:

- the Draft EIS is misleading, lacks impartiality or lacks transparency
- the impacts on the community and environment have been underestimated
- the assessment has not been informed by sufficient baseline data
- the study area for the Draft EIS was insufficient
- the Draft EIS was not definitive when describing the project and predicted impacts remained unclear, unconfirmed or uncertain
- the Draft EIS did not clearly and consistently quantify the expected impacts of WSI or the facilitated changes

- the disclaimer and limitations/assumptions expressed in the Draft EIS undermined the accuracy, credibility and reliability of the Draft EIS
- insufficient mitigation measures have been identified to address impacts on the community or the environment
- the assessment of impacts to the Greater Blue Mountains World Heritage Area was inadequate, the Draft EIS failed to recognise the values of the World Heritage Area in the introductory chapters, or the Draft EIS provides a narrow view of Outstanding Universal Values.

It was also suggested that the EIS Guidelines were not adequate.

Submissions stated that the Draft EIS had not referenced and/or considered:

- Section 323 of the EPBC Act and Schedule 5 of the Environment Protection and Biodiversity Conservation Regulation 2000 (Cth), specifically that the management principles for World Heritage Areas was not identified in Chapter 5 (Statutory context) of the Draft EIS
- the *Wilderness Act 1987* (NSW)
- other NSW legislation, including the objects of the *Protection of the Environment Operations Act 1997* (NSW).

Other comments made on the accuracy of the Draft EIS included:

- concern that smaller airports such as Wedderburn, The Oaks and Wilton airports were not considered in the Draft EIS
- errors in the figures produced for the facilitated changes
- comments that the Aircraft Noise Ombudsman is not an independent administrative office because it comes under the umbrella of Airservices Australia.

5.3.1.2 Response

Prior to the public exhibition period, the Draft EIS was provided to DCCEEW for a review of its adequacy against the EIS Guidelines in accordance with Section 103 of the EPBC Act. The Draft EIS was edited in response to comments received in that review. Subsequently, the DCCEEW as the delegate for the Minister for the Environment and Water advised DITRDCA that it was satisfied that the Draft EIS is in accordance with the EIS Guidelines.

The assessments of the potential impacts of the project are consistent with the precautionary principle. The assessments undertaken and documented in the Draft EIS are consistent with accepted scientific and assessment methodologies, and established criteria and guidelines. The assessments included in the Draft EIS were prepared, reviewed and validated by specialists in their field. The assessments have applied a conservative approach with regard to the modelling used, and limitations have been identified where applicable. Opportunities to avoid and mitigate impacts were explored where possible through the design process, and additional mitigation measures have been identified where appropriate. Specific comments from submissions relating to the adequacy of technical assessments, baseline data or significance assessments are responded to in Chapters 10 to 23 of this Submissions Report.

The Draft EIS is required to consider the 'whole of the environment' and has been structured to provide consideration to a range of environmental, social and economic impacts. The main body of Draft EIS provides a brief summary of World Heritage listing of the Greater Blue Mountains Area (GBMA), and the values for which it is listed. This is then further discussed as relevant within the individual impact assessment chapters. In addition to this, Chapter 22 (Matters of National Environmental Significance) of the Draft EIS provided a consolidated assessment of the Greater Blue Mountains Area and is supported by Technical paper 14: Greater Blue Mountains World Heritage Area. Further response to criticisms about the assessment of the GBMA is provided in Chapter 22 (Matters of National Environmental Significance) of this Submissions Report.

Section 323 of the EPBC Act and its associated regulation outlines the relevant management principles for World Heritage Sites in Australia. This includes the requirement to prepare a management plan for the property or area. This is in addition to the requirements for the environmental assessment and approvals of actions under the EPBC Act. While identified in Technical paper 14, further discussion has been made in Chapter 5 (Statutory context) of the finalised EIS.

NSW planning laws do not apply in relation to the management of controlled airspace and they are largely excluded from application to WSI pursuant to section 112 of the Airports Act. NSW legislation also does not apply to the assessment of a PAAM by virtue of Section 160(5) of the EPBC Act.

While NSW legislation does not apply to the project, declared wilderness areas located within the GBMA have been considered in the Draft EIS. This issue is further discussed in Section 22.2.1 of this Submissions Report. Chapter 5 (Statutory Context) of the finalised EIS has been amended to make these considerations clearer.

A response to issues concerning consideration of other small aviation airports, such as The Oaks, is provided in Chapter 8 (Facilitated changes) of this Submissions Report.

The Aircraft Noise Ombudsman conducts independent reviews of Airservices Australia's management of aircraft noise-related activities. The Aircraft Noise Ombudsman Charter ensures that the Aircraft Noise Ombudsman is independent and is not subject to the direction of Airservices Australia's Board.

5.4 Detail in the Draft EIS

5.4.1 General

5.4.1.1 Issue raised

Raised by

Community, Blacktown City Council, Blue Mountains City Council, Fitzgerald Creek Catchment Group, RAWSA, The Hon Jo Haylen MP – Member for Summer Hill (NSW), WSA Co

Issue

Submissions made comment that the Draft EIS was a comprehensive document, informative and addressed the relevant matters for consideration whereas other submissions raised concerns about the documentation, specifically:

- the size and complexity of the Draft EIS made it challenging for the general public to read and understand, alongside the difficulty in interpreting the maps and figures
- the content in the Draft EIS was summarised and too generalised
- the level of technical language and detail provided in the Draft EIS impacted the accessibility and inclusivity of the Draft EIS (including literacy or language barriers)
- the Draft EIS did not contain technical details of procedures or supporting imagery to understand new or modified procedures or airspace
- figures that depict all preliminary flight paths overlayed with each other were not provided, including the facilitated changes
- the noise comparisons (for example, with lawn mowers and quiet libraries) were not useful
- the Draft EIS did not address concerns raised in response to the 2016 EIS
- the number of flights over an area was not clear in the Draft EIS, and therefore understanding eventual impacts was difficult. A neighbourhood by neighbourhood summary was requested to be incorporated into the finalised EIS.

Submissions expressed the view that better figures and visuals were needed throughout the Draft EIS.

Submissions asked where the technical reports referenced by the Draft EIS could be found. The safety assessment in support of the proposed preliminary flight paths and airspace changes was also requested.

5.4.1.2 Response

The concerns regarding the size and complexity of the Draft EIS are noted. The content of the Draft EIS was necessary to satisfy the requirements of the EIS Guidelines and reflect the complexity of the project, as well as other relevant guidelines as outlined within the supporting technical papers.

To facilitate the community's understanding of the information contained, the Draft EIS was supported by the online Digital Draft EIS and Aircraft Overflight Noise Tool as well as other resources found on the project website. Community information and feedback sessions and community information stalls held during the exhibition period allowed members of the community to seek information and raise questions with the project team.

Multiple figures of the preliminary flight paths were presented in the Draft EIS. Figures depicted the modes of operation, and time of day or night to reflect how the project would operate. Preliminary flight paths were depicted by the runway modes of operation and time of day or night to reflect how the project would operate, as only flight paths for one runway mode can operate at any time. The maps of preliminary flight paths is considered sufficient to effectively identify and communicate impacts associated with the project.

Community and industry feedback provided on the 'proof of concept' design as identified in the 2016 EIS informed the airspace design principles for the project and were considered during the preparation of the preliminary flight path design.

Technical papers were exhibited alongside the Draft EIS and provided at display locations and online (https://www.wsiflightpaths.gov.au/download-the-draft-eis). References have been listed in Chapter 26 of the Draft EIS and within each technical paper. If a reference document has been accessed online, a website has been provided in the reference list.

Many of the technical details associated with the project are discussed in the PAAM. These details have not been developed for public release as they are complex and not provided in a suitable context for a general audience. The PAAM was developed as a requirement of the Airport Plan and is the airspace design which was assessed in the Draft EIS for the preliminary flight paths for WSI. The information contained in the PAAM has been illustrated, described and assessed by the Draft EIS and, as such, there is no plan to release the PAAM.

Safety assessments associated with the development of the WSI airspace design are snapshots taken at specific points in time and, as the design is not yet complete, do not tell the full story and for this reason have not been published. Airservices Australia may choose to release the safety assessments associated with the design upon completion of the detailed design stage of the project.

Chapter 6 Project development and alternatives

This chapter provides a response to the issues raised in submissions specific to Chapter 6 (Project development and alternatives) of the Draft EIS.

Overall, submissions raised concerns regarding the general design development process as well as the disparity between the designs of the 2016 and 2033 flight paths. Additionally, submissions also provided a range of alternative flight paths that should be considered across the whole of the Sydney Basin.

Development of airspace and flight path design is an iterative process that is informed by a range of technical and community and stakeholder engagement inputs. A comprehensive description of the methodology and processes that were applied to the development of the preliminary airspace design and air traffic management system for WSI was provided in the Draft EIS. The development process focused on key criteria including safety, environmental (including noise), efficiency and capacity, while minimising changes to existing airspace arrangements in the Sydney Basin.

The main consideration for the 2016 EIS in its depiction of the 'proof-of-concept' flight paths for WSI was to demonstrate air traffic management feasibility, particularly whether WSI flight paths could operate independently and synchronise with aircraft operating to or from Sydney (Kingsford Smith) Airport and other Sydney Basin airports and Defence facilities. While the indicative 'proof-of-concept' flight paths identified in the 2016 EIS provided a reasonable basis for assessing the potential extent and intensity of impacts associated with aircraft operations at WSI, it was also noted in the 2016 EIS that the conceptual and preliminary airspace design had not been developed to a level of detail necessary for implementation and that further analysis and detailed planning of the flight paths would be undertaken. The broadening of the area over which the preliminary flight paths are distributed sought to minimise the overflight of residential areas, reduce the impact of aircraft noise and provides a more equitable distribution of flight paths across all of the communities within Western Sydney and the Blue Mountains. It is acknowledged that in achieving a more equal distribution of flight paths (and their associated impacts) across a broader area of the Sydney Basin that additional suburbs would therefore be subject to some level of flight path impact.

In relation to alternative flight paths, as part of the development of the preliminary flight paths, a range of alternatives were considered, which were summarised in the Draft EIS. It is acknowledged that a number of submissions requested that alternative flight paths be identified that shifted the current design away from their property and/or suburb to an adjoining suburb which the design does not otherwise overfly. While such changes may benefit specific respondents, the overall impacts would not be reduced, but shifted to different communities.

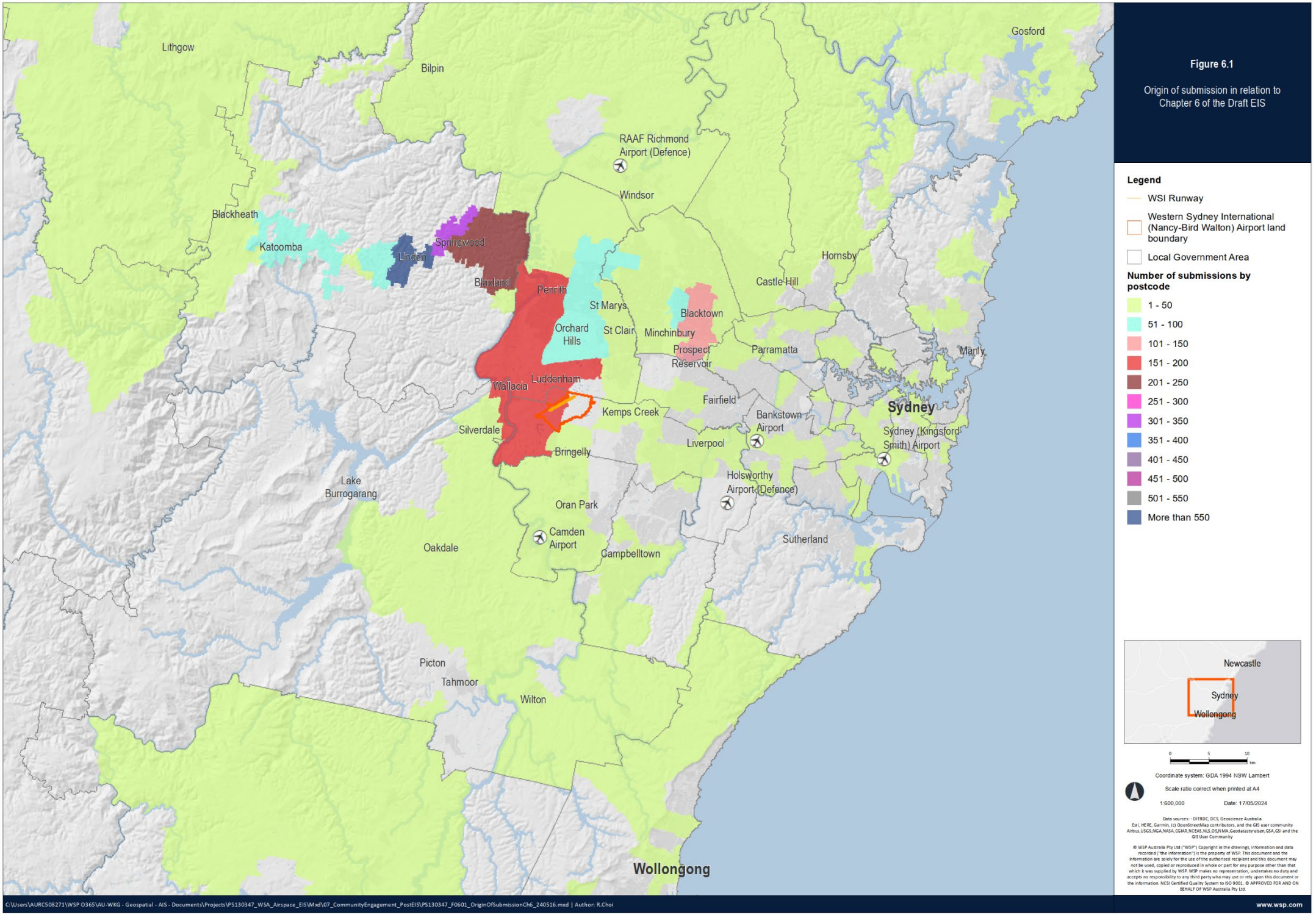
6.1 Submission overview

6.1.1 Number and origin of submissions

A total of 4,050 submissions raised matters concerning the project development process and project alternatives. The majority of these submissions originated from the Sydney Basin and surrounds as shown in Figure 6.1. Around 15 per cent of submissions did not supply a postcode.

Of the 4,050 submissions that raised the project development or alternatives, 55 per cent originated from the Western City District (Blue Mountains) followed by the Western City District (excluding Blue Mountains) at 14 per cent and the Central City District at around 10 per cent.

Around 2 per cent of submissions originated from intrastate and interstate locations such as NSW, the ACT, Queensland, Victoria, Tasmania and Western Australia).


Lithgow
Bilpin
Gosford
RAAF Richmond Airport (Defence)
Windsor
Blackheath
Katoomba
Springwood
Linden
Blaxland
Penrith
St Marys
Orchard Hills
St Clair
Blacktown
Minchinbury
Prospect Reservoir
Parramatta
Castle Hill
Hornsby
Manly
Wallacia
Luddenham
Fairfield
Kemps Creek
Bankstown Airport
Sydney
Sydney (Kingsford Smith) Airport
Silverdale
Liverpool
Bringelly
Holsworthy Airport (Defence)
Lake Burrogarang
Oran Park
Camden Airport
Sutherland
Oakdale
Campbelltown
Picton
Tahmoor
Wilton
Wollongong
Figure 6.1
Origin of submission in relation to Chapter 6 of the Draft EIS
Legend
WSI Runway
Western Sydney International (Nancy-Bird Walton) Airport land boundary
Local Government Area
Number of submissions by postcode
1 - 50
51 - 100
101 - 150
151 - 200
201 - 250
251 - 300
301 - 350
351 - 400
401 - 450
451 - 500
501 - 550
More than 550
Newcastle
Sydney
Wollongong
0
5
10
km
Coordinate system: GDA 1994 NSW Lambert
Scale ratio correct when printed at A4
1:600,000
Date: 17/05/2024
Data sources: - DITRDC, DCS, Geoscience Australia
Esri, HERE, Garmin, (c) OpenStreetMap contributors, and the GIS user community
Airbus,USGS,NGA,NASA, CGIAR,NCEAS,NLS,OS,NMA,Geodatastyrelsen,GSA,GSI and the GIS User Community
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C:\Users\AURC508271\WSP O365\AU-WKG - Geospatial - AIS - Documents\Projects\PS130347_WSA_Airspace_EIS\Mxd\07_CommunityEngagement_PostEIS\PS130347_F0601_OriginOfSubmissionCh6_240516.mxd | Author: R.Choi
www.wsp.com

In addition to the submissions received during the Draft EIS exhibition period, the International Union for Conservation of Nature (IUCN) submitted a technical review of the Draft EIS to the Australian Department of Climate Change, Energy, the Environment and Water. The matters raised in this technical review have been captured within this chapter.

6.1.2 Key issue breakdown

A breakdown of the sub-issues within this key issue and the percentage of total submissions that raised each of these sub-issues is outlined in Table 6.1.

Table 6.1 Breakdown of sub-issues in relation to the project's development and alternatives

Sub-issue	Number of submissions that raised the sub-issue	Percentage of submissions that raised each sub-issue
Design development process – general	1,174	14%
Comparison between 2016 and 2033 flight paths	172	2%
Alternative flight paths	3,023	36%
Future phases	501	6%

Both submissions concerning alternative flight paths and the general design development of the flight paths were raised the most by the Western City District (Blue Mountains) followed by the Western City District (excluding Blue Mountains). In contrast, submissions concerning the future phases of the development were most raised by the Central City District community. Submissions comparing the flight paths of 2016 EIS flight paths to those presented in the Draft EIS were raised the most by the Western Sydney District (excluding Blue Mountains) at around 44 per cent followed by the Western City District (Blue Mountains) at 27 per cent.

6.2 Design development process – General

6.2.1 Review of Sydney airspace and request for increased equality

6.2.1.1 Issue raised

Raised by

Aeria Management Group, Bayside Council, Blacktown City Council, Blue Mountains City Council, Blue Mountains World Heritage Institute, Camden Council, Luddenham Progress Association Inc, Penrith City Council, Southern Cross Gliding Club, The Parks - Sydney's Parkland Councils, Sydney Airport Corp Ltd, Trish Doyle MP – Member for the Blue Mountains (NSW), Western Sydney Regional Organisation of Councils (WSROC Inc)

Issue

Submissions objected to the requirement that the preliminary flight paths for WSI will result in minimal impacts to existing flight paths associated with Sydney (Kingsford Smith) Airport. Submissions stated that the implication of this requirement was that the airspace of Sydney (Kingsford Smith) Airport was to be protected and that this resulted in a concentration of the preliminary flight paths in the western part of the Sydney Basin and Blue Mountains area. Submissions also stated that this concentration of flight paths resulted in inequitable impacts to Western Sydney and Blue Mountains communities. Submissions requested a number of actions including:

- a comprehensive review of the Sydney Basin airspace be undertaken to consider the existing preliminary flight path design and that a wholistic overhaul of the broader airspace architecture for the Sydney Basin be completed. It was requested that this review include full analysis of alternative flight path options across the Sydney Basin that includes options for a full new flight path arrangement for flights arriving and departing Sydney (Kingsford Smith) Airport.

Submissions requested that the review include consideration of noise impacts, introduction of new flight corridors and identification of tailored risk management strategies that allocates specific airspace for different user groups, whilst ensuring safety and efficiency

- the Australian Government establish a Federal inquiry to:
  - redesign the overall Sydney Basin airspace
  - minimise inequitable impacts on the Greater Blue Mountains Area (GBMA)
  - redesign the preliminary flight paths to avoid overflight or limit overflights from dusk to dawn
  - promote aircraft exposure (noise) sharing/equity
- an independent consultant engaged to develop alternative flight path options including consideration of more equitable sharing of noise across the Sydney Basin.

Submissions requested that the review consider alternative Sydney (Kingsford Smith) Airport flight paths that provide a more equitable distribution of flight paths across the whole of the Sydney Basin to:

- move flight paths to and from WSI further to the east
- lower current noise and pollution impacts on residents of the entire Sydney Basin
- allow more flexibility in the design of the flight paths for WSI to minimise aircraft noise and pollution impacts on residents of Sydney's West, South West, North West, Blue Mountains and Wollondilly regions
- not permit the incursion of low flying aircraft within the World Heritage listed areas
- allow the same '360 degrees of proposed airport take-offs and landings' that is provided to Sydney (Kingsford Smith) Airport to also be given to WSI (rather than the current '90 degree' window), so that flights over the GBMA can be avoided or minimised.

Overall, submissions stated that the current design was unfair and is discriminatory, given Western Sydney would continue to be impacted by flight paths associated with Sydney (Kingsford Smith) Airport as well as the flight paths for WSI. It was argued that the combined effects would have unprecedented impacts on the residents of Western Sydney, and result in excessive overflights of the GBMA. Submissions argued that the burden of the new flight paths should be spread between the 2 airports in the interests of fairness.

6.2.1.2 Response

A comprehensive review and simplification of airspace management in the Sydney Basin is beyond the scope of the project and environmental assessment. The preliminary airspace concept and flight paths developed for single runway operations at WSI were designed to limit the need for changes to existing airspace and noise sharing arrangements in the Sydney Basin, in particular current flight paths at Sydney (Kingsford Smith) Airport. The development of the preliminary airspace concept and flight paths was led by the project Expert Steering Group, which will continue to lead and refined the finalisation in conjunction with the project Technical Working Group (TWG), comprising Airservices Australia, Civil Aviation Safety Authority (CASA), the Department of Defence, the Department of Infrastructure, Transport, Regional Development, Communications, and the Arts (DITRDCA) and DITRDCA technical experts.

The airspace and flight path design process sought to minimise impacts on existing airspace arrangements while implementing a new world class management system. The preliminary airspace concept and flight paths took full account of potential interactions with aircraft operating to or from Sydney (Kingsford Smith) Airport, as well as other operating airports within the Sydney Basin. Where necessary, the preliminary flight paths needed to be integrated safely with the existing Sydney Basin airspace, already one of the most complex airspace environments in Australia. The preliminary modelling confirmed that 2 high capacity airports could operate fully independently within the Sydney Basin without changes to existing flight paths and noise sharing arrangements at Sydney (Kingsford Smith) Airport.

The airspace and flight path design process also sought to, among other factors, minimise impacts or required changes to the flight paths associated with Sydney (Kingsford Smith) Airport as well as other airports in the Sydney Basin such as Camden, Bankstown, Richmond and Holsworthy. Additionally one of the guiding principles that were used in the development of the preliminary flight paths stated that in order to more equitably distribute potential impacts 'where

flight paths are unable to avoid residential areas, where possible, these areas should not be overflown by both arriving and departing aircraft'. Finally the design process sought to also minimise the overall number of dwellings and noise sensitive facilities overflown as far as possible.

It is acknowledged that the future introduction of parallel runway operations at WSI would likely require a substantial review of airspace arrangements across the Sydney Basin. A second parallel runway is not expected to be required until 2055 when single runway operations approach capacity at around 37 million annual passengers and around 226,000 air traffic movements per year.

With regards to items that were requested to be reviewed through a Federal Inquiry:

- as noted above, it is not proposed that a redesign of the overall Sydney Basin airspace be undertaken at this time
- as identified in Section 6.3.1 and Section 6.3.2 of the Draft EIS, minimising impacts on the GBMA was a key environmental consideration in the flight path design process, including overflights of sensitive tourist, recreational and wilderness areas as well as Aboriginal Places and other heritage items/locations. Further discussion regarding consideration of the GBMA in the airspace and flight path design process is provided in Chapter 22 (Matters of National Environmental Significance) of this report
- noting that WSI will operate as a 24-hour airport, the identification of the RRO mode of operation currently provides opportunities (where certain factors such as during Sydney (Kingsford Smith) Airport curfew hours, appropriate weather conditions and aircraft traffic demand levels permit) to allow for minimisation of overflight of residential and other sensitive receivers during night periods (11 pm to 5:30 am)
- as identified in Section 6.3.2 of the Draft EIS, aircraft noise sharing arrangements with Sydney (Kingsford Smith) Airport or prioritisation of retaining existing flying training areas was considered as part of the airspace design process. A range of overarching noise abatement procedures were considered during the design of each flight path including:
  - use of noise preferential runways to direct the initial and final flight paths of aircraft away from noise-sensitive areas
  - the use of noise preferential routes to assist aircraft in avoiding noise-sensitive areas on departure and arrival, including the use of turns to direct aircraft away from noise-sensitive areas located under or adjacent to the usual take-off flight paths.

6.2.2 Adequacy of assessment

6.2.2.1 Issue raised

Raised by

Community, Blue Mountains City Council, Blue Mountains Conservation Society, Residents Against WSA Inc (RAWSA), CFI Bathurst Soaring Club, Gliding NSW, Friends of Fernhill and Mulgoa Valley Inc, Penrith City Council, The Parks – Sydney's Parkland Councils, Trustees of Linden Observatory

Issue

General concerns

Submissions stated that the Draft EIS presented a notable lack of consideration of alternative flight paths that could alleviate the disproportionate negative impact on both Western Sydney and the Blue Mountains.

Submissions stated that Chapter 6 (Project development and alternatives) of the Draft EIS presented a contradictory and misleading representation of the development of the flight paths and alternatives explored. Submissions contended that the options inadequately assessed the significant environmental impacts likely to occur as a result of proposed flight paths and airspace design.

It was also stated that while the Draft EIS contained a large volume of text and data, it lacked actual information on the 22 primary concept designs and the way they were identified, developed and evaluated. Submissions suggested this gave the impression of flight paths development occurring inside a 'black box' that did not discuss what trade-offs were made between the requirements of Condition 16 (of the Airport Plan) and the 12 airspace design principles. Further, it was stated that it was inadequate that the only information presented for each of the 22 primary concept designs was their overall ranking, with no concept descriptors or mapping. It was argued that this meant the community had no way of knowing what concepts were actually considered or the specific reasons they were adopted or discarded.

Assessment considerations

Submissions argued there had been limited information as to how the guiding principles had been utilised in the design of the preliminary flight paths, with submissions arguing that a number of them had not been achieved including:

- avoiding impacts to the maximum extent possible on residential areas and noise sensitive facilities
- that aircraft arrivals would not converge through a single merge point over any one residential area. For example, submissions stated that the current design has all runway modes of operation passing over the mid-Blue Mountains both day and night
- minimising the impact of night-time flights or developing noise mitigation measures, given some communities are overflown by flight paths under all modes of operation providing little or no respite and a noise mitigation response has not been identified
- considering the impacts of air operations on natural and visually sensitive areas.

A number of submissions also stated that the overall assessment of impact and flight path options was inadequate and must be revisited. Submissions also argued there had been limited information as to how the guiding principles had been utilised in the design of the preliminary flight paths, with submissions arguing that a number of them had not been achieved. Specifically, submissions noted items including:

- the safety of residents appeared to have been a last consideration in the process, behind the principles aimed at ensuring aviation efficiency and profits
- the adequacy of the environmental considerations with regard to the GBMA and of the wilderness area assessment was not appropriate
- the assessment of the design principles did not include any consideration of biodiversity and visual amenity
- the assessment presented an inconsistent approach to flight path design, as design principles changed according to the desired outcome
- the options assessments did not provide details explaining why proposed options were superior compared to alternative options
- there was no consideration of other users of the sky, or other impacts caused by aircraft. The effects of lights, atmospheric turbulence and contrails were not considered as no value was given to the presence of the observatory (at Linden)
- assessment of the options' impacts on the GBMA was not considered to have been undertaken appropriately
- sensitivity to tourist and recreational areas has not been adequately considered
- the assessment of options did not take into account any cumulative impacts.

Submissions requested that:

- the preliminary flight path design be revisited to comprehensively address potential impacts such as aircraft lighting and sky glow on the intrinsically dark landscapes of the GBMA, including the Linden Observatory, and realign flight paths to avoid these areas
- a more thorough and considered approach to the consideration of the options presented be undertaken that explores the impacts of alternative options to ensure a fair outcome for affected communities and a fair sharing and distribution of the burden.

Consideration of 'no action' scenario

Submissions also noted that the consideration of the 'no action' option was cursory and superficial. It was argued that the Draft EIS should have provided more meaningful assessment of alternatives to the project, with a comparative consideration of environmental impact. Submissions stated that the discussion of alternatives presented the preliminary flight paths as a 'fait accompli', confirming that construction has commenced, and the airfield geometry and infrastructure is fixed. It was argued that the fixed nature of the runway and other infrastructure did not allow for an authentic and transparent assessment of all potential options.

6.2.2.2 Response

General concerns

Development of airspace and flight path design is an iterative process informed by community and stakeholder engagement at each phase. Chapter 6 (Project development and alternatives) of the Draft EIS provided a comprehensive description of the methodology and processes that were applied to the development of the preliminary airspace design and air traffic management system for WSI. The information presented in the Draft EIS was intended to provide sufficient overview for the community and other stakeholders to gain an understanding of the process undertaken, without providing overly extensive technical information.

To achieve this, the information provided in the Draft EIS focused on the 4 main development phases as outlined in the Airport Plan (identification of a proof-of-concept; planning and approvals; detailed design; and implementation). The phased process allows the final airspace arrangements (the detailed design phase) to better reflect the operating environment closer to the time WSI opens. The preliminary airspace and flight path design for WSI applied Australian and international best practice for managing airspace design and its associated environmental impacts.

With respect to the development and presentation of the initial 22 options that were considered, these options were identified as they represented a broad range of concept designs in order to demonstrate a wide selection of ideas and solutions for initial consideration. They were developed by the Joint Concept Option Evaluation Workshop (JCOEW) group comprising representatives from DITRCDA (formerly Department of Infrastructure) and Airservices Australia subject matter experts. These options were shortlisted through a qualitative assessment process to rationalise the number requiring detailed analysis by the JCOEW group. Section 6.3.1.4 of the Draft EIS described the performance assessment criteria scoring that was used for the initial rationalisation of the 22 options. The summary of this assessment was presented in Figure 6.10, which showed how each of the 22 options performed against the 4 key performance criteria of safety; environment; capacity and efficiency.

Assessment considerations

The airspace and flight path design process was undertaken to provide a balance between the competing needs from the community, environment, industry and users of the Sydney Basin airspace. With respect to the specific items identified in submissions:

- safety was the overriding priority of the airspace design process, both in terms of safety of ground-based activities, minimisation of potential flight path conflicts between existing and proposed flight paths and with respect to minimising air traffic control workload interactions
- overflight of the GBMA was considered as a key input into the assessment of the preliminary design flight paths as noted in Section 6.3.2.2 of the Draft EIS. Further discussion regarding the adequacy of this assessment is provided in Chapter 22 (Matters of National Environmental Significance) of this report
- as noted in Section 6.3.2.2 of the Draft EIS, visual impacts on sensitive tourist and recreational areas by aircraft overflight were considered for each preliminary design refinement with the aim of minimising the potential visual impacts of aircraft flying over these areas
- biodiversity impacts were not specifically considered as part of the airspace design process, however potential impacts of the preliminary flight paths on biodiversity were considered in Chapter 16 of the Draft EIS

- in the assessment of the flight path designs, the design principles key performance criteria of safety; environment; capacity; and efficiency were consistently applied throughout both the initial options identification phase and the subsequent refinement phases of the design
- given the broad nature of the area of airspace in which the preliminary flight paths were developed, consideration of effects such as lights, atmospheric turbulence and contrails were not considered as part of the broad airspace design process. However, these issues (such as the potential impacts on the Linden Observatory) were considered as part of the impact assessment presented as part of the landscape and visual impact assessment presented in Chapter 15 of the Draft EIS. Further discussion regarding the potential impacts of the project on the Linden Observatory is provided in Section 17.5 of this report
- similar to the assessment of design options, assessment of cumulative impacts as part of the airspace and flight path design process was not considered to provide measurable differentiation between each of the options, noting the cumulative impacts of the project were assessed and presented in Chapter 22 of the Draft EIS.

Consideration of 'no action' scenario

As stated in Section 6.1.3 of the Draft EIS, given the approval and ongoing construction of the ground-based elements of WSI, not proceeding with the development of associated flight paths was not considered to be a practical option as the proposed flight paths are a critical component of the viability and operation of the approved airport. Therefore, a detailed assessment of a non-viable alternative was not considered to be appropriate.

Condition 16 of the Airport Plan requires the Australian Government to undertake an airspace and flight path design process and as such it was considered that a 'take no action' (i.e. to consider a no-flight path option) would not represent a feasible alternative.

The consideration of a 'no action' scenario with respect to WSI as a general project (i.e. the development of WSI) was considered previously in the 2016 EIS.

6.2.3 Community input to airspace design process

6.2.3.1 Issue raised

Raised by

Community

Issue

Submissions stated that they felt that the exhibition of the Draft EIS (and subsequent submissions process) had been timed to deliberately delay releasing any details about the proposed flight paths until a point in time where it was too late to make any meaningful change. Submissions identified that individuals felt the flight paths had already been determined (in part due to the previous determination of the WSI layout) and would not be changed as a result of ongoing community input.

6.2.3.2 Response

One of the main objectives of the Draft EIS was to seek feedback from communities and other stakeholders that may be impacted by the proposed flight paths. In order to receive effective and constructive feedback, the proposed flight paths needed to have been developed to a certain level of design, both to ensure their viability and allow for suitable environmental assessment.

The submissions received on the Draft EIS have been used to inform the flight paths design team as part of the finalisation of the EIS and flight paths for WSI. Consultation with communities affected by the proposed design refinements is planned for August. Excluding this consultation, no further formal engagement activities are proposed to be undertaken by DITRDCA prior to the determination of the finalised EIS. Ongoing consultation would however occur through FOWSA, until the establishment of the WSI Community Aviation Consultation Group (WSI CACG), to ensure appropriate community engagement on airport planning and operations.

It is acknowledged that some elements of the proposed flight paths presented in the Draft EIS would not be able to be refined based on community input due to the fixed nature of the runway alignment.

Further discussion of the process used to consider community feedback on the proposal is provided in Section 6.4 of this report.

6.2.4 Consideration of a curfew as part of the development process

6.2.4.1 Issue raised

Raised by

Community, RAWSA

Issue

Submissions questioned whether the implementation of a curfew had been included as part of the development of flight path options for WSI.

Submissions also queried whether the development process had considered better use of the airspace available over the eastern parts of the Sydney Basin during the Sydney (Kingsford Smith) Airport curfew periods for night-time flight paths. It was argued that this would provide a more dispersed flight path arrangement during night-time periods and would result in reduced overall noise impacts to certain locations.

6.2.4.2 Response

As described in Section 6.4.1.2, the airspace design has been developed on the basis that WSI would operate 24-hours, 7 days a week consistent with the approved 2016 EIS and Airport Plan. Adoption of a curfew for WSI was therefore not part of the consideration of the design and development of the preliminary flight paths.

However, the airspace design process for WSI did include the use of noise preferential flight paths which, where possible, direct aircraft operations away from noise sensitive areas. This included the use of different flight paths between 11 pm and 5.30 am to take advantage of the additional airspace available as a result of substantially diminished Sydney (Kingsford Smith) Airport operations during this period. This includes the identification of the RRO mode of operation which will provide opportunities (where certain factors such as during Sydney (Kingsford Smith) Airport curfew hours, when appropriate weather conditions and aircraft traffic demand levels permit) to allow for minimisation of overflight of residential and other sensitive receivers during evening and early morning periods.

6.2.5 Consideration of future development plans

6.2.5.1 Issue raised

Raised by

Community

Issue

It was noted in submissions that the flight path design should take into consideration all future development plans for the Sydney Basin in the next 20 years as part of the design development process.

6.2.5.2 Response

It is not possible to consider all possible development plans that may occur within the Sydney Basin over the coming decades.

Significant strategic planning is underway within Western Sydney, with much of the Sydney Basin expected to experience substantial transformation and growth over the coming decades. While not all future development plans within the Sydney Basin have currently been identified, a number of known long term strategic planning activities within the region, and the impact of the project on these future land uses were considered in Section 14.6 of the Draft EIS.

Key planning initiatives/activities that were considered included:

- Western Sydney Aerotropolis (which is made up of several different precincts including: the Aerotropolis Core, the Bradfield Centre, Badgerys Creek, Northern Gateway, Agribusiness, Luddenham Village)
- Greater Penrith to Eastern Creek Growth Area which spans around 19,000 ha of land from the Nepean River in the west to the M7 Motorway in the east and is comprised of parts of the Blacktown and Penrith LGAs, considering capacity for future housing and urban renewal, such as the Glenmore Park Stage 3 development
- South West Growth Area which comprises around 10,000 ha of land adjoining the Aerotropolis aiming to connect new suburbs with WSI and the Aerotropolis to the north across 14 separate precincts
- development of other growth areas in the Sydney Basin including ongoing expansion of the North West Growth Area
- a number of large-scale transport and infrastructure projects and initiatives currently in varying stages of strategic planning including a number of large road and rail projects.

The potential impacts that could arise from the project that were considered on these developments related to:

- aircraft noise, and the impact they could have on existing land use and future planning or approvals
- the potential for restricted development due to protected airspace (i.e. Obstacle Limitation Surface)
- wildlife buffers and management of issues such as the risk of wildlife strike on aircraft in the vicinity of WSI.

In line with NSW Government planning, future developments that have not yet commenced would be required to take into consideration the impacts of WSI on these future developments, as an approved project within the Sydney Basin. Planning instruments such as *State Environmental Planning Policy (Precincts – Western Parkland City) 2021* (NSW) (Western Parkland City SEPP) and the supporting *Western Sydney Aerotropolis Precinct Plan* (NSW DPE, 2023) and Council Local Environmental Plans contain controls to ensure that incompatible development (particularly noise sensitive development, such as schools and hospitals etc) is not approved in the vicinity of WSI, specifically within ANEC 20. As such, planning authorities may not grant consent to development unless it is demonstrated to be in accordance with *Australian Standard AS 2021:2015 Acoustics – Aircraft Noise Intrusion – Building Siting and Construction* (AS 2021:2015) (Standards Australia, 2015) based upon the ANEC contours in the Western Parkland City SEPP.

6.2.6 Other alternatives identified

6.2.6.1 Issue raised

Raised by

Community

Issue

Submissions identified a series of additional alternatives (outside of flight path alternatives) that should have been considered including:

- relocation of WSI outside of Western Sydney/away from the GBMA
- construction of a new airport inland with a connecting fast train back to Sydney
- a request for the Federal Government to undertake a comprehensive assessment for expansion of the existing Newcastle Airport (through construction of a new runway(s)) and redistribution of flights proposed to land at WSI between both WSI and Newcastle Airport in order to reduce the overall number of flights arriving and departing WSI.

Other commonly referenced alternatives include increasing the capacity of Sydney (Kingsford Smith) Airport or using high speed rail as a substitute for aviation services.

6.2.6.2 Response

As part of the development of the preliminary flight paths, alternative locations for the new airport were not considered. Alternative locations for WSI were considered and presented in the 2016 EIS.

As discussed in Section 2.1 of the Draft EIS, the Commonwealth-owned land at Badgerys Creek was selected as the site for the proposed airport after extensive investigation of a range of location options (as detailed in the *2012 Joint Study on Aviation Capacity in the Sydney Region* (the Joint Study)). The Joint Study considered around 80 sites across 18 locations in the Greater Sydney region. Locations that were assessed as part of this study included sites in Hawkesbury and the Blue Mountains, the Southern Highlands, within the Sydney Basin and on the Central Coast.

Among a range of other considerations, Badgerys Creek was chosen as the preferred site due to its proximity to the predicted growing aviation demand within Western Sydney, as well as other factors such as its proximity to road and potential rail transport links, and the existing planning controls on surrounding lands. It was also found to provide additional benefits such as offering the potential for increased employment and economic opportunities for the Western Sydney community and to be a catalyst for much needed supply of housing.

Approval for the construction of the ground-based elements of WSI (Stage 1) was approved in 2016 pursuant to the approval of the Sydney (Kingsford Smith) Airport Plan (and the subsequent variations to this plan in 2020 and 2021). This approval included the construction of the airfield, terminal and the landside layout and associated facilities. Construction commenced in 2018 and is scheduled to be completed in 2026 to enable operations to commence.

Relocation of some aircraft movements to other airports or expansion of airport(s) such as Newcastle may create some additional capacity but would not address the Sydney Basin's long term aviation capacity issues.

6.3 Comparison between 2016 and 2023 flight paths

6.3.1 General objection to changed flight paths

6.3.1.1 Issue raised

Raised by

Community, Blue Mountains City Council, Melissa McIntosh MP – Member for Lindsay (Federal), Mulgoa Valley Landcare Group Inc

Issue

General

Submissions generally expressed disappointment that the proposed flight paths that were presented in the 2016 EIS were substantially different to the ones presented in the 2023 EIS.

Submissions noted that they felt it was unfair to change the flight paths from those that were considered by the community to be approved as part of the 2016 EIS. Concern was also raised in submissions that the 2023 flight paths covered a wider area of the Sydney Basin than the 2016 flight paths.

A number of submissions highlighted that the differences in the flight paths between those presented in 2016 compared to those presented in 2023 would impact more suburbs including: Eastern Creek, Ebenezer, Sackville, Windsor, Pitt Town, Maraylya, Cattai, St Marys, Castlereagh, Cranebrook, Emu Plains, Llandilo, Werrington, Emu Plains, Claremont Meadows, Cambridge Park and Blue Mountains suburbs.

Submissions argued that the 2023 flight paths would result in worse overall outcomes (in particular from noise impacts) than the 2016 flight paths and that the original flight paths presented a much fairer distribution of impacts.

Submissions requested that the flight paths presented in the 2016 EIS be reinstated and that justification for the proposed changes be provided.

GBMA impacts

Submissions noted that the 2016 EIS stated that WSI would not result in the attributes of World Heritage being lost, degraded or damaged, but stated that the current proposed flight paths would put these attributes at risk.

6.3.1.2 Response

General

As described in the 2016 EIS, the principal objective of the preliminary assessment was to establish whether safe and efficient operations could be introduced at the proposed airport through the development of indicative air traffic management designs. The main consideration for the 2016 EIS in its depiction of the indicative flight paths for WSI was to demonstrate air traffic management feasibility, particularly whether WSI flight paths could operate independently and synchronise with aircraft operating to or from Sydney (Kingsford Smith) Airport and other Sydney Basin airports and Defence facilities.

While the indicative 'proof-of-concept' flight paths identified in the 2016 EIS provided a reasonable basis for assessing the potential extent and intensity of impacts associated with aircraft operations at WSI, it was also noted in the 2016 EIS that the conceptual and preliminary airspace design had not been developed to a level of detail necessary for implementation and that further analysis and detailed planning of the flight paths would be undertaken. Further development of the preliminary flight paths subsequently resulted in a greater distribution of flight paths across the Sydney Basin, including areas that were not previously identified in the 2016 EIS.

The broadening of the area over which the preliminary flight paths are distributed sought to minimise the overflight of residential areas, reduce the impact of aircraft noise and provides a more equitable distribution of flight paths across all of the communities within Western Sydney and the Blue Mountains. It is acknowledged that in achieving a more equal distribution of flight paths (and their associated impacts) across a broader area of the Sydney Basin that additional suburbs would therefore be subject to some level of flight path impact.

GBMA impacts

Many of the indicative flight paths identified in the 2016 EIS included overflights of various portions of the GBMA. Given the nature of the project, complete avoidance of potential impacts on the GBMA is not possible. However, the airspace and flight path design process for the preliminary flight paths has resulted in a design that is expected to result in minimal direct impacts on the World Heritage or National Heritage values of the area, including the Outstanding Universal Values which contribute to its World Heritage status. Further discussion regarding the assessment of impacts associated with the preliminary flight paths on the GBMA is provided in Chapter 23 of the finalised EIS.

6.3.2 Removal of the point merge location

6.3.2.1 Issue raised

Raised by

Community

Issue

Submissions objected to the removal of the 'point merge' arrangement presented as part of the 2016 flight paths. While submissions acknowledged that it appears unfair that the 2016 EIS demonstrated a single merge point over the Blue Mountains, it was argued that the dissolution of this merge point, and the broadening of the flight path area (to the 2023 flight paths) would impact more communities than previously identified.

It was felt that the flight paths had been changed because specific communities had been more vocal than others during the previous EIS.

6.3.2.2 Response

The initial 'proof of concept' design presented in the 2016 EIS utilised an airspace design that incorporated a concept known as 'Point Merge'. The Point Merge concept presented in the 2016 EIS drew considerable concern from the community, including those within and surrounding the Blaxland area, in particular with respect to potential noise impacts associated with the concentration of flights over one area. To address the concerns raised, the Australian Government announced that the airspace design for WSI would not include a single merge point over Blaxland. This decision was confirmed in Principle 6 of the Airport Plan that stated that aircraft arrivals will not converge through a single merge point over any single residential area.

The broadening of the area over which the preliminary flight paths are distributed sought to minimise the overflight of residential areas, reduce the impact of aircraft noise and provides a more equitable distribution of flight paths across all of the communities within Western Sydney and the Blue Mountains.

6.3.3 Impacts on previous house purchases

6.3.3.1 Issue raised

Raised by

Community

Issue

Submissions stated that they had purchased homes or moved into suburbs in areas outside of the flight paths identified in the 2016 EIS. The submissions raised objections to the 2023 flight paths presented in the Draft EIS, noting that a number of people had purchased homes or moved to certain suburbs based on the location of the 2016 flight paths and that the current flight paths were now over these areas.

A number of submissions also noted that rezoning of land had been determined based on the location of the previous 2016 flight paths, and that a number of these future residential areas would now be overflown by the 2023 flight paths.

6.3.3.2 Response

As noted previously, the flight paths identified in the 2016 EIS were intended to establish whether safe and efficient operations could be introduced at WSI and were considered to be indicative 'proof-of-concept' flight paths. The main consideration for the 2016 EIS in its depiction of the indicative flight paths for WSI was to demonstrate air traffic management feasibility, and not to provide a definitive basis of where the final flight paths would be located. It was also noted in the 2016 EIS that the conceptual and preliminary airspace design had not been developed to a level of detail necessary for implementation and that further analysis and detailed planning of the flight paths would be undertaken.

With respect to submissions noting changes in zoning based on the 2016 flight paths, the NSW planning framework has taken a precautionary approach to residential land use development in regard to WSI operations. As part of this approach, land use restrictions on future developments within certain areas have been adopted which relies on ANEF contours and AS 2021:2015 (Standards Australia, 2015) to inform planning decisions for residential land uses in areas affected by aircraft noise. At this time, these contours are presented in the Noise Exposure Contour Map of the Western Parkland City SEPP which is used to inform land use planning in areas adjacent to WSI.

It is acknowledged that areas within the vicinity of WSI, such as Luddenham and the South West Growth Area (SWGA) are, or have been, rezoned with the aim of connecting new suburbs with WSI and the future Aerotropolis. For example within the SWGA, 9 precincts have been rezoned with a focus on providing new residential areas to support Western Sydney's growth. The rezoning of these areas have been based on a wholistic land use approach by the NSW Government and were not based on the 2016 EIS indicative flight paths. It is acknowledged that some of these areas would be overflown by the preliminary flight paths identified in the Draft EIS.

Further discussion regarding zoning and the impacts of the proposed flight paths on existing and future zoning is provided in Chapter 14 of the Draft EIS.

6.4 Alternative flight paths

6.4.1 Requests to move or change the preliminary flight paths

6.4.1.1 Issue raised

Raised by

Community, Aeria Management Group, Australian International Council of Monuments and Sites, Blacktown City Council, Blue Mountains City Council, Blue Mountains Conservation Society, Blue Mountains Unions and Community, Blue Mountains World Heritage Institute, Camden Council, Friends of Fernhill and Mulgoa Valley Inc, Fitzgeralds Creek Catchment Group, Greater Blue Mountains Area World Heritage property advisory committee, IUCN, Trustees of Linden Observatory, Mt Wilson Progress Association Inc and Mt Ervine Progress Association, Mount Tomah and Berambing Community Association, Mountains Conservation Society, Rainforest Conservancy Inc, RAWSA, Susan Templeman MP – Member for Macquarie (Federal), Social Justice Committee – Holy Spirit Catholic Church St Clair, Sydney Airport Corp Ltd, Trish Doyle MP – Member for the Blue Mountains (NSW), Wallacia Progress Association, Western Sydney Amateur Astronomy Group Inc, Wollondilly Shire Council

Issue

A number of submissions objected to the current design of the preliminary flight path requesting that alternative flight paths be identified that generally:

- share flight paths more equitably over the whole Sydney Basin
- cover a larger geographical area
- reduce overall impacts to a limited number of suburbs within the Sydney Basin and Blue Mountains area
- reduce the overall number of flight paths
- provide alternative operation options that remove flight paths at night/provide a curfew for WSI.

Overall, most submissions requested that the preliminary flight paths presented in the submissions be revised to provided fairer distribution of impacts. In particular, it was identified that the suburbs of Woodford, Linden and Faulconbridge would be inequitably impacted by the proposed flight paths and/or subject to the highest concentration of flight paths. A number of submissions requested that alternative flight paths be sought to change the concentration of flights over these suburbs.

Submissions also requested that, where flight paths were identified above their property or above their suburb (including a range of suburbs across the Sydney Basin, Blue Mountains, and Central and South coasts), that they be moved away from their suburb to another area to reduce direct impacts (in particular noise).

Where specific alternative flight paths were not identified, submissions typically identified a number of general options for revised flight paths (noting some options would provide contradictory outcomes). These included:

- avoiding any overflight of residential areas, or at minimum less populated areas, by moving the flight paths over bushland areas such as the GBMA (typically to the north and south of the Great Western Highway corridor) or over the bushland areas south of WSI
- avoiding negative impacts on the GBMA's Outstanding Universal Value (including the conditions of integrity), in particular those linked to the connection of First Nations peoples and places of cultural value and significance
- avoiding any overflight of areas associated with the GBMA (in particular, to avoid any impacts on the World Heritage and natural values of this area) with submissions requesting all flight paths to the west of WSI be removed, limiting flight paths to the north, south and east only
- redesigning the preliminary flight paths so that they do not fly over the GBMA, including the townships within the Blue Mountains, wilderness areas and other natural areas under 31,000 feet in altitude

- routing all flight paths over the ocean to a higher elevation before turning back west, north or south at a more acceptable altitude that would result in less impacts
- routing aircraft over already noisy areas such as highways and industrial zones.

A number of submissions made specific requests for changes to the preliminary flight path. Key suggestions provided in submissions included:

- shifting Sydney (Kingsford Smith) Airport flight paths to the east for increased overflight of the ocean/Botany Bay to allow greater airspace to distribute WSI flight paths
- moving WSI flights further to the northeast, south and southeast, and to introduce new waypoints to the north and south of the Sydney Basin
- routing aircraft further west before turning north to minimise impacts to communities such as Linden
- shifting the preliminary flight paths to avoid overflight of the Linden Observatory
- shifting the convergence point of all the flight paths over the Western Sydney Parklands and utilise this open space corridor for more flight paths
- directing flight paths over flatter areas, such as the Hawkesbury area and follow natural features such as the Hawkesbury River to avoid residential areas
- avoiding flight paths that travel over drinking water catchments such as Warragamba Dam
- directing the preliminary flight paths over the Warragamba Dam where it is not accessible to the public and would therefore minimise impacts
- directing the preliminary flight paths to be more concentrated over areas such as the Eastern Creek Industrial corridor, rather than residential areas
- better utilising available airspace not being used by Sydney and Bankstown airports
- shifting the preliminary flight paths to avoid the Euroka Clearing and Glenbrook
- amending the preliminary flight paths to travel between 3 km and 5 km further north of Emu Plains and Penrith
- shifting the preliminary flight paths to avoid night flight paths over Mulgoa but travel north over Fernhill Estate
- shifting the preliminary flight paths to provide more flight paths over the north shore including additional flight paths over the northern part of Ku-ring-gai National Park
- amending operations so that all non-RRO night take offs are required to undertake a 20 degree left turn after take-off to avoid suburbs such as Wallacia, Silverdale and Warragamba
- restrict flight paths over heavily populated areas such as St Clair, St Marys, Ropes Crossing, Jordan Springs, Penrith, Llandilo, Werrington, Cambridge Park, and Cranebrook during the late evening and early morning (10 pm until 7 am)
- shifting the preliminary flight paths to be directed over the existing Defence Land at night time to minimise impacts to St Clair
- consider greater use of the existing RAAF airspace and amend any existing RAAF flight paths to accommodate the preliminary flight paths
- shifting the preliminary flight paths to preference arriving or departing towards the south to continue further south and cross over the coast between Helensburgh and Wollongong and travel west of Bargo before heading north towards WSI.

6.4.1.2 Response

It is acknowledged that the implementation of the proposed preliminary flight paths would represent a broad scale change to the Sydney Basin, in particular communities in Western Sydney and the Blue Mountains. However, through the airspace and flight path design process, the Australian Government has made every effort to ensure there is minimal impact to these communities, while also minimising the potential impacts on existing general aviation operations in the Sydney Basin. The WSI airspace and flight paths have been designed to reserve the minimum airspace possible while continuing to adhere to the design principles of safety, efficiency and minimisation of environmental impacts.

The airspace and flight path design process was undertaken with the purpose of identifying and rigorously assessing a range of different airspace concepts and flight path options in order to determine an optimised design that:

- maximises safety for all airspace uses as well as communities below the proposed preliminary flight paths in accordance with required safety standards
- minimises over flight of residential areas, in particular communities in Western Sydney and the Blue Mountains and where impacts are expected provide, as far as possible, equitable distribution of these impacts, noting that some areas of concentration are unavoidable due to required runway arrival and departure approaches
- provides sufficient capacity to cater for the anticipated number of aircraft expected to operate to and from WSI.

This process was described in detail in Chapter 6 of the Draft EIS.

It is also acknowledged there were some competing statements made in submissions, with a range of submissions requesting preference for flights over bushland areas (including the GBMA) instead of residential areas, and other submissions requesting that the proposed preliminary flight paths not overfly the GBMA. In respect of these submissions, the current design has sought to provide a balance between these competing requests, while providing an optimal and efficient airspace design. Avoiding overflight of both residential areas and sites such as the GBMA would impact on the efficiency of the design, requiring much longer, more circuitous routes that would also conflict with other airspace users, such as flights operating from Sydney (Kingsford Smith) Airport.

With respect to the specific flight path design changes identified in submissions, these suggested changes have been considered as part of the submissions process following exhibition of the Draft EIS. The suggested alternative flight paths were considered through a formal design change process. This process generally consisted of the following steps:

- all public submissions that provided suggestions for changes to preliminary flight path design, usage, airspace access, or runway use, including submissions suggesting noise abatement procedures, were considered by the project design team responsible for developing the airspace design
- the design team undertook an initial review of each submission to determine if suggestions were technically feasible to enable further analysis (including detailed review of each submission and any supporting diagrams or illustrations):
  - where the initial review considered that the suggestion(s) represented a viable alternative to consider, the submission was identified for further assessment. Typically, each of the viable changes were grouped geographically to ensure that all related suggestions were considered collectively for the greatest potential improvement and to address contradictory suggestions in a coordinated manner. The groupings selected were:
    - Western Sydney Airport North
    - Western Sydney Airport South
    - Western Sydney Airport West
    - Sydney Kingsford Smith Airport changes
    - Bankstown Airport VFR/IFR Changes and Airspace Access
    - noise abatement procedures

  - where the initial review considered that the suggestion(s) did not represent a viable alternative to consider, the suggestion was not progressed and a reason recorded for this decision. Changes that did not progress were generally based on one or more of the following reasons:
    - they were not feasible for safety reasons
    - they provide no clear benefit to the community
    - the change would only transfer the identified impact from one community to another with no other benefit
    - they contravene a key design principle.

Using the above process, of the approximately 8,500 submissions received around 680 submissions were initially reviewed for consideration as viable options. From these, around 300 suggestions were considered for further assessment. A technical analysis of each of these design suggestion was undertaken, and potential changes to the preliminary flight paths or procedures were developed based on the intent of the submission. This entailed turning public suggestions into technical solutions. Once technical solutions were identified, they were considered against the key performance criteria (safety; efficiency; environment (including noise); and capacity). Where a technical solution was assessed as safe and likely to provide a better community or environmental outcome, the submission became a candidate for potential change. Each candidate was categorised according to the level of change and environmental assessment required, using the Draft EIS design as the baseline for assessing the change. Of the suggestions received, around 50 were considered to be suitable for further consideration.

These 50 design opportunities underwent further detailed analysis and examination by the WSI TWG. This process generally consisted of the following process:

- candidate design changes which were considered operationally feasible during consideration by the TWG were broadly categorised as follows:
  - Category A – no environmental assessment would be required to incorporate the change into the design (change is considered within EIS)
  - Category B – environmental assessment would be required to determine consultation requirements and need for Department of Climate Change, Energy, the Environment and Water referral before the change could be incorporated into the design.
  - Category C – likely to trigger EPBC Act significance and would require referral before the change could be incorporated into the design
- design changes were assessed as being suitable for inclusion in the revised flight path design where:
  - the change did not affect safety
  - the change provided a clear benefit to the community
  - the change did not transfer the impact from one community to another; and
  - the change did not contravene a key design principle
- the design changes that were not accepted as being suitable for inclusion in the revised flight path design were not progressed where they were identified as:
  - not feasible for safety reasons
  - they provided no clear benefit to the community
  - they transferred the impact from one community to another; or
  - they contravened a key design principle.

The design changes that were progressed for inclusion in the revised preliminary flight path design are described in greater detail in Chapter 24 (Refinements to the project since exhibition) of this Submissions Report.

It is acknowledged that a number of submissions requested that alternative flight paths be identified that shifted the current design away from their property and/or suburb to an adjoining suburb. While changes may benefit specific respondents, the overall impacts would not be reduced, but shifted to different communities.

There were a number of technical airspace design changes initiated by the design team for safety and flyability reasons which were also considered during this technical analysis process, primarily initiated due to air traffic control and pilot feedback. Any change required to maintain safety or regulatory requirements was automatically adopted, noting that some of these changes are associated with flight path design requirements for safe access to other aerodromes.

Details of the proposed refinements to the preliminary flight path design since exhibition of the Draft EIS are detailed in Chapter 24 (Refinements to the project since exhibition) of this report.

6.5 Future phases

6.5.1 Assessment of future phases

6.5.1.1 Issue raised

Raised by

Community, Aeria Management Group, The Parks - Sydney's Parkland Councils, Wollondilly Shire Council, WSROC Inc

Issue

Independent monitoring committee

It was also requested that additional monitoring of WSI be established by an independent monitoring committee to report to residents on the operation of WSI prior to consideration of future phases.

6.5.1.2 Response

Independent monitoring committee

As noted in Section 6.4.3 of the Draft EIS, following 'opening day' there would continue to be ongoing monitoring of the operation of the design as part of standard business practices for new airspace and flight paths projects. Monitoring of the operation would be undertaken by key operational stakeholders, in particular Airservices Australia, the Department of Defence and CASA. It is standard practice for Airservices Australia to conduct a Post Implementation Review of significant airspace changes.

6.5.2 Extent of future phases

6.5.2.1 Issue raised

Raised by

Community

Issue

Submissions questioned whether there were any limits to be put on the future expansion of WSI.

It was stated in submissions that limits on the expansion of flights associated with WSI be put in place until all aircraft operating from WSI are carbon neutral.

6.5.2.2 Response

Incremental development and expansion of WSI's facilities will be required at various stages as passenger demand increases. As demand grows over time, WSI is expected to include an expanded terminal, further supporting passenger and commercial facilities. When single runway operations approach capacity at around 37 million annual passengers and around 226,000 air traffic movements per year in 2055, a second parallel runway is expected to be required. By around 2063 it is expected that WSI will reach its ultimate capacity for a 2-runway system, with the total aircraft traffic movements per year forecast to be around 370,000 air traffic movements per year, servicing approximately 82 million annual passengers. Flexibility and expandability were considered in the geometry of WSI and facility layout to allow for its proposed development over the long term in line with increasing demand. Expansion beyond the 2-runway system has not been planned at this time.

It is not proposed to limit the expansion of flights associated with WSI until all aircraft operating from WSI are carbon neutral. By 2055 single runway operations at WSI are expected to approach capacity, handling around 37 million annual passengers and around 226,000 air traffic movements per year. Notwithstanding this, as stated in Section 12.6.1.2 of the Draft EIS, an Operational Sustainability Strategy and Operational Sustainability Plan for WSI is currently under development by WSA Co, which will be released prior to the commencement of operations at WSI. A core component of this strategy and plan will be a roadmap to progress WSI along a 'Carbon Neutral Pathway' that will be supported by participation in Airports Council International's *Airport Carbon Accreditation* programme, and a strategy to support aviation partners to reduce scope 3 emissions, including those produced by aircraft engine use in the landing take-off cycle.

Chapter 7 The project

This chapter provides a response to the issues raised in submissions specific to Chapter 7 (The project) of the Draft EIS.

Submissions objected to, questioned or made comment on the preliminary flight path and airspace design for WSI, and questioned elements of the project concerning the runway modes of operation and how the flight paths would be used, in terms of frequency, aircraft type and provision of respite. Submissions also objected to the hours of operation.

The WSI airspace and flight path design has been developed based on the requirement for WSI to operate 24-hours, 7 days a week. In the development of the preliminary flight path design, a number of considerations were given including the safety of operations, aircraft overflight noise on communities and the environment, elevation above terrain, Civil Aviation Safety Authority (CASA) regulations and required separation distances. Other aviation conflicts were also assessed with some changes to these activities being required to allow for the WSI flight paths to be in operation.

It is acknowledged that the implementation of the proposed flight paths would represent a broad scale change to the Sydney Basin, in particular in Western Sydney and the Blue Mountains. The Australian Government has made every effort to ensure the impact to these communities is minimised, while also minimising the potential impacts on existing general aviation operations in the Sydney Basin.

Air traffic control must consider a set of specific conditions relating to weather, operational conditions and noise abatement before nominating the runway for use. The nominated preferred runway of operation or flight path will be a key element of the future noise abatement procedures for WSI.

Noise abatement procedures have been included in the preliminary design for WSI, such as the use of noise preferential flight paths which direct aircraft operations away from noise sensitive areas, where possible, and the use of different flight paths during the day and night. Airservices Australia will further develop these procedures in consultation with stakeholders, including aircraft operators, airlines, WSA Co and the Forum on Western Sydney Airport (and its future replacement, the WSI Community Aviation Consultation Group).

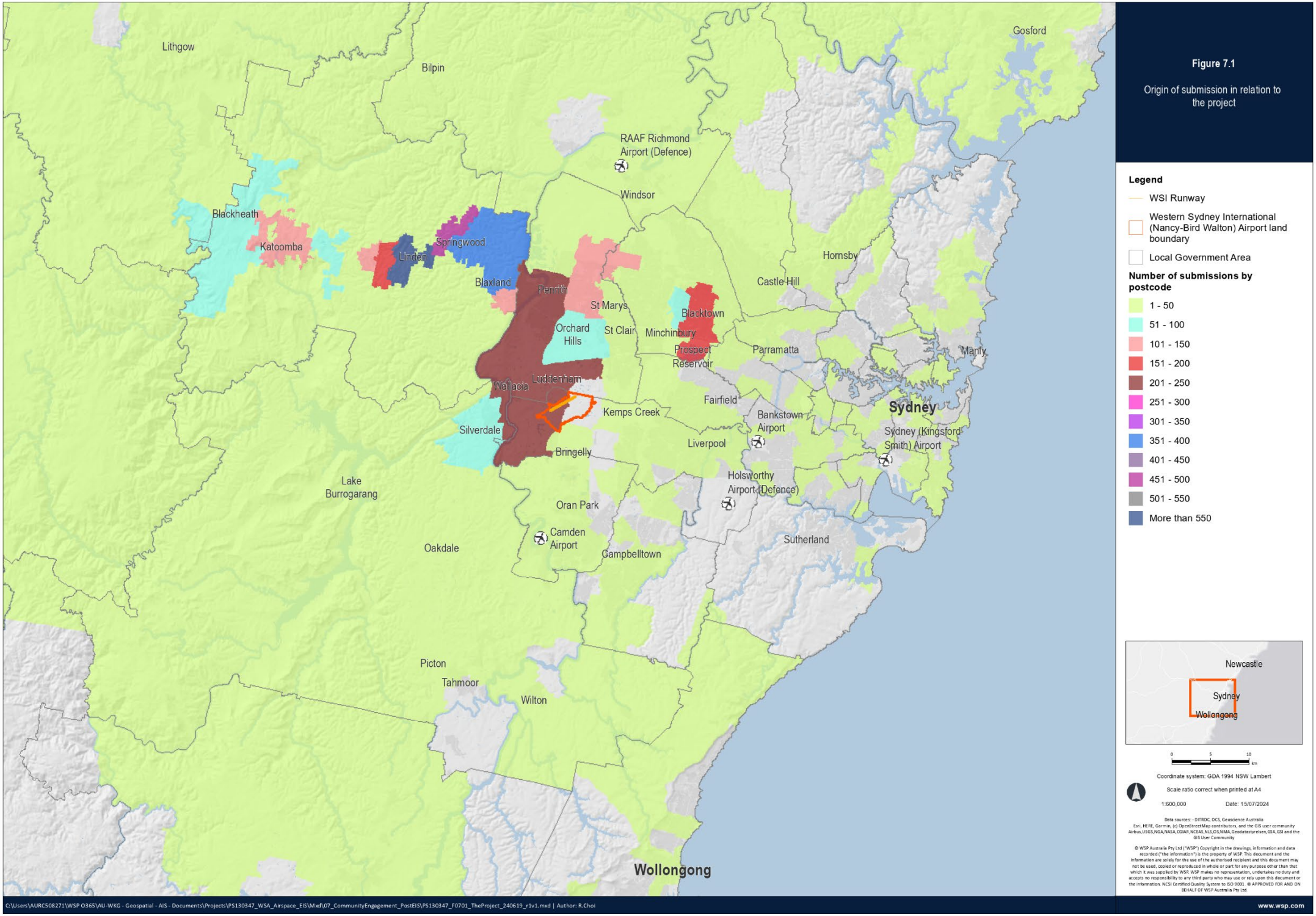
Refinements have been made to the preliminary design for RRO flight paths to reflect the concerns raise by the community in relation to the overflight of the mid Blue Mountains and Wallacia (including the addition of a new night-time (11 pm to 5:30 am) RRO noise abatement procedure (RRO-NAP). RRO-NAP is discussed further in Chapter 24 (Refinements to the project since exhibition) of this Submissions Report.

7.1 Submission overview

7.1.1 Number and origin of submissions

A total of 5,900 submissions raised matters concerning the project. The majority of these submissions originated from the Sydney Basin and surrounds. The distribution of submitters by postcode is shown in Figure 7.1. Around 14 per cent of submissions did not supply a postcode.

Around 56 per cent of submissions originated from the Western City District (Blue Mountains) followed by the Western City District (excluding Blue Mountains) at 14 per cent and the Central City District at 9 per cent. The remainder originated from other Sydney districts, intrastate and interstate locations.


Lithgow
Bilpin
Gosford
RAAF Richmond Airport (Defence)
Windsor
Blackheath
Katoomba
Springwood
Linden
Blaxland
Penrith
St Marys
Orchard Hills
St Clair
Blacktown
Minchinbury
Prospect Reservoir
Castle Hill
Hornsby
Parramatta
Manly
Wallacia
Luddenham
Fairfield
Kemps Creek
Bankstown Airport
Sydney
Sydney (Kingsford Smith) Airport
Silverdale
Liverpool
Bringelly
Holsworthy Airport (Defence)
Lake Burrogarang
Oran Park
Camden Airport
Oakdale
Campbelltown
Sutherland
Picton
Tahmoor
Wilton
Wollongong
Figure 7.1
Origin of submission in relation to the project
Legend
WSI Runway
Western Sydney International (Nancy-Bird Walton) Airport land boundary
Local Government Area
Number of submissions by postcode
1 - 50
51 - 100
101 - 150
151 - 200
201 - 250
251 - 300
301 - 350
351 - 400
401 - 450
451 - 500
501 - 550
More than 550
Newcastle
Sydney
Wollongong
0
5
10
km
Coordinate system: GDA 1994 NSW Lambert
Scale ratio correct when printed at A4
1:600,000
Date: 15/07/2024
Data sources: - DITRDC, DCS, Geoscience Australia
Esri, HERE, Garmin, (c) OpenStreetMap contributors, and the GIS user community
Airbus,USGS,NGA,NASA, CGIAR,NCEAS,NLS,OS,NMA,Geodatastyrelsen,GSA,GSI and the GIS User Community
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C:\Users\AURC508271\WSP O365\AU-WKG - Geospatial - AIS - Documents\Projects\PS130347_WSA_Airspace_EIS\Mxd\07_CommunityEngagement_PostEIS\PS130347_F0701_TheProject_240619_r1v1.mxd | Author: R.Choi
www.wsp.com

7.1.2 Key issue breakdown

A breakdown of the sub-issues within this key issue and the percentage of total submissions that raised each of these sub-issues is outlined in Table 7.1.

Table 7.1 Breakdown of sub-issues in relation to the project

Sub-issue	Number of submissions that raised the sub-issue	Percentage of submissions that raised the sub-issue
Flight path and airspace design	3,376	40%
Modes of operation	339	4%
Hours of operation	4,813	57%
Aircraft movement	2,015	24%
Aircraft type	33	<1%
Air traffic control procedures	13	<1%
Airspace classification	3	<1%

Each sub-issue was raised the most by the Western City District (Blue Mountains) followed by the Western Sydney District (excluding Blue Mountains) and Central City District. All other districts typically represented less than 5 per cent of the submissions of each sub-issue.

Submissions from other intrastate or interstate locations also typically represented 2 per cent or less of submissions for each sub-issue, and up to 15 per cent of submissions in each sub-issue did not provide a location.

7.2 Flight paths and airspace design

7.2.1 General

7.2.1.1 Issue raised

Raised by

Community, Blue Mountains City Council, Campbelltown City Council, Melissa McIntosh MP – Member for Lindsay (Federal), Mount Tomah and Berambuing Community Association, Residents Against Western Sydney Airport (RAWSA), Susan Templeman MP – Member for Macquarie (Federal), The Parks - Sydney's Parkland Councils, The Trustees of Linden Observatory Varuna – The National Writers House Wallacia Progress Association, WSA Co

Issue

Submissions objected to, questioned or made comment on the preliminary flight path and airspace design for WSI. Submissions conditionally supported WSI or the preliminary flight path and airspace design, or acknowledged the range of safety, environmental and operational considerations that must be balanced in the flight path design.

The objections or concerns with the flight path design or a particular flight path were expressed as a general statement or were made on the grounds of:

- the low altitude of aircraft, the presence of multiple proposed flight paths (day and night), the level or lack of respite, frequency of movement on flight paths, and/or due to the presence of existing flight paths
- the impacts to overflown communities (such as noise, health, social issues and economic), heritage or the environment. This was often associated with potential impacts on urban areas, growth areas, villages, rural areas, or the Greater Blue Mountains Area (GBMA) (and its World Heritage Area status)
- cumulative impacts with other airports in the Sydney Basin (such as Sydney (Kingsford Smith) Airport, Bankstown Airport or the RAAF Base Richmond).

Submissions objected to a specific flight path or multiple flight paths, particularly at night, due to the impact on villages and areas of population (such as Mulgoa, Wallacia, Silverdale, Warragamba and Orchard Hills). Equally, other submissions criticised a particular flight path given the higher density of residents in overflown localities (for example, St Clair, Penrith, Twin Creeks, Orchard Hills, Claremont Meadows, or the Central Coast). This was reflected in submissions from the Blue Mountains where submissions questioned the justification for the design where multiple flight paths cross the Mid- or Lower Blue Mountains (such as Hazelbrook, Linden, Woodford, Faulconbridge, Springwood, Warrimoo Yellow Rock, etc).

Often these submissions requested that changes be made to avoid or minimise impacts on communities or the environment, that the current design should be rejected, and that a more equitable or fairer flight path design be provided that is informed by a 'whole of basin' review. Submissions also challenged that the flight path design met Condition 16 of the Airport Plan or achieved the 12 guiding airspace design principles when commenting on the flight path design.

Submissions identified that the runway orientation for single runway operations at WSI has meant that flight paths cannot avoid some suburbs irrespective of the time of day/night or the wind direction. These concerns were sometimes linked to a critique on the planning approval process for WSI.

Other submissions stated that the flight path design:

- has not avoided populated areas, or should avoid low noise, low density communities, communities at higher elevations, natural environments, tourist destinations and Sydney's drinking water infrastructure
- has not resulted in an equitable distribution of flight paths (and impacts) and that some localities (towns or suburbs) were overflown by multiple flight paths during the day and/or night. Examples include (but are not limited to) Wallacia, Mulgoa, and the mid Blue Mountains
- should have maximised overflight of non-residential localities such as agricultural land, commercial areas, industrial land, open space or bushland. In contrast, other submissions criticised flight paths that pass over bushland/GBMA, tourist destinations, and commercial areas and that it appears flightpaths have been designed with consideration to minimise noise during the day-time, but that the night time flight paths have not been designed to minimise impacts on existing townships.

Submissions queried why certain flight paths include turns immediately after departure from the runway or on approach to the runway (particularly at night), or why flight paths do not include wider approaches at higher altitudes over less populated areas before arrival or after departure.

It was also questioned why the night-time flights paths pass over eastern, northern or southern Sydney. Submissions also questioned why the flight path design has not included more flight paths to/from the west, north or south to limit impacts on more populated areas, whereas others criticised the flight path design for including flight paths over the Blue Mountains (including the GBMA). Other submissions questioned why the flight path design does not include flight paths that pass over the eastern suburbs or northern suburbs of Sydney (including at night).

Submissions questioned why arrival flight paths from southern destinations were not identified in the flight path design, or why flight paths with destinations to the east need to pass over western areas, or why flights paths have not been directed to be further south before turning west to increase altitude.

Submissions also questioned if elevation had been appropriately considered in the design, including compliance with the Civil Aviation Safety Regulations, visual flight rules and minimum separation distances to obstacles.

Concerns were expressed that the flight path design had not considered aviation conflicts with:

- aircraft on WSI arrival and departure flight paths
- helicopters, circuit training flying at lower altitudes, or other general aviation activities.

Submissions stated that the flight paths from Sydney (Kingsford Smith) Airport should have been depicted alongside the proposed flight path design.

7.2.1.2 Response

The airspace and flight path design has been developed on the basis that WSI is to operate 24-hours, 7 days a week. In the development of the preliminary flight path design, a number of considerations were given including the safety of operations, aircraft overflight noise on communities and the environment, elevation above terrain, Civil Aviation Safety Authority (CASA) regulations and required separation distances. Other aviation conflicts were also assessed with some changes to these activities being required to allow for the WSI flight paths to be in operation.

Condition 16 of the Airport Plan and the 12 guiding design principles set out in the Airport Plan have been followed in the development of the WSI airspace and flight path design presented in the Draft EIS. In particular, the WSI airspace and flight paths have been designed to:

- reserve the minimum airspace possible while continuing to adhere to the design principles of safety, efficiency and minimisation of environmental impacts
- equitably distribute potential impacts where flight paths are unable to avoid residential areas by avoiding or minimising areas overflown by both arriving and departing aircraft
- minimising the overall number of dwellings and noise sensitive facilities overflown as far as possible
- minimising overflights of the GBMA to the extent practicable, particularly areas of scenic or tourism value and wilderness areas.

Further discussion on the flight path design considerations is discussed in Section 6.2 of this Submissions Report, alongside requests for a ‘whole of basin’ review and changes to the preliminary flight path design.

It is acknowledged that the implementation of the proposed flight paths would represent a broad scale change to the Sydney Basin, in particular communities in Western Sydney and the Blue Mountains. The Australian Government has made every effort to ensure the impact to these communities is minimised, while also minimising the potential impacts on existing general aviation operations in the Sydney Basin.

Noise abatement procedures have been included in the preliminary design for WSI, such as the use of preferential flight paths which direct aircraft operations away from noise sensitive areas where possible and the use of different flight paths during the day and night. Other noise abatement procedures may be included in the detailed airspace design such as the use of noise abatement departure procedure (NADP) climb profiles. NADPs require aircrew to operate their aircraft in ways which minimise the aircraft's noise footprint by changing flap and power settings, while maintaining safety levels at all times. Airservices Australia will further develop these procedures in consultation with stakeholders, including aircraft operators, airlines, WSA Co and the Forum on Western Sydney Airport (FOWSA) (and its future replacement, the WSI Community Aviation Consultation Group (CACG)).

WSI is currently under construction consistent with the approved 2016 EIS and therefore airfield geometry and infrastructure cannot be altered. It is acknowledged that the single runway geometry limits the potential for respite for communities near WSI. The broadening of the area over which the preliminary flight paths are distributed seeks to minimise the overflight of residential areas and to reduce the impact of aircraft noise.

The design of the WSI flight paths to or from enroute destinations to the north, east, west and south have utilised the available airspace in the Sydney Basin while avoiding major changes to the flight paths for Sydney (Kingsford Smith) Airport. The WSI flight path design has had to achieve separation assurance with Sydney (Kingsford Smith) Airport flight paths, which currently dominate the airspace across the Sydney Basin, particularly in areas above the inner suburbs of Sydney, as well as areas to the north and south. At night (11 pm to 5:30 am), WSI flight paths have taken advantage of the additional airspace that becomes available as a result of substantially diminished Sydney (Kingsford Smith) Airport operations. Key features and design decisions for each individual flight paths have been described in Section 7.6 of the Draft EIS, including the relationship with Sydney (Kingsford Smith) Airport flight paths and other aviation users (as relevant).

Avoiding all communities and natural environments is not possible both during the day and at night. The preliminary design has considered the overflight of residential and natural areas, while providing an optimal and efficient airspace design. Avoiding overflight of both residential areas and sites such as the GBMA would impact on the efficiency of the design, requiring much longer, more circuitous routes and greater conflict with other airspace users.

Refinements have been made to the preliminary design to reflect the concerns raised by the community in relation to the overflight of the mid Blue Mountains and Wallacia. These refinements to the proposed RRO mode of operation meet the identified criteria for change, have been identified as safe to implement and are detailed in Appendix G (Assessment of the refinements to the project) of the EIS, which would reduce the impact on the Wallacia, Mulgoa and the mid Blue Mountains community, when implemented.

Figures in EIS, such as those in Chapter 7 (The project), depicted the modes of operation, and time of day or night to reflect how the project would operate.

7.2.2 Flight path corridors and off-procedure manoeuvring operations

7.2.2.1 Issue raised

Raised by

Community, Blue Mountains City Council, Campbelltown City Council, Melissa McIntosh MP – Member for Lindsay (Federal), Mount Tomah and Berambuing Community Association, RAWSA, The Trustees of Linden Observatory, Wallacia Progress Association

Issue

Submissions were concerned with the disclaimer which stated that some aircraft may fly at a lower altitude depending on weather and operational conditions. This concern applied to locations that are already overflown at low altitudes as well as at higher altitudes, but also due to the spatial or horizontal changes that could mean different suburbs are overflown. Submissions often criticised that the Draft EIS has not clearly identified this variation to the general public or considered this variation. Submissions stated that minimum altitudes should be established for flight paths.

Submissions also criticised the uncertainty arising from off-procedure manoeuvring areas or radar vectoring, given the Draft EIS states that it is not feasible to predict, depict, nor quantitively assess the impact of these off-procedure manoeuvres. Submissions stated that this should be quantified and addressed in the finalised EIS, particularly given the sensitivity of the overflown areas.

Submissions stated that there was insufficient information in the Draft EIS concerning the holding pattern for arrival aircraft (including location) or stated that holding patterns should avoid areas impacted by other airports to manage cumulative impacts or should not occur over the Blue Mountains. Submissions identified concern that the Draft EIS underestimated the number of aircraft being held in a holding pattern given local weather conditions (such as fog) and when compared to Sydney (Kingsford Smith) Airport.

7.2.2.2 Response

It is acknowledged that aircraft do not adhere to a rigidly defined flight path and do not fly with the same level of consistency as a train running on a linear railway track. The position of an aircraft on a flight path is influenced by meteorological conditions, pilot techniques and variations in aircraft performance. This means that there will be some variation as to where different aircraft will be on the flight path. This is referred to as dispersion.

The Draft EIS depicts flight path corridors in recognition of aircraft dispersion. The flight paths will progressively widen to notionally one nm (2 km) either side of the nominal centreline of the flight path, transitioning to 3 nm (5 km either side of the nominal centreline as the aircraft join the enroute flight network.

Due to the density and frequency of aircraft operations in the Sydney Basin area, the WSI flight paths and procedures have incorporated 'Safety by Design' principles to ensure safe separation standards and operational efficiencies including Continuous Climb Operations (CCO)and Continuous Decent Operation (CDO) profiles. This key design principle which reflects contemporary international practice utilises modern aircraft satellite-based guidance and flight management systems, requires aircraft to adhere closely to procedures limiting dispersion from designed flightpaths.

Chapter 7 (The project) of the Draft EIS states the great majority of aircraft arriving and departing WSI at lower altitudes (operations below 10,000 ft (3 km)) are expected to remain on the published flight paths where operational predictability and safe assurance of separation from other aircraft is built into the procedure design. All aircraft must follow a flight path unless otherwise instructed by air traffic control. Air traffic control will vary a flight path for reasons of safety or traffic sequencing when required. It is acknowledged that this can occur for a range of reasons, and cannot be quantified.

Reasons for flying off-procedure is discussed further in Section 7.5.7 of the Draft EIS.

Minimum safe altitude requirements are a fundamental consideration of the flight path design, along with opportunities to minimise environmental, community and social impacts to the extent practical.

With respect to holding patterns, the Draft EIS states that should the capacity disruption be of a long duration, then arriving aircraft can be subject to ground holding at their departure point. Aircraft already airborne can be speed controlled or have their path stretched or ultimately be subject to enroute holding to manage and sequence traffic flow to the runway. Consistent with practices at other major Australian airports, holding patterns for arrival aircraft would typically be beyond 40 nm (74 km) from WSI and above 10,000 ft (3 km).

Some aircraft in extremely rare instances, in line with safety requirements, could be required to enter a lower altitude holding pattern at 4,000 ft (1.2 km) if there is an unplanned major issue (for example, wind changes forcing a runway change) at WSI or a technical issue with the aircraft.

7.3 Modes of operation

7.3.1 Selection and preference of the runway mode

7.3.1.1 Issue raised

Raised by

Community, Blacktown City Council, Blue Mountains Union and Community, Penrith City Council, RAWSA, Susan Templeman MP – Member for Macquarie (Federal), Wallacia Progress Association, Wollondilly Shire Council

Issue

Submissions expressed objections or concerns with the modes of operation identified in the Draft EIS, specifically that:

- a preference to a mode of operation cannot be identified where flight paths pass over the same location under each mode, as the modes offer no or little respite
- runway modes of operation at night (particularly the RRO) only shifts or increases the impact at other communities and does not holistically address or minimise impacts. In this regard, submissions stated that the hours of operation are not justified

- the runway modes of operation would not achieve any 'noise sharing' outcome or satisfies the 12 guiding airspace design principles, given the limitations of a single runway, the position of WSI, or because major changes to Sydney (Kingsford Smith) Airport flight paths have been avoided.

Other submissions objected to RRO due to the impacts on suburbs or villages (such as Silverdale, Warragamba, Wallacia and mid Blue Mountains) and the lack of respite for these communities. It was stated that the option for RRO does not justify the WSI hours of operation, and that it results in some communities being unfairly exposed and significantly impacted by aircraft noise.

Submissions expressed support or preferences to certain runway modes of operation, including:

- preference for Runway 23 generally or during the night, when conditions allow
- preference for Runway 05 generally or during the night
- preference for RRO over Runway 05
- preference for RRO to be used only when necessary.

Submissions requested further information on when each runway mode of operation would be in use (such as number of days over a year) to understand the likely frequency of overflight, as the Draft EIS does not provide information on when Runway 23, Prefer Runway 05 or RRO would be in use. Further information was also requested on:

- if the preferences have considered or would consider future population densities in addition to the existing population
- how the runway mode would be selected and if this could change during the day/night. Submissions queried if this would be communicated to residents
- what runway would generally be used.

It was also requested that RRO be used during the day.

Submissions queried if the criteria for selecting the runway mode of operation would be documented (similar to Sydney (Kingsford Smith) Airport, if this would provide for a more equitable distribution of aircraft movements, and if this would be enforced. Submissions requested that the selection of the runway mode is managed so that any one area is not subjected to consecutive days and nights of impact, for example that communities are not overflown 50 per cent of days or 75 per cent of nights.

The safety of the RRO was also raised by the community, in light of the incident in Tokyo in 2023.

7.3.1.2 Response

Runway modes of operation refer to the direction in which aircraft take off and land. The flight paths identified in Chapter 7 (The project) of the Draft EIS show that locations along the runway alignment are overflown under different modes of operation, whereas areas off the runway alignment have various routes which have the potential to offer respite. It is acknowledged that the single runway geometry limits the potential for respite for communities near WSI.

For night operations (11 pm to 5.30 am), the flight paths have been designed to minimise the number of impacted residences. A key mechanism for achieving this is the use of RRO, where departing flight paths require an early turn away from the runway centreline to ensure safe separation from arriving aircraft. It is recognised that this involves impacting communities which are relatively less affected by daytime operations.

Air traffic control must consider a set of specific conditions relating to weather, operational conditions and noise abatement provisions before nominating the runway for use. The nominated preferred runway of operation or flight path will be a key element of the future noise abatement procedures for WSI. Noise abatement procedures (NAPs) are to be further developed by Airservices Australia and published prior to the commencement of operations at WSI. Airservices Australia will further develop these procedures in consultation with stakeholders, including aircraft operators, airlines, WSA Co and the Forum on Western Sydney Airport (FOWSA)/WSI Community Aviation Consultation Group (CACG).

The choice of a runway mode of operation is primarily informed by the weather (especially wind direction and speed). Other factors include the runway surface condition (wet, damp or dry), air traffic demand, aircraft performance profile and capability, airspace management procedures and potential impacts on surrounding communities, such as noise. The selection of a runway mode of operation may also involve ensuring that mode changes are minimised until the current mode is unavailable, especially during peak periods.

To minimise overflight of residential areas and noise sensitive areas, Runway 23 would be the preferred mode of operation during the day. At night, the use of RRO mode of operation would be prioritised (when weather conditions are suitable and air traffic volumes are low enough to permit safe operations), followed by Runway 23. As identified in Section 7.2.1, refinements have been made to the preliminary design for RRO flight paths to reflect concerns raised by the community in relation to the overflight of the mid Blue Mountains and Wallacia, and the inclusion of an additional RRO-NAP. Refinements to allow for the inclusion of the RRO-NAP are discussed further in Chapter 24 (Refinements to the project since exhibition) of this Submissions Report.

The preferred runway mode of operation can change during the day and night time periods. The changes are not communicated to the residents in real time given the many factors that determine the preferred mode.

The 3 assessment scenarios presented in the Draft EIS represent the outer envelope of the potential impacts of the WSI flight paths (No Preference, Prefer Runway 05 and Prefer Runway 23). Up to 7 possible combinations of runway modes of operation were identified in the Draft EIS, and the modal splits during the day and night are discussed in Section 8.4 of Technical paper 1: Aircraft noise (Technical paper 1).

Using a runway allocation emulator, each movement was allocated to a runway based on the criteria of each operating scenario, using actual weather conditions from the 10 year period 2012–2021. Figure 8.11 and Figure 8.12 of Technical paper 1 present the resulting cumulative runway end exposure and runway usage for each scenario and projected activity level, for day and night operations respectively. The number of aircraft movements resulting from this analysis are provided in the flight path movement charts and informed the respite charts (refer to Appendix B of Technical paper 1).

Table 7.2 provides the projected frequency of each mode of operation by assessment scenario based on the 10 years of historical wind data (2012–2021).

Table 7.2 Projected frequency of each mode of operation by scenario using averaged historical wind data (2012–2021)

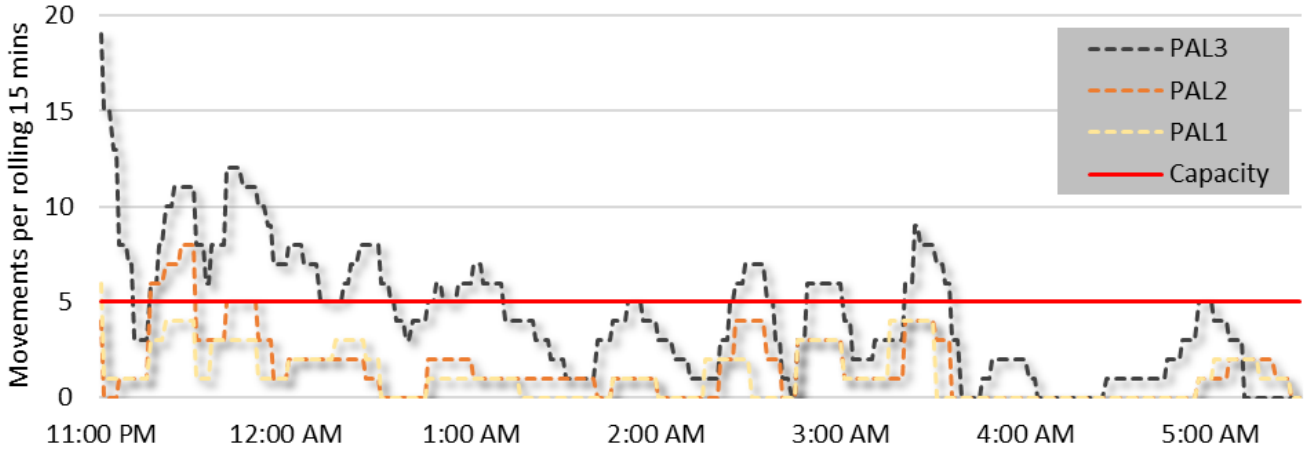
Mode of operation	Frequency of use by scenario		
	No Preference	Prefer Runway 05	Prefer Runway 23
Runway 05 – Day	45.9%	73.4%	17.9%
Runway 23 – Day	54.1%	26.6%	82.1%
Runway 05 – Night	54.0%	3.6%	2.9%
Runway 23 – Night	46.0%	18.0%	18.7%
RRO	0.0%	78.4%	78.4%

There could be prevailing wind conditions that may support operations using a runway in one direction across an entire day. Analysis of the historical wind data suggests that this could happen around 34 per cent of the time under the No Preference scenario. This would occur at lower percentages for the other 2 assessment scenarios (up to 5 per cent) as the use of the RRO mode of operation would reduce this occurrence.

The RRO mode of operation can only be used at night (11 pm to 5:30 am) when weather conditions are suitable and air traffic volumes are low enough to permit safe operations. In the 3 assessment scenarios, almost 90 per cent of movements at night could operate over the south-west end of WSI on an annualised basis (when only taking weather into account).

The use of the RRO mode of operation is also dependent on a low traffic demand, typically less than 20 movements per hour on average (or 5 movements per 15 minutes), or 12 movements per hour (or 3 movements per 15 minutes). Figure 7.2 compares the capacity of the RRO mode of operation compared to the 3 assessment years presented in the Draft EIS.

As demand grows over time (represented by years 2040 and 2055), availability and usage of RRO will be more limited. The potential limitation in usage was not accounted for when determining the runway allocation given this would ultimately be determined by the actual schedule for WSI (along with any natural day-to-day variation from schedule). The influence of this change over time is that the proportion of movements at the north-east end of WSI at night would progressively increase.



Assessment year: 2033 – PAL 1; 2040 – PAL 2; PAL3 – 2055

Figure 7.2 Forecast demand during 11 pm to 5:30 am versus RRO capacity by assessment year

Runway modes are managed by air traffic control using air traffic control procedures to ensure safe and efficient operations of arriving and departing air traffic. The RRO mode of operation have been used safely at Brisbane Airport for 30 years prior to the introduction of the parallel runway in 2020, and at Sydney (Kingsford Smith) Airport since the 1970s. Aircraft are not permitted to enter the runway until they have been cleared by air traffic control, irrespective of what runway mode of operation is in operation.

7.4 Hours of operation

7.4.1 24-hour operations

7.4.1.1 Issue raised

Raised by

Community, Blacktown City Council, Blue Mountains City Council, Blue Mountains Conservation Society, Blue Mountains Union and Community, Fitzgerald Creek Catchment Group, Friends of Fernhill and Mulgoa Valley Inc, Greater Blue Mountains World Heritage Area Property Advisory Committee, Julian Leeser MP – Member for Berowra (Federal), Luddenham Progress Association, RAWSA, Stephen Bali MP – Member for Blacktown (NSW), Susan Templeman MP – Member for Macquarie (Federal), Trish Doyle MP – Member for the Blue Mountains (NSW), Wallacia Progress Association, Wollondilly Shire Council, WSA Co

Issue

Submissions objected to or expressed concern with the proposed hours of operation and requested that hours of operation of WSI are reviewed to exclude all aircraft movements. This was primarily associated with concerns or objections to night time movements (particularly freight planes), the lack of or limited provision of respite, and/or sleep disturbance impacts for existing and future populations. However, submissions also requested changes to the hours of operation to address visual (including the Linden Observatory), air quality, social, amenity, lifestyle, economic, health, biodiversity and World Heritage impacts (including 'Dark Sky' values). Submissions nominated a range of suggested curfew periods, spanning 2 to 8 hours over the night and early morning.

Submissions stated that similar protections provided for communities impacted by Sydney (Kingsford Smith) Airport should be afforded to communities impacted by the project. This includes legislative protections.

Submissions often stated in conjunction with a request for a curfew that there was insufficient justification for 24-hour operations at WSI and that what is proposed is inconsistent with the ICAO's Balanced Approach to Aircraft Noise Management policy.

7.4.1.2 Response

The preliminary airspace design has been developed on the basis that WSI would operate 24-hours, 7 days a week consistent with the approved 2016 EIS and Airport Plan. This has been discussed in Section 7.2.1. The need for an airport in Western Sydney is driven by a continued growth in demand for aviation services in Western Sydney and the Sydney Basin more broadly. To ensure that the Sydney Basin stays an international commercial and financial centre, as well as one of Australia's foremost tourist destinations, there needs to be efficient access to air services for travel by passengers and freight. Further discussion on the justification and need for WSI is provided in Chapter 4 (Strategic need and justification) of this Submissions Report.

The ICAO's Balanced Approach to Aircraft Noise Management policy focuses on identifying measures to reduce aircraft noise issues at airports. The Balanced Approach requires consideration of measures across 4 areas – reduction of noise at source, land use planning and management, noise abatement procedures and, as the last resort, operating restrictions. Operating restrictions should only be introduced once all other cost-effective measures have been implemented.

Approaches to minimise impacts on communities have been addressed through flight path design as discussed in Section 7.2.1. Strategic planning in the vicinity of WSI has considered and incorporated the operational needs of WSI into land use planning in accordance with guidance provided in the National Airports Safeguarding Framework (NASF). Noise abatement procedures are to be further developed by Airservices Australia and published prior to the commencement of operations at WSI. Airservices Australia will develop these procedures in consultation with stakeholders, including aircraft operators, airlines, WSA Co and the Forum on Western Sydney Airport (FOWSA)/WSI Community Aviation Consultation Group (CACG).

It is Australian Government policy that operating restrictions will not be considered for WSI. Restrictions on Sydney (Kingsford Smith) Airport are not directly comparable, given the density and proximity of residential areas to WSI. Land use planning in the vicinity of WSI has been ongoing for over a decade and is well established in existing planning instruments. Further, the Noise Insulation and Property Acquisition Policy (NIPA) for WSI is aimed at residents that are in areas close to the Airport Site who would experience increased and significant levels of sleep disturbance.

7.5 Aircraft movements

7.5.1 Controls on aircraft movements

7.5.1.1 Issue raised

Raised by

Community, Blue Mountains Union and Community, Greater Blue Mountains World Heritage Area Property Advisory Committee, Penrith City Council, RAWSA, Stephen Bali MP – Member for Blacktown (NSW), Varuna – The National Writers House

Issue

Submissions objected to or raised concern with the frequency of aircraft movements associated with a particular flight path or paths over an hour, during the night and early morning, or over a 24-hour period. In raising these concerns, submissions often requested a reduction to the number of movements or a 'movement cap' (particularly during night and early morning), or a change to the flight path design and/or hours of operation. Concerns raised in submissions largely related to the impacts arising from aircraft noise and requests for increased respite (particularly where communities are overflown by multiple flight paths), but also included impacts on the GBMA.

Submissions stated that aircraft movements should be subject to strict conditions (e.g. maximum movements during the day or night) or that only certain movements should be permitted at night (e.g. only passenger flights, or only departures). Submissions stated that frequency, number or timing of aircraft movements should be regulated. It was also questioned who would determine the use and frequency of movements on the flight paths.

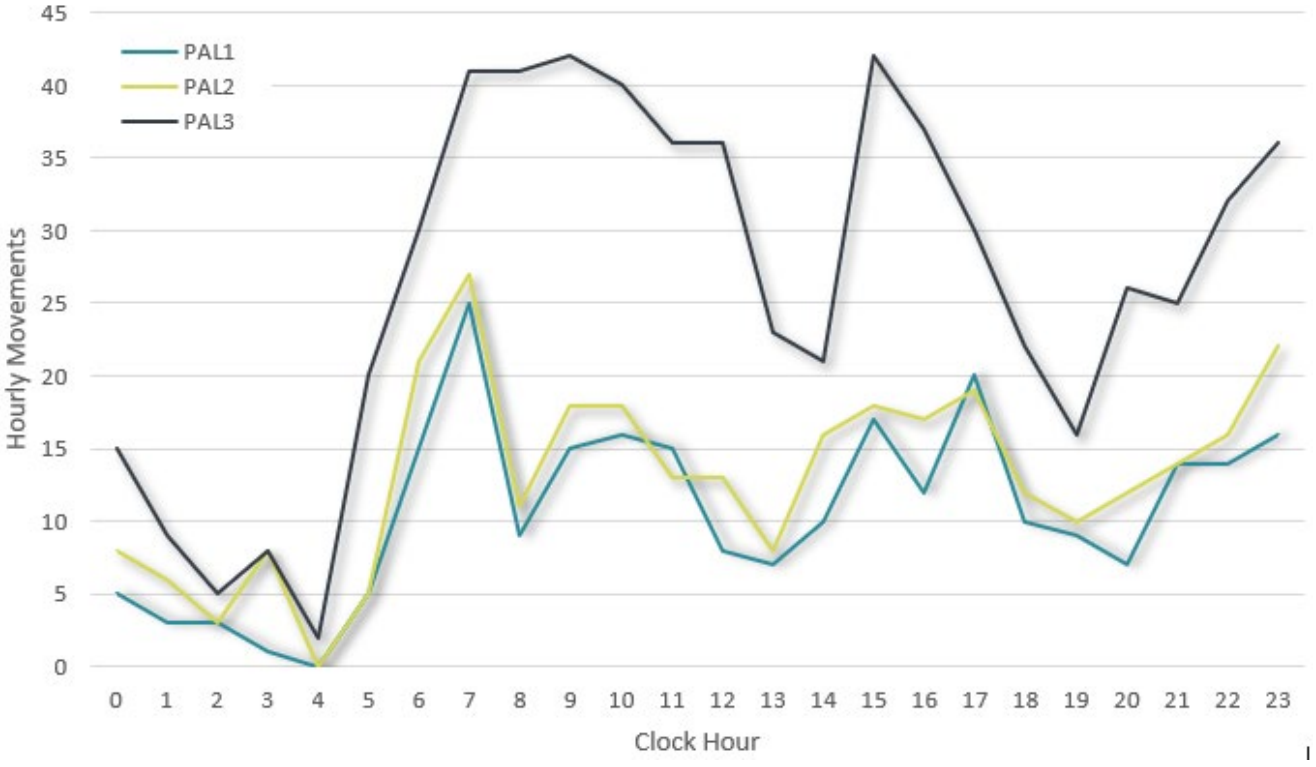
Submissions questioned the equality of controls in the Sydney Basin in the absence of a movement cap on the flights per hour.

7.5.1.2 Response

Hourly movements at WSI would be limited by the maximum capacity of the single runway at WSI, being around 48 to 49 movements per hour. Hourly movements will also be subject to demand management and weather influences. Figure 7.3 depicts the forecast demand in the early years (2033), interim year (2040) and when the single runway is operating close to capacity (2055).

The use and frequency of movements on any particular flight path is determined by the selected runway mode of operation. As discussed in Section 7.3.1, air traffic control must consider a set of specific conditions relating to weather, operational conditions (including movement demand) and the noise abatement provisions before nominating the runway for use.

The flight path movement and respite charts presented in the Draft EIS provide a minimum, maximum and average number of movements, and show a percentage of days and nights where no aircraft movements are expected on a specific arrival or departure flight path. These are based on the assessment scenarios (No Preference, Prefer Runway 05 and Prefer Runway 23) and year (2033, 2040 and 2055). These can be found in Appendix B of Technical paper 1.



Assessment year: 2033 – PAL 1; 2040 – PAL 2; PAL3 – 2055

Figure 7.3 Daily predicted aircraft traffic movements over future years, 2033, 2040 and 2055

The project does not propose the inclusion of movement caps. Approaches to minimise impacts on communities and the environment have been incorporated into the preliminary flight path design and would be further developed as part of the final noise abatement procedures as discussed in Section 7.2.1.

7.5.2 Forecast schedule

7.5.2.1 Issue raised

Raised by

Community, RAWSA, Susan Templeman MP – Member for Macquarie (Federal), Wallacia Progress Association

Issue

Submissions requested a movement or forecast schedule for the project, including detail on the number of movements on each flight path over an hour and 24-hours, the number of freight movements, as well as the change in movements over time. Submissions stated that this had not been provided in the Draft EIS.

Submissions queried if the movements on the proposed flight paths would increase dramatically over time compared to what has been outlined in the Draft EIS. It was questioned if freight movements would be shifted to the night or from Sydney (Kingsford Smith) Airport due to financial drivers.

Submissions queried the reliability of the forecast schedule and requested that the Australian Government commits to ensuring these numbers are not exceeded. There was concern that the numbers identified in the Draft EIS did not reflect peak movements, or variations in aircraft type, destinations, etc.

It was questioned if the forecast schedule had factored in seasonal variation or influences of meteorological conditions, as it appeared to be averaged. This included concern that hourly movements at night could increase as a result of extreme temperatures during the day.

7.5.2.2 Response

As identified in the Draft EIS, Stage 1 Development and the preliminary flight path design is limited to single runway operations. This has the capacity to handle up to 10 million annual passengers and around 81,000 air traffic movements per year by 2033. By 2055, WSI is forecast to handle up to 37 million annual passengers and around 226,000 air traffic movements per year. The annual forecast activity and movements has been discussed in Chapter 2 (Strategic context and need) of the Draft EIS. WSI will provide additional aviation capacity in the Sydney Basin and address the increase in demand for passenger and freight aviation. It would not replace operations at Sydney (Kingsford Smith) Airport, including freight.

The aircraft volumes presented in the Draft EIS are based on demand schedules projected by WSA Co, which includes freight aircraft. This is depicted in Figure 7.3 of this Submissions Report and discussed further in Section 7.2 of the Draft EIS. Responses to comments concerning aircraft type and variation is addressed in Section 7.6.

Northern Summer (NS)/Northern Winter (NW) is the internationally acceptable method of describing scheduling seasons and the convention adopted by the Australian Aviation industry. The NS/NW convention typically captures the overall local seasonality of flights, considering time change (that is, daylight saving). The forecast schedules provided by WSA Co reflect an average weekly schedule derived from the NS/NW airline schedule seasons for each future year. The average weekly schedules were 'annualised' by taking the relative proportions of days in the NS/NW airline schedule seasons to create a table with 365 days' worth of aircraft movements. This was the basis for the daily and hourly movement data in the Draft EIS.

The flight path movement charts in the Draft EIS present the movements in 2033, 2040 and 2055, including the minimum, average and maximum movements based on the demand schedules. These are available in Appendix B of Technical paper 1. As identified in Section 7.3.1, each aircraft movement was allocated to a runway based on the criteria of each operating scenario, using actual weather conditions from the last 10 years (2012-2021). A range of sensitivity analyses were completed as part of the aircraft noise assessment, which is discussed further in Section 10.2 of this Submissions Report, including temperature.

It is acknowledged that averaged aircraft movements have been applied in the Draft EIS to illustrate what the community can expect to experience in the vicinity of WSI when operations commence and progressively increase in number over coming decades. A 'peak' operating period would only present impacts for a very discrete period of time as it would be dictated by the origin and destination of the aircraft (i.e., the flight path used) and the runway in use (based on operating scenario and wind direction/speed).

Further discussion and analysis of the air traffic forecasts is provided in Section 8.3 and Section 8.6 of Technical paper 1, including the differences between the time of year, or time of day (day, evening and night), and the aircraft fleet mix in 2033, 2040 and 2055.

Forecast schedules and many other variables used in the Draft EIS are based on assumptions about future aircraft types, aircraft occupancy rates, technology use and air traffic demand forecasts. While these assumptions are based on accurate sources and best-practice methodology, the realisation of these assumptions depends on global events and trends, business decisions of airlines and other industry participants, decisions by international organisations such as ICAO and other factors which are outside the control of any airport developer or operator.

In accordance with Airservices Australia's *Environmental Management of Changes to Aircraft Operations – National Operating Standard* (National Operating Standard) (NOS) (Airservices Australia 2022a), Post Implementation Reviews are conducted 12 months after airspace and flight path changes to confirm actual noise and aircraft operations and to identify opportunities to improve outcomes for communities. As part of this, Airservices Australia compares actual operations data with forecasts modelled during the preliminary flight path design to identify any variances and the reasons for this.

7.6 Aircraft type

7.6.1 Fleet mix

7.6.1.1 Issue raised

Raised by

Community, Wallacia Progress Association

Issue

Submissions requested further detail on the fleet mix assumptions, or criticised the level of detail provided in the Draft EIS in terms of the type of aircraft that would arrive or depart WSI. The reliability of the fleet mix assumptions was also questioned. Submissions expressed concern that older aircraft would use WSI.

It was also claimed that the Draft EIS did not acknowledge that freight aircraft would use WSI, or that a significant number of freight aircraft movements would occur, particularly at night.

Submissions requested that certain aircraft types should not use WSI. In addition to older aircraft, it was requested helicopters or smaller aircraft (including aircraft used for training or survey work) do not travel to/from WSI.

7.6.1.2 Response

The Draft EIS states that WSI (and therefore the project) would be used by commercial passenger and freight aircraft. Dedicated freight aircraft accounts for around 12 per cent of total air traffic movements (less than 10,000 freight aircraft movements) by 2033 (refer to Figure 7.4). As WSI approaches full capacity for single runway operations in 2055, it is anticipated that freight aircraft movements would account for around 9 per cent of total air movements per year (nearly 20,000 dedicated freight movements).

Aircraft types assessed and modelled for the Draft EIS are conservatively based on those currently in service, and not all types of aircraft listed in the Draft EIS are expected to still be in operation by 2055. The breakdown of the aircraft family that are projected to use WSI is provided in Section 2.1.3 of the Draft EIS and is further described in Section 8.6 of Technical paper 1.

While there is an observed ongoing trend towards the operation of quieter aircraft, the assessment is based on a conservative assumption around the introduction of new aircraft. The assumed fleet mix does not take into account future types of aircraft, including electric or hybrid. While freight airlines may lag in achieving similar outcomes, they also renew their fleet periodically through the acquisition of new freighters or the conversion of older passenger aircraft.

There are no known plans to accommodate helicopter operations or aircraft smaller than turbo-props at WSI.

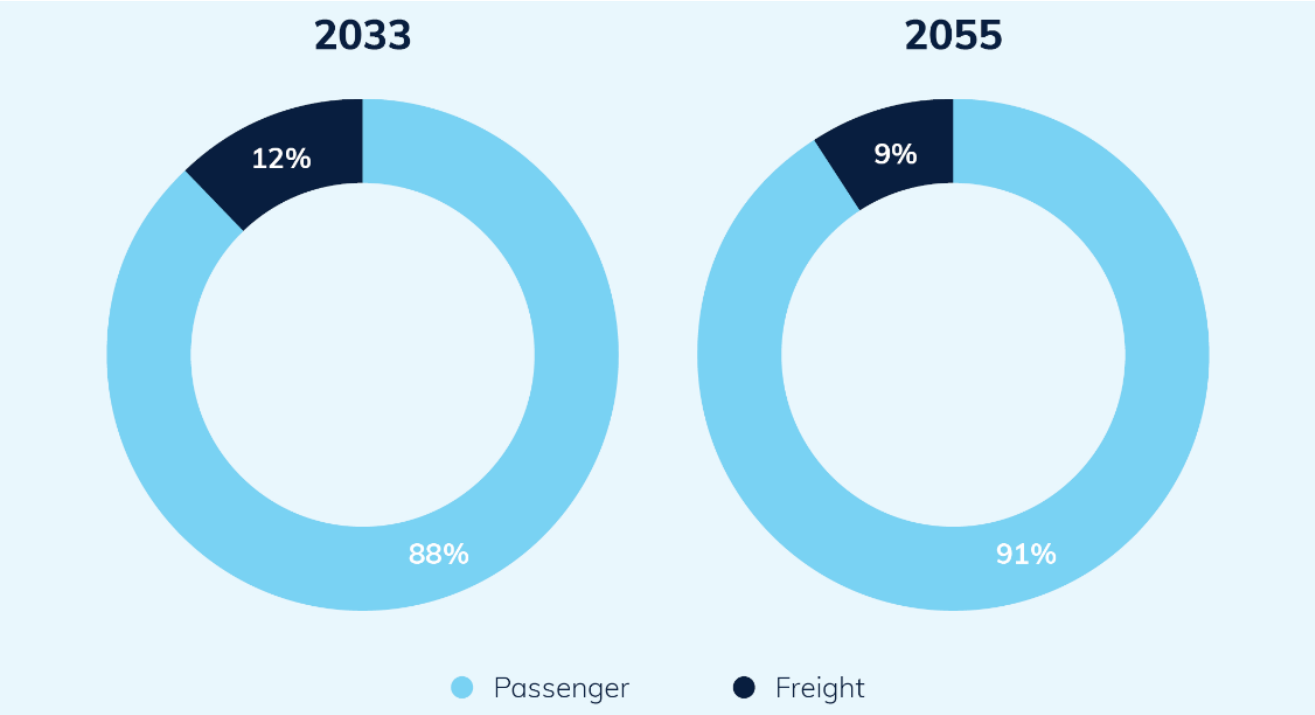


Figure 7.4 Passenger and freight movements at WSI in 2033 and 2055

7.7 Air traffic control procedures

7.7.1 Design of air traffic control procedures

7.7.1.1 Issue raised

Raised by

Community

Issue

A submission criticised the lack of formally designed instrument flight procedures within the Draft EIS, including standard arrival routes (STARs), RNP-E and RNP-W (i.e. the preferred instrument approaches to land), and the standard instrument departure plates. It was also stated that the revisions to the charts for the other 4 airports within the Sydney Basin should be disclosed, including airways and turning points.

A submission questioned why RNP-AR has not been applied on the basis that this would enable greater avoidance of residential areas. It was also suggested that aircraft that cannot meet the climb gradient should be expected to avoid residential areas that have not been acoustically treated.

It was questioned if the flight path design has achieved the required vertical and horizontal separation between arrival and/or departing aircraft, and if continuous decent procedures have been applied, noting the safety, noise and efficiency improvements this offers when compared to the current practice at Sydney (Kingsford Smith) Airport.

Submissions queried if flight paths have a reasonable angle of descent or ascent to minimise noise impacts and requested detail on the climb/descent profiles for each flight path. Other submissions suggested that flight paths should be designed to enable aircraft to climb or descent over shorter distances to maximise altitude over communities or the GBMA.

A submission queried if the air traffic control procedures allow for the independent operation of airports in the Sydney Basin with the full use of climb via SID and descend via STAR with strategic aircraft segregation and separation.

Submissions requesting a noise abatement procedure for RRO have been captured under Chapter 10 (Aircraft noise) of this Submissions Report.

7.7.1.2 Response

The Draft EIS details the air traffic control procedures to be implemented at WSI, which includes the use flight path procedures known as STARs and SIDSs. These SIDs and STARs are designed and coded to Performance Based Navigation (PBN) standards (representing satellite-based navigation technologies) whereas conventional technologies employed fixed ground-based beacons to guide aircraft along published routes via waypoints (specified locations used to define positions along an air navigation route). The ability to accurately describe these departure and arrival flight paths has been used in the preliminary design process to strategically de-conflict the flight paths from concurrent and crossing track operations for WSI as well as all other Sydney Basin operations.

WSI STARs have been designed as Closed STARs which provides track, speed and altitude guidance from the exit point of the enroute segment of flight to either an intercept of a ground-based approach aid such as the Instrument Landing System (ILS) or to the commencement point of an RNP or RNP-Authorisation Required (AR) arrival procedure. The WSI SID design also applies continuous climb operations to the extent practical to deliver environmental and community benefits. Such benefits include reduced fuel burn and emissions and reduced engine noise. This allows arriving aircraft to descend continuously using minimum engine thrust and low drag settings.

To manage large volumes of air traffic that operate in the Sydney Basin safely and predictably, air traffic control issues clearances and coordinates internally using a series of pre-coordinated standard clearances and procedures. These standard clearances define the way air traffic control process aircraft onto SIDs and STARs and determine the number of aircraft that will fly along specific flight paths. The method of using pre-coordinated standard clearances and procedures would continue to be used by air traffic control to manage WSI flight paths. Both WSI and Sydney (Kingsford Smith) Airport can operate independently regardless of which runway direction is in operation at either airport.

The presentation of detailed SIDs and STAR plates were not required as part of the EIS Guidelines. The detailed procedures would be developed during the detailed design and in support of the Airspace Change Proposal that will be submitted by Airservices Australia to CASA for approval. This would need to consider the advice provided by the Australian Minister for the Environment and Water following consideration of the finalised EIS, including this Submissions Report.

7.7.2 Enforcement of air traffic control procedures

7.7.2.1 Issue raised

Raised by

Community

Issue

Submissions questioned how the air traffic control procedures would be enforced.

7.7.2.2 Response

Aircraft must follow a flight path unless otherwise instructed by air traffic control. Air traffic control will vary a flight path for reasons of safety or traffic sequencing when required.

Air traffic control procedures will be regulated by CASA as per existing air traffic control procedures for other airports.

7.7.3 Influence of weather and visibility conditions

7.7.3.1 Issue raised

Raised by

Community

Issue

A number of submissions questioned or expressed concern that weather or visibility conditions at WSI and surrounds would impact the ability for aircraft to depart or arrive at WSI, specifically:

- how aircraft would safely operate or continue to operate in adverse meteorological conditions, including fog or smoke. Submissions stated that there had been insufficient consideration of these factors in the design of the flight paths
- how aircraft could operate in high temperatures
- that aircraft that do not have Category 2 or 3 landing systems would need to be redirected to another location during adverse weather conditions.

7.7.3.2 Response

The use of technology at WSI, such as Category IIIB (CAT IIIB) Instrument Landing System (ILS) and high intensity approach lighting (HIAL), would enable certain operations to continue in adverse weather. However, the capacity and use of the WSI airspace and runway modes of operation would continue to be dictated by weather conditions and phenomena such as fog, low cloud and low visibility. This may slow the number of movements at WSI, or may cause aircraft to deviate from the flight paths (e.g. in the case of convective turbulence).

Meteorological hazards have been assessed and there are no exceptional meteorological conditions at WSI that might lead to significant risks to operational safety. Compared with other airports which operate with an acceptable level of safety, any potential risks to safety and operational efficiency from meteorological hazards can be mitigated by provision of improved forecasting, which will be implemented at WSI in the form of an Automated Thunderstorm Alert Service. This mitigation measure is listed at HR4 in Table 11.1 of Technical paper 4: Hazard and risk (Technical paper 4).

The flight path procedures (SIDs and STARs) for WSI are designed to be flown under Instrument Flight Rules (IFR). IFR govern how aircraft are flown and how safe separations are maintained in differing meteorological conditions. The WSI flight paths are designed to facilitate aircraft arrivals to the lowest minimums possible, consistent with all other airports. Where aircraft are not equipped with certain navigation equipment to meet these low minimums they would be required to divert to a more suitable aerodrome in line with existing airline operations.

Hot weather conditions were also factored into aircraft departure procedure design to ensure aircraft can comply with SID requirements with less than optimum performance capability.

Aircraft that do not have Category II or III ILS may elect to proceed to another airport during periods of extremely low visibility.

Chapter 8 Facilitated changes

This chapter provides a response to the issues raised in submissions specific to Chapter 8 (Facilitated changes) of the Draft EIS.

Submissions were primarily focused on the changes to Sydney (Kingsford Smith) Airport, however, submissions also raised issues with changes to general aviation airports and activities in the Sydney Basin.

The aviation Technical Working Group (TWG) established for WSI was responsible for the design of WSI flight paths and their integration into the existing Sydney Basin flight paths with safety of operations as the primary consideration. Where the integration of WSI flight paths with Sydney (Kingsford Smith) Airport flight paths required a change to Sydney (Kingsford Smith) Airport flight paths, the change to Sydney (Kingsford Smith) Airport flight paths was kept to the minimum required to meet the safety by design standards and to not compromise current noise sharing arrangements. The variation of aircraft overflight of some suburbs is an outcome of this process.

Although care has been taken to minimise the impacts to general aviation activities in the Sydney Basin and to maintain safe and equitable access, it is acknowledged that the implementation of the WSI airspace would have an impact on certain general aviation activities. The changes for aircraft operating under both visual flight rules (VFR) and instrument flight rules (IFR) in the Sydney Basin as described in the Draft EIS are necessary to safely segregate general aviation operations with WSI operations while maintaining access to all airports.

Comments related to associated airspace changes described in Airservices Australia's *Proposed changes to general aviation operations in the Sydney Basin in support of the new Western Sydney International (Nancy-Bird Walton) Airport* have been noted. This industry briefing paper includes additional airspace changes in support of continued safe aircraft operations in the Sydney Basin. These changes have been consulted via the Civil Aviation Safety Authority's (CASA) Aviation State Engagement Forum. The timing for the implementation of these changes is subject to the completion of this process and is not within the scope of the Draft EIS.

Members of the gliding community may apply to CASA to establish airspace for their operations. This can be achieved by following CASA's Office of Airspace Regulation (OAR) airspace change process. However, due to the airspace volume requirements for gliding activities, it is not expected that gliding would continue to be available to the same extent in the same locations as they currently occur.

8.1 Submission overview

8.1.1 Number and origin of submissions

A total of 672 submissions raised matters concerning facilitated changes. The majority of these submissions originated from the Sydney Basin and surrounds. The distribution of submitters by postcode is shown in Figure 8.1. Around 19 per cent of submissions did not supply a postcode.

Of the 672 submissions, around 60 per cent originated from the Eastern City District. Less than one per cent of submissions originated from intrastate or interstate locations (such as the Australian Capital Territory and Tasmania). The remainder originated from other districts within the Sydney Basin.

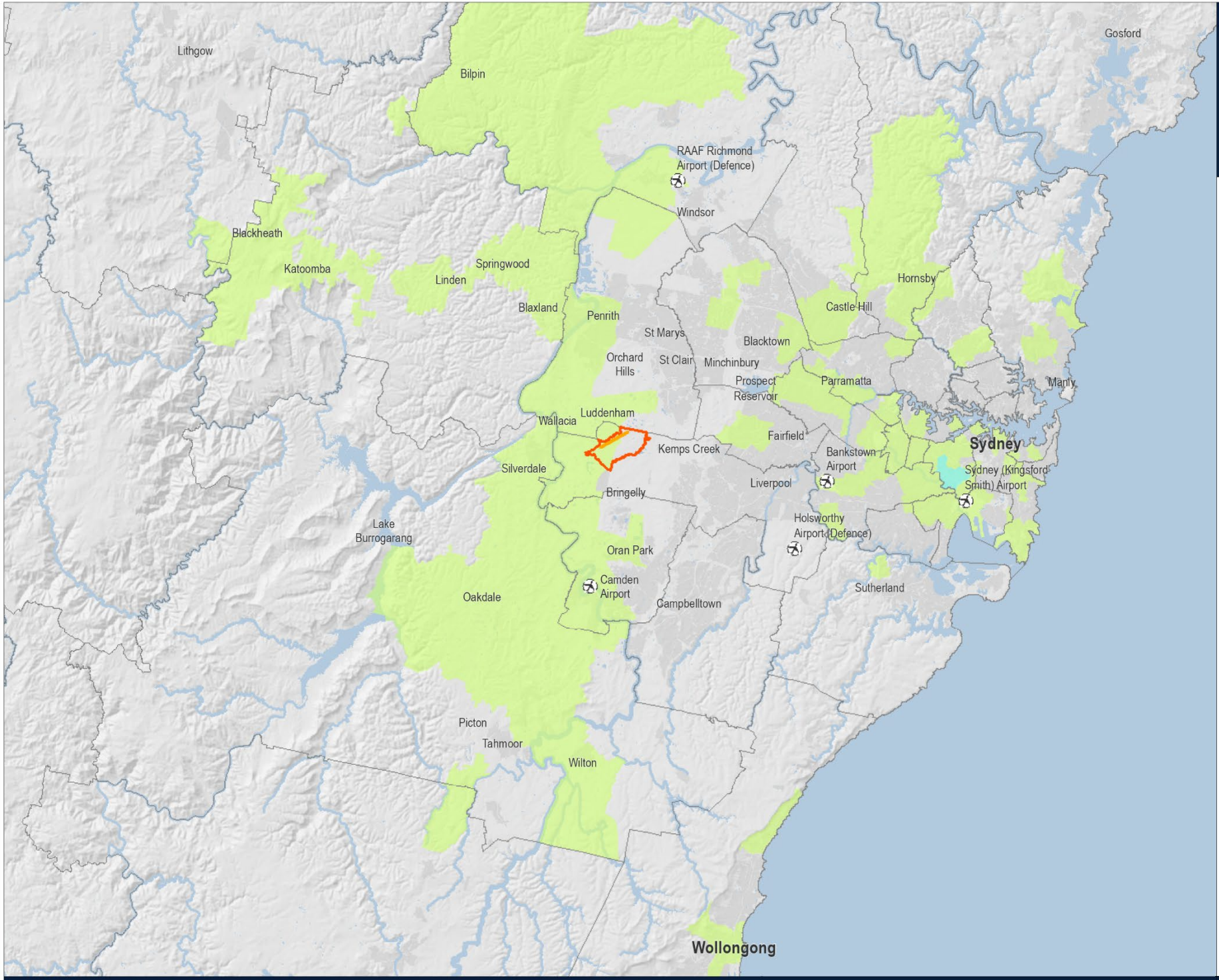


Figure 8.1

Origin of submission in relation to the facilitated changes of the project

Legend

- WSI Runway
- Western Sydney International (Nancy-Bird Walton) Airport land boundary
- Local Government Area

Number of submissions by postcode

- 1 - 50
- 51 - 100
- 101 - 150
- 151 - 200
- 201 - 250
- 251 - 300
- 301 - 350
- 351 - 400
- 401 - 450
- 451 - 500
- 501 - 550
- More than 550

0 5 10 km

Coordinate system: GDA 1994 NSW Lambert

Scale ratio correct when printed at A4

1:600,000 Date: 20/06/2024

8.1.2 Key issue breakdown

A breakdown of the sub-issues within this key issue and the percentage of total submissions that raised each of these sub-issues is outlined in Table 8.1.

Table 8.1 Breakdown of sub-issues in relation to the facilitated changes

Sub-issue	Number of submissions that raised the sub-issue	Percentage of submissions that raised the sub-issue
Changes to Sydney (Kingsford Smith) Airport – general	621	7%
Changes to Bankstown Airport	11	<1%
Changes to Camden Airport	2	<1%
Changes to Visual Flight Rule aircraft changes	44	1%
RAAF Richmond Base	2	<1%

Most of the submissions received were concerned with facilitated changes to Sydney (Kingsford Smith) Airport. For this sub-issue, almost 64 per cent of submissions originated from the Eastern City District. Each of the other districts typically represent less than 5 per cent of the submissions that raised this sub-issue.

Submissions concerned with the Visual Flight Rule (VFR) aircraft changes originated from a range of districts within the Sydney Basin as well as other intrastate and interstate locations. This is the only sub-issue that was raised in submissions that originated from intrastate and interstate locations.

Each of the other sub-issues were raised by very few districts. For submissions concerning operations at Bankstown Airport, submissions originated from either the Central City District, Eastern City District and South District. Submissions concerned with Camden Airport originated from the South District. Submissions concerned with RAAF Base Richmond originated from the Central City District.

Up to 27 per cent of submissions in each sub-issue did not supply a location.

8.2 Changes to Sydney (Kingsford Smith) Airport

8.2.1 General

8.2.1.1 Issue raised

Raised by

Community, Bayside Council, Cumberland City Council, Homebush Residents Group Inc, Inner West Council, Julian Leeser MP – Member for Berowra (Federal), Sally Sitou MP – Member for Reid (Federal), Sydney Airport Corporation Ltd, The Hills Shire Council

Issue

Submissions objected to and questioned the need for the proposed adjustments to Sydney (Kingsford Smith) Airport flight paths, in particular adjustments to the Standard Instrument Departures (SIDs) using Runway 25 and Runway 34L. A key concern expressed in submissions was that the proposed changes would result in a disproportionate impact on some suburbs, while avoiding others. Submissions were also concerned that residential areas would be subject to aircraft flying at lower altitudes.

Submissions requested that the changes are redesigned to balance the needs of the community and environment, and that safety had been prioritised over residential noise amenity. A key theme raised in submissions was the need to ensure that the existing noise sharing mechanisms at Sydney (Kingsford Smith) Airport are maintained and that aircraft movements and noise are not concentrated over a single area. It was requested that the design changes are reviewed by an independent consultant to ensure an equitable outcome.

Suggestions made by submissions to minimise impacts included:

- undertaking a holistic review of all airspace in the Sydney Basin
- implementing procedures to integrate Sydney (Kingsford Smith) Airport flight paths with WSI flight paths
- adding more waypoints across the Sydney Basin or removing the waypoint above Katoomba
- utilising more of the airspace above the eastern suburbs, Botany Bay, Kurnell and the Pacific Ocean
- avoiding overflight of residential areas or ensuring that aircraft above residential areas are at sufficient altitude
- incorporating newer, better performing aircraft into the flight path designs.

There was also concern that the 2016 EIS and the Airport Plan had identified that WSI flight paths would not impact Sydney (Kingsford Smith) Airport flight paths. Submissions were of the view that the changes were not consistent with messaging that WSI would reduce pressure on Sydney (Kingsford Smith) Airport and not see an increase in aircraft noise in Sydney.

Submissions felt that the changes had already been implemented, noting their changed experience of aircraft noise from Sydney (Kingsford Smith) Airport. Submissions were also concerned over the accuracy of the maps provided, commenting that their experience of the current flight paths did not match the diagrams.

8.2.1.2 Response

The introduction of the WSI control area and flight paths has meant that some Sydney (Kingsford Smith) Airport flight paths need to be adjusted to ensure that the Civil Aviation Safety Authority's (CASA) minimum vertical and lateral separation requirements are achieved where WSI and Sydney (Kingsford Smith) Airport flight paths cross. Broadly in Australia, aircraft flying under Instrument Flight Rules (IFR) in controlled airspace must be separated by 1,000 feet (ft) (or 305 metres (m)) vertically unless they are separated laterally by 3 nautical miles (nm) (or 5.6 kilometres (km)). These 'Safety by Design' standards are ensured at the flight path crossing points by the design of the proposed WSI SIDs and Standard Instrument Arrivals (STARs) and the adjusted Sydney (Kingsford Smith) Airport flight paths.

It is acknowledged that the implementation of these changes would represent a change to some communities. However, the changes are required to safely integrate the WSI control area and flight paths while providing for safe and efficient operations for all aircraft in the Sydney Basin. The changes have been minimised to the extent practicable and have been considered in terms of safety, efficiency, equity of airspace access, existing aircraft operating standards, and impacts on the surrounding communities and environment. Consideration was given to minimising the changes to Sydney (Kingsford Smith) Airport flight paths which exist to safely control the high volume of demand associated with this airport and the spread of noise in the Sydney Basin.

The ability to disperse flights across a wider area beyond what has been proposed is not possible due to safety and the available airspace. However, the current practice of radar vectoring of aircraft on certain adjusted Sydney (Kingsford Smith) Airport SIDs would continue to occur when it is safe to do so, resulting in a level of dispersion of these flights.

There are no proposed changes to the current aircraft noise sharing arrangements or runway modes for Sydney (Kingsford Smith) Airport traffic. It has been a functional requirement of this project to enable WSI and Sydney (Kingsford Smith) Airport to be able to operate independently with no changes to the noise sharing mechanism in place for Sydney (Kingsford Smith) Airport.

The facilitated changes have been identified by the technical working group established for WSI with oversight of the Expert Steering Group. An independent review is not proposed.

A comprehensive review and simplification of airspace management in the Sydney Basin or a broader review of Sydney (Kingsford Smith) Airport flight paths is beyond the scope of the Draft EIS and is a matter for future government policy. A response to submissions concerning the development process for the proposed flight paths is discussed in Chapter 6 (Project development and alternatives) of the Draft EIS.

The proposed adjustments to Sydney (Kingsford Smith) Airport flight paths have not been implemented to date. The adjustments are planned to be introduced in 2026 on a scheduled Aeronautical Information Regulation and Control (AIRAC) date, prior to the official opening of WSI.

The 2016 approval provided for the on-ground development for the Stage 1 Development of WSI with indicative 'proof of concept' flight paths. These flight paths, presented in the 2016 EIS, demonstrated that WSI could operate safely and efficiently in the Sydney Basin. It is acknowledged that the Airport Plan and 2016 EIS did identify that WSI and Sydney (Kingsford Smith) Airport could operate independently without changes to Sydney (Kingsford Smith) Airport flight paths. However, the 'proof of concept' did not present a comprehensive airspace and air route design and it did not consider all the essential components that would be necessary to implement an air traffic management plan for the Sydney Basin as a whole.

Figures in the Draft EIS that depict the existing flight paths that are subject to change show the nominal backbone (centreline) of the flight path and are based on an average of radar plotted flight tracks associated with a particular procedure. This has been sourced from Airservices Australia's Noise and Flight Path Monitoring System (NFPMS) from Year 2019. Where relevant, flight path corridors are also depicted which show the actual dispersion of flights again based on radar data.

8.2.2 Runway 25

8.2.2.1 Issue raised

Raised by

Community

Issue

Submissions commented on the current and/or expected use changes to Runway 25 SIDs, specifically that:

- Runway 25 is over-utilised as the north-south runways (Runways 16/34) are not used once winds are 20 knots (37 km per hour) and above. Runway 25 should only be used when crosswind on Runway 16/34 is 30 knots (56 km per hour) or above
- the suggested frequency of use of Runway 25 had not considered the influence of prevailing winds
- the use of Runway 25 is unpredictable, meaning people cannot adjust their plans to avoid the area when this runway is in use.

Other submissions made comment on the proposed changes to the Runway 25 SIDs, specifically that flight paths should not be concentrated above a single area and that:

- aircraft turning to the right should be delayed until aircraft are above 3,000 ft (914 m). This would minimise impacts over Wolli Creek Regional Park and/or at residences when aircraft turn at 1,500 ft (457 m)
- aircraft with western and north-western destinations should continue south-west on the existing flight path, rather than turning north-west to avoid more densely populated areas. In making this point, submissions stated that there no technical reasons why aircraft cannot continue to fly directly over WSI as these movements can be coordinated. It was also noted that WSI flight paths are proposed to pass over Sydney (Kingsford Smith) Airport).

8.2.2.2 Response

Runway 25 is typically in use for less than 4 per cent of the year and is normally used as part of a noise sharing runway mode or when westerly winds are of such strength that the crosswind on the main runways are above 20 knots (37 km per hour). The use of Runway 25 for a full day is dependent on strong westerly winds which are infrequent. In the event that Runway 25 is in use on a representative weekday for an entire day (and based on the 2019 data):

- approximately 47 aircraft movements to the west are expected to occur on the proposed KADOM SID
- approximately 25 aircraft movements to the north-west are expected to occur on the proposed RICHMOND SID
- approximately 96 aircraft movements to the north and east are expected to occur on the proposed SHORE SID. Of these, around 50 per cent of these movements would initially continue to be radar vectored once aircraft have reached proposed new waypoint NB010 and would be dispersed over the north-eastern suburbs. As aircraft movement numbers grow over time the percentage of radar vectoring on this procedure may reduce.

It is acknowledged that for the suburbs that are overflown by a common segment to waypoint NB010 on the proposed SIDs, around 168 aircraft movements in total would occur on a representative weekday if Runway 25 is in use for an entire day. While this would represent a change to some communities, Runway 25 is typically only in use for less than 4 per cent of the year.

The current flight path track from Runway 25 for southern departures (as depicted in Figure 8.3 of the Draft EIS) would remain unchanged.

Any adjustments to the Sydney (Kingsford Smith) Airport runway mode allocations and noise sharing arrangements is not within the scope of the Draft EIS. This includes the frequency of runway use or runway modes of operation.

The proposed Runway 25 procedures for western and north-western departures would continue to follow the existing SID flight path and nominal backbone track until reaching 1,500 ft (457 m). At this point, the new KADOM and RICHMOND SIDs do require a right turn. It is not possible for these flights to continue further westwards to a higher altitude before turning right as there would be insufficient safe separation assurance with aircraft on multiple WSI flight paths that pass above or below at lower or higher altitudes.

The proposed turn at 1,500 ft (457 m) with a then direct track to proposed waypoint NB010 is designed to ensure lateral procedural separation with all proposed WSI flight paths, ensuring safety by design outcomes.

The ability to disperse flights across a wider area beyond what has been proposed is not possible due to safety and the available airspace as well as the frequency and density of aircraft operations in the Sydney Basin airspace. This includes maintaining safe separation standards for all aircraft associated with WSI, Sydney (Kingsford Smith), the RAAF Base Richmond, RAAF Base Williamtown, Bankstown and Camden airports, and transiting flights.

8.2.3 Runway 34L

8.2.3.1 Issue raised

Raised by

Community, Bayside Council, Homebush Residents Group Inc, Inner West Residents and Mums Group

Issue

Specific issues raised by submissions on changes to Runway 34L SIDs included:

- request to reconsider the proposed changes to eastbound departures. Submissions questioned why aircraft are directed to the north-west before turning east. It was noted that the changes to eastbound departures would result in a concentration of flights above communities that are already subject to westbound and southbound departures
- recommendation to keep flight paths separated as distinct tracks to minimise the concentration of impacts
- concern that the backbone of the flight path had been moved away from industrial areas and would result in increased overflight of areas that have not received insulation support.

8.2.3.2 Response

The use of Runway 34L for departures typically occurs approximately 45 per cent of the year (based on the 2019 data) with:

- around 30 aircraft movements are expected to use this procedure for eastern departures (KADOM to SHORE SID) on a typical busy weekday when Runway 34L is being used
- around 80 aircraft movements are expected to use this procedure for western departures (KADOM SID) on a typical busy weekday when Runway 34L is being used. Typical aircraft altitudes would be similar to current operations with some new fixed requirements at proposed new waypoints that may result in aircraft being at a slightly higher altitude than current operations
- around 47 aircraft movements are expected to use this procedure for northern departures (RICHMOND SID) on a typical busy weekday when Runway 34L is being used. Typical aircraft altitudes would be similar to current operations with some new fixed requirements at proposed new waypoints that may result in aircraft being at a slightly higher altitude than current operations.

The southern flight path has very limited use and typically only involves one or 2 flights per busy weekday when Runway 34L is being used.

The revised SIDs are required to maintain safe lateral and vertical separation with WSI flight paths. This involves minor tracking changes and inclusion of new waypoints to allow defined altitude climb requirements to be established at known positions to ensure 'Safety by Design' separation assurance with both arrivals and departures at WSI, including those for eastbound departures. The backbone of the eastern and western flight paths (to new waypoint NB010) has been designed to closely match the existing flight path currently in place for western departures (KADOM SID).

Departing aircraft travelling to the east from Runway 34L currently depart to the north-west, and then are radar vectored by air traffic control, which means that aircraft currently fly a wide variety of tracks over the northern suburbs of Sydney. This practice is expected to continue within the extensive radar vectoring area over the northern suburbs in addition to an extension to the west as depicted in Figure 8.5 of the Draft EIS. However, it is acknowledged that the change in procedure required by instrument flight path design standards (KADOM to SHORE SID) has positioned the flight path backbone further to the west and would follow the existing Runway 34L flight path to the west (KADOM SID) to Waypoint NB010.

The changes to Sydney (Kingsford Smith) Airport and the impacts are beyond the reach of the current ANEF contours. The concerns about impacts to the ANEF and/or impacts in areas that were not subject to insulation support under the previous scheme for Sydney (Kingsford Smith) Airport are discussed in Chapter 20 (Facilitated impacts) of this Submissions Report.

The adjustments to the RICHMOND SID replicate the existing SID as far as possible while maintaining safe separation from WSI northern arrivals. This means that after take-off the proposed SID maintains the first turn at 1,500 ft (457 m) and the new waypoint NB013 has been designed to maintain the dispersion of aircraft as long as possible. These procedures set an altitude restriction to ensure that aircraft on this procedure are above 6,000 ft (1.8 km) but below 11,000 ft (3.4 km) where the flight path crosses the WSI arrival flight paths.

The adjustments to the KADOM SID replicate the existing SID as far as possible while maintaining safe separation from WSI northern arrivals. This means that after take-off the proposed SID maintains the first turn at 800 ft (244 m) and the proposed new waypoint NB010 has been designed to maintain the dispersion of aircraft for as long as possible. These procedures set an altitude restriction to ensure that aircraft on this procedure are above 6,000 ft (1.8 km) where the flight path crosses the WSI arrival flight paths.

By maintaining a 1,200 ft (366 m) turn for the KADOM SID and a 1,500 ft (457 m) turn for the Richmond SID, the track dispersion is maintained in the initial phase of flight.

8.3 Bankstown Airport

8.3.1 General

8.3.1.1 Issue raised

Raised by

Community, Cumberland City Council

Issue

Submissions objected or raised concerned that changes to Bankstown Airport would result in flights at lower altitudes and increased impacts. Submissions noted that it was difficult to understand the proposed changes to the flight paths and how these changes would be experienced.

Submissions raised additional concerns relating to the proposed changes to Bankstown Airport. Specifically:

- the Bankstown Control Area (CTA) currently requires a common entry and exit direction due to existing constraints to the CTA, and that the changes to the flight paths and airspace would result in the existing convergence points becoming a 'pinch point' for Bankstown Airport. This would increase safety risk for aircraft
- safety concerns over the proposed required navigation performance (RNP) approaches to Bankstown as it has multiple course changes in very short legs and that this would increase the number of missed approaches
- the Draft EIS does not outline flight assessment priorities for Bankstown Airport traffic through Class C airspace. In raising this issue, the submission criticised the current application and requested that the priority order is confirmed
- queried why a direct IFR route is not provided for aircraft originating from the west (waypoint KADOM) to Bankstown Airport.

8.3.1.2 Response

Although care has been taken to minimise the impacts to general aviation – activities in the Sydney Basin and to maintain safe and equitable access, it is acknowledged that the implementation of the WSI airspace would have an impact on certain general aviation activities.

As the WSI flight paths reduces the airspace available to the west of Bankstown Airport, some changes to how aircraft operate in controlled and uncontrolled airspace to and from Bankstown Airport are required. This does include the adjustment and/or formalisation of current IFR movements into standard flight path procedures, including SIDs, STARs and new instrument approaches (RNP). These are described in Section 8.3.2 of the Draft EIS and depicted in Figure 8.13 to Figure 8.16 of the Draft EIS. The procedures provide for 'Safety by Design' outcomes and the changes have been minimised as much as possible as required by Condition 16 of the Airport Plan.

Bankstown Airport currently handles on average around 700 flight movements per day (based on 2019 data). Around 145 movements per day are expected to operate under IFR, comprising:

- turbo-prop and jet aircraft (38 movements), which would consistently operate under IFR
- all twin-engine aircraft movements and around 10 per cent of single-engine aircraft could also operate and train under IFR.

Most of the areas overflown by the proposed procedures are already frequently overflown by both IFR and Visual Flight Rules (VFR) flights associated with Bankstown Airport. However, it is acknowledged that these changes would result in an increased frequency and some concentration of overflight by aircraft arriving to and from Bankstown Airport using these procedures, particularly in the final approach phase of arriving aircraft. Further, it is acknowledged that aircraft close to Bankstown Airport would be flying at relatively low and similar altitudes to current activity. Some dispersion of these flights could occur as departing aircraft may still be radar vectored.

Noise generated by aircraft varies according to the various phases of flight, and varies between aircraft type or other factors such as pilot technique, meteorological conditions or lateral distance between the on-ground receiver and the aircraft. Due to high variability in potential noise levels from the different operating aircraft types, the Draft EIS has presented the predicted average noise levels that represent different aircraft types at different phases of flight and altitude.

A set of noise abatement procedures are in place at Bankstown Airport, which detail the preferred runway and circuit directions, and limitations during the day and night time periods. The airport also has a voluntary Fly Neighbourly Procedures Program. This program assists in managing noise-related airport issues for fixed-wing aircraft and helicopters, as well as on-ground noise sources. It is expected that this would continue to apply.

The current and future application of flight assessment priorities inside Class C Airspace is a matter for Airservices Australia and not within the scope of the Draft EIS.

The proposed IFR RNP approaches have been designed to comply with instrument flight path design standards.

A proposed low-altitude flight path that enables general aviation using IFR to transit overhead WSI to and from Bankstown Airport at 4,000 ft (1.2 km) and above has been identified and is depicted in Figure 8.2 of Appendix J of Technical paper 13: Facilitated changes (Technical paper 13). This is in addition to the proposed western STAR/RNP approach to Bankstown Airport via waypoint RAKSO. The precise location of the low altitude transit flight path would be finalised following an evaluation of the final detailed design of WSI flight paths with consideration of safety and environmental matters. Aircraft can also request a clearance from air traffic control to enter controlled airspace. Flight routes over WSI will be available to IFR aircraft based on traffic disposition and air traffic control workload, as they are at other Australian airports with similar movement numbers.

8.4 Camden Airport

8.4.1 General

8.4.1.1 Issue raised

Raised by

Community, Camden Council

Issue

Submissions objected or raised concerns about the changes to Camden Airport. Submissions stated that it did not provide sufficient information on how Camden Airport would function because of the changes.

8.4.1.2 Response

Although care has been taken to minimise the impacts to general aviation activities in the Sydney Basin and to maintain safe and equitable access to the Sydney Basin, it is acknowledged that the implementation of the WSI airspace would have an impact on certain general aviation operations.

In the case of current Camden Airport operations, the following operations would not change as a result of the project:

- operations inside the Camden Airport control zone for IFR and VFR aircraft, including circuit training
- the RNP Approach final track for IFR aircraft
- the initial tracking of IFR departures.

However, some adjustments are required for IFR aircraft arrivals to Camden Airport to deliver a 'Safety by Design' outcome following the introduction of WSI flight paths and airspace. Changes would occur to VFR routes and gliding activities beyond the Camden Airport control zone as well as a reduction in the lateral dimensions of the flight training areas to the north and west of Camden Airport. Submissions concerning these changes have been responded to in Section 8.5 of this Submissions Report.

A very small number of IFR aircraft operate to and from Camden Airport. In 2019, an average of only 10 of the 265 daily average movements from Camden Airport were IFR aircraft, and annual growth in aircraft movements at the airport is estimated to be less than one per cent. For these limited number of IFR movements, the following changes are required:

- departing aircraft travelling to the north and north-west would need to avoid the controlled airspace for WSI once aircraft have left the Camden Airport control zone (CTR) (if remaining within uncontrolled airspace). The procedures for remaining in uncontrolled airspace and accessing the CTA at a later stage of flight would remain the same
- new STARs for IFR aircraft arriving from the east, north and west would be implemented. However, if conditions allow for visual flight, arrival aircraft may manage their own tracking via visual fixes as per the current procedures. These areas are already frequently overflown with similar aircraft undertaking both IFR and VFR flights
- the altitude of the IFR approach from the south-west and the south would be adjusted so that aircraft would be at 4,500 ft (1.4 km) as opposed to current practice where aircraft are at or above 5,400 ft (1.6 km)
- a minor change to waypoints near Lake Burragorang, which would shift the intermediate leg of the approach slightly further south. However, the final approach path over developed areas would remain the same.

The lateral and vertical dimensions of the Camden Airport CTR may change to maintain safety levels, however, any such change would be subject to separate assessment.

8.5 Visual Flight Rule aircraft changes

8.5.1 New airspace boundary changes

8.5.1.1 Issue raised

Raised by

Community, Aeria Management Group, Air Spurzen Pty Ltd, Australian Aerobatic Academy, Air Sport Australia Confederation, CFI Bathurst Soaring Club, Gliding Australia, Gliding NSW, NSW Small Business Commission, Southern Cross Gliding Club, Sydney Gliding, Sydney Recreational Flying Club

Issue

Submissions raised concern or objections to the proposed airspace design for other airports in the Sydney Basin due to the impact on general aviation generally, or due to impacts on specific user groups such as gliders, recreational aviation and sports aviation. Submissions stated that adjustments are required to maintain an equitable access to the Sydney Basin airspace, and/or that a comprehensive review of the Sydney Basin is required to address these concerns. This included the request for a tailored risk management approach to allocate specific pockets of airspace for different users.

The submissions often also referred to detail provided in a separate industry briefing paper released by Airservices Australia in December 2024, titled *Proposed changes to general aviation operations in the Sydney Basin in support of the new Western Sydney International (Nancy-Bird Walton) Airport* (Airservices Australia, 2023a). This included objection or concern with:

- changes to airspace classification or lower levels, specifically the creation of a Class D airspace and the changes to the Class G airspace
- safety concerns with increased congestion along corridors and pinch points for some general aviation users
- additional equipment and financial demands placed on general aviation to operate within the proposed airspace
- the mandatory requirements for pilots to submit flight plans because of these changes
- additional training requirements to safely conduct operations in the proposed D airspace
- detail provided in the industry briefing paper, and timeframes for comment.

Submissions stated that the additional procedural requirements will make it difficult for small and medium aviation companies at Bankstown Airport to operate, with submissions commenting that flight training and recreational flights would need to be relocated to Camden Airport.

Submissions requested a review of the new airspace to allow for easier and better access for VFR aircraft, as the proposed VFR lane south to north through the proposed new controlled airspace would require air traffic control clearance, a submitted flight plan and appropriate equipment (transponder). There is concern that pilots with a RAAus Pilot Licence would lose access to any airspace to the north of The Oakes as they are currently not permitted to fly into controlled airspace.

A review of the lower level (LL) of the airspace south of The Oaks Airport and Camden Airport was requested to address concerns about increased congestion.

Submissions also expressed concern that there was uncertainty on the equipment requirements for the future airspace, and that the current rebate offered by the Australian Government would not be available for individuals or companies to seek compensation for increased equipment costs (for example, radar surveillance requirement), as this expires in May 2024. Submissions also stated that some operators would prefer not to install additional safety equipment unnecessarily due to weight implications to aircraft, that some aircraft cannot be retrofitted, and/or that some cannot afford these costs (irrespective if a rebate is available).

8.5.1.2 Response

Although care has been taken to minimise the impacts to general aviation activities in the Sydney Basin, such as flight training and gliding, it is acknowledged that the implementation of the WSI airspace would have an impact.

The changes for aircraft operating under both VFR and IFR in the Sydney Basin as described in the Draft EIS are necessary to safely segregate general aviation operations with WSI operations while maintaining access to all airports. The changes include new and adjusted procedures for VFR and IFR aircraft, new and modified VFR routes and IFR waypoints and adjusted transit routes for enroute aircraft.

Comments related to associated airspace changes described in Airservices Australia's *Proposed changes to general aviation operations in the Sydney Basin in support of the new Western Sydney International (Nancy-Bird Walton) Airport* have been noted (Airservices Australia, 2023a). This industry briefing paper includes additional airspace changes in support of continued safe aircraft operations in the Sydney Basin. These changes have been consulted via the Civil Aviation Safety Authority's (CASA) Aviation State Engagement Forum. The timing for the implementation of these changes is subject to the completion of this process and is not within the scope of the Draft EIS.

A broader review of the Sydney Basin airspace is beyond the scope of the Draft EIS. A response to submissions concerning the development process the proposed flight paths is discussed in Chapter 6 (Project development and alternatives) of this Submissions Report.

8.5.2 VFR routes

8.5.2.1 Issue raised

Raised by

Community, Aeria Management Group, Air Spurzen Pty Ltd, Australian Aerobatic Academy, Gliding Australia, NSW Small Business Commission, Southern Cross Gliding Club, Sydney Gliding, Sydney Recreational Flying Club

Issue

General

Submissions made comment or raised concern with the proposed VFR routes identified in the Draft EIS.

Submissions raised safety concerns for general aviation aircraft travelling to or from the west due to the changes to the CTA steps from Lithgow to Katoomba and into the Sydney Basin. Submissions states that there would be an increased safety risk due to the impact of combination of high terrain, the controlled airspace steps, weather conditions, and lack of forced landing locations for single engine aircraft.

Submissions stated that the CTA is currently at 8,500 ft (2.6 km) to 4,500 ft (1.4 km) over this area and would be lowered to 5,500 ft (1.7 km) and 3,500 ft (1.1 km). The submissions stated that had raised concerns that general aviation aircraft would be placed at altitudes with challenging turbulence, that the changes force 'scud running' between low cloud and the ground, and that this limits the ability for general aviation aircraft to glide to a landing area.

Submissions expressed concern that the Draft EIS does not provide guidance on VFR operations associated with Bankstown and Camden Airports at night, and more detail is requested to outline how this will be managed. Submissions were specifically interested in how this would be applied across Class C airspace to ensure sufficient terrain clearance. It was suggested that flight paths using Class C airspace should be separated to minimise the involvement of the Air Traffic Control.

Conflict with routes near Bankstown Airport

Submissions raised safety concerns with respect to the routes, specifically:

- the overlapping routes of the northern and north western transit lanes in the Bankstown area would require safety mitigation, such as altitude separation
- the south west VFR arrival and departure routes are in opposite directions to northern and north-western routes and are contrary to the current lane of entry for Bankstown Airport, which requires aircraft are generally required to keep to the right.

Overflight of WSI

It was questioned why the VFR and IFR overflight of WSI for flights to/from Bankstown Airport would be limited to emergency aircraft. It was suggested that these procedures should be available to all aircraft. An example of procedures above the Los Angeles International Airport (LAX) was provided.

Bankstown Airport Southeast VFR Corridor

It was also requested that the proposed Bankstown Airport Southeast VFR Corridor (formerly known as the Engadine Corridor transit route) is delivered as soon as practicable. This was identified as an important initiative to address current and ongoing safety risks within and adjacent to the Bankstown Airport control area, and to provide some assistance to flight training schools that would be impacted by the proposed facilitated changes. It was requested that the Australian Government, CASA and Airservices Australia commit to a formal process and timeline for consideration, determination and delivery of this proposed corridor prior to 2026.

8.5.2.2 Response

General

The WSI airspace and flight paths have been designed to reserve the minimum airspace possible while continuing to adhere to the design principles of safety, efficiency and minimisation of environmental impacts. Wherever possible, changes and additions to controlled airspace volumes have been minimised to the greatest extent possible while safely containing aircraft operations.

Changes to the Sydney Basin airspace were designed to provide safe aircraft operations, enabling the new flight paths and instrument procedures to service WSI. It is acknowledged these changes impact existing light aircraft flight operations. If required, an aircraft can request clearance into controlled airspace for the safe operation of flight or utilise alternative flight routes around the new airspace.

Providing VFR night time operations utilise the proposed new access corridors, remain clear of Class C Airspace, or obtain an air traffic control clearance to enter Class C Airspace, procedures will remain as they currently are, and remain consistent with VFR day operations.

Conflict with routes near Bankstown Airport

It is recognised that CTA lower-level boundaries constrain Class G operations to the north of Bankstown Airport. General aviation access routes in this area will require further refinement and resolution as part of the airspace design finalisation process to ensure safe separation standards.

The direction of the northern general aviation corridor is expected to remain the same as the current practice. The direction of the south western general aviation corridor is expected to change with aircraft arriving into Bankstown from the west and departing to the south west via VFR waypoint 2RN (a reversal of the current practice). The new western corridors between WSI and RAAF Base Richmond are the exception and have been established using a prominent visual navigation fix (refer to Technical paper 13 at Appendix I: Proposed changes to Sydney Basin VFR operations, Chapter 6 and Figure 6.1).

Overflight of WSI

VFR operations around the WSI would be facilitated via new dedicated VFR routes. Aircraft can also request a clearance from air traffic control to enter controlled airspace and flight routes over WSI will be available to all aircraft. Similar to any other Australian airport with similar movement numbers, any such access would be based on traffic disposition and air traffic control workload.

Dedicated VFR routes that fly directly over an airport are not available at any major city in Australia. The LAX Special VFR route identified in submissions utilises an airspace classification that does not exist in Australia. Procedures implemented by other international organisations are not within the scope of the Draft EIS.

Bankstown Airport Southeast VFR Corridor

The Bankstown Airport Southeast VFR Corridor (formerly known as the Engadine Corridor transit route) is a parallel project that was identified in the *Proposed changes to general aviation operations in the Sydney Basin in support of the new Western Sydney International (Nancy-Bird Walton) Airport*. This is beyond the scope of the Draft EIS. As identified in the industry briefing paper, CASA is analysing whether this corridor is feasible. If feasible, it would be expected to be operational prior to the opening of WSI in late 2026.

8.5.3 Gliding

8.5.3.1 Issue raised

Raised by

Community, NSW Hang-gliding and Paragliding Association, Gliding Australia, Gliding NSW, Southern Cross Gliding Club, Sports Aviation Federation of Australia, Sydney Gliding

Issue

Submissions made raised specific concerns or objections to changes that have implications on gliding activities in the Sydney Basin and beyond. Submissions identified that gliding provides training for pilots who contribute to the broader aviation sector.

For gliding activities associated with Camden Airport and within south-west Sydney, submissions expressed concern that this would impact the viability of gliding activities and stated that:

- the height of Class G airspace accessible from Camden CTR and to the south west, south and south-east should remain at 7,500 ft (2.3 km) to accommodate diverse users efficiently as the lowering of the maximum height could lead to airspace congestion and the risk of mid-air collision, and would impact training for gliding, GA, helicopters, RAAus, Sports Aviation and emergency services
- at least 4000 ft (1.1 km) AGL must be maintained for spin training in the Camden CTR for gliders, identifying that spin training requires at least 4,000 ft (1.2 km) AGL and that spin training is a mandatory component of Glider Pilot Certificate training and flight reviews
- the changes would impact areas available for outlanding (off-field landing) practice. Submissions identified that access to The Oaks and Wedderburn airports for gliding activity from Camden Airport would be impacted. It was stated that this access is critical for training.

Other submissions expressed concern with the impacts to gliding activities from Mount Blackheath. Submissions outlined distances and altitude of current gliding activities, including climbs to 12,500 ft (3.8 km) in extending between 1–3 nm (2–5 km) from the launch site, or longer cross-country flights up to 12,500 ft (3.8 km), extending for 7 hours or more to the west and north west of Mount Blackheath. These flights extend to Class G and E airspace. Lower and more local flights also occur in the winter months (up to 5000 ft (1.5 km)). A submission stated that this location is the main thermic site closest to the Sydney Basin and is a key site for pilots to gain currency in flying in thermals.

Submissions expressed concern that:

- the proposed Class C Lower Limit of 5,500 ft (1.7 km) at Blackheath would impact the ability to fly at least 3 types of flights currently occurring at Mount Blackheath, and the ability to conduct cross-county flights as the limit to 5,500 ft (1.7 km) would make it impossible to leave the launch area
- the lowering of Class C would limit the Mount Blackheath site to winter ridge soaring operations and would adversely impact gilders who use this site.

Submissions requested adjustments to the airspace classification, flight paths or creation of protocols to address the impacts to local and cross-country flights conducted from Mount Blackheath and to provide fair and equitable airspace access.

8.5.3.2 Response

Although care has been taken to minimise impact to general aviation activities, such as gliding operations in the Sydney Basin, the Australian Government understands that implementation of WSI airspace would have an impact on some gliding activities.

Gliding activities including outlanding practice should continue to be available above the Oaks and Wedderburn airstrips as the intended base of Class C airspace remains at 4,500 ft (1.4 km) in this vicinity.

Spin training above the Camden Airport control zone should continue to be available as the intended base of Class C airspace is 4,500 ft (1.4 km) in this vicinity.

Class G airspace has historically only been accessible to 7,500 ft (2.3 km) above Danger Area 552, located to the south-west of Camden Airport. It is proposed that Class G airspace to 7,500 ft (2.3 km) will only be available above the southern half of Danger Area 552 in response to the requirements of WSI operations.

Members of the gliding community may apply to CASA to establish airspace for their operations. This can be achieved by following CASA's Office of Airspace Regulation (OAR) airspace change process. However, due to the airspace volume requirements for gliding activities, it is not expected that gliding would continue to be available to the same extent in the same locations as they currently occur.

8.5.4 Changes to flying training areas

8.5.4.1 Issue raised

Raised by

Community, Aeria Management Group, Australian Aerobatic Academy, Air Sport Australia Confederation, Sydney Recreational Flying Club, Sydney Gliding

Issue

Submissions raised objections or concerns about the impacts to flight training areas such as changes to altitudes or locations of flight training areas because of the introduction of WSI flight paths. Key concerns raised by submissions noted increased barriers and risks for training activities, which could result in reduced accessibility and viability of training activities. Submissions stated that this would have implications to airport operators and businesses, and the development of pilots in the future. The key concerns included:

- risk of collision due to increased ground elevation and topographic features in the proposed training areas
- risk of collision between training aircraft and commercial aircraft
- increased congestion in training areas, particularly noting the areas above and to the south of The Oaks and Camden Airport
- insufficient minimum height limits for training exercises. For example, it was stated that restrictions of 1,500 ft (457 m) for parts of the southern possible training area would be insufficient
- increased time and costs incurred by training flights to travel to the proposed training areas
- reduced training hours due to weather impacts in the southern training area
- lack of forced landing areas.

It was also suggested that the RAAF Base Richmond CTR should be reduced to the south and replaced with a civil flying training area in Class G airspace, based on the view that parachuting operations should be conducted elsewhere in recognition that Defence has other options to conduct these activities whereas Bankstown Airport operators do not.

Submissions referred also to the detail provided in a separate industry briefing paper released by Airservices Australia in December 2024, titled *Proposed changes to general aviation operations in the Sydney Basin in support of the new Western Sydney International (Nancy-Bird Walton) Airport* (Airservices Australia, 2023a). One submission stated that the identification of the residual flight training area directly west of Bankstown Airport in the Draft EIS was misleading given the restrictions associated with Class D airspace as described in the industry briefing paper.

It was also questioned how ILS training would be impacted in the Sydney Basin because of the introduction of the WSI flight paths and other airspace changes. It was requested that ILS training for Bankstown operators at WSI, Sydney (Kingsford Smith) Airport and/or RAAF Base Richmond should be assured.

8.5.4.2 Response

The WSI airspace and flight paths have been designed to reserve the minimum airspace possible while continuing to adhere to the design principles of safety, efficiency and minimisation of environmental impacts. CTA volumes have been minimised to the greatest extent possible while safely containing aircraft operations.

Although care has been taken to minimise impact to general aviation activities, such as flight training in the vicinity of WSI, the Australian Government understands that implementation of WSI flight paths would have an impact.

The Draft EIS identified the residual flight training areas, and stated that 2 possible (new) training areas located to the north-east of the RAAF Base Richmond Restricted Airspace (the northern training area) and to the south of Camden Airport (southern training area) had been identified. However the exact location and extents of these areas are subject to ongoing discussion with stakeholders, including Bankstown and Camden Airports.

The RAAF Base Richmond Restricted Airspace needs to accommodate Defences' future requirements. Further CTR airspace reductions would be inconsistent with these requirements. In accordance with the Airspace Design Principles (DITRDC, 2021a), airspace restrictions associated with military establishments will be reviewed to improve efficiency and environmental impacts from commercial operations, while meeting Australia's future defence requirements. Defence has been extensively involved in the development of the WSI flight path design.

Airservices Australia's *Proposed changes to general aviation operations in the Sydney Basin in support of the new Western Sydney International (Nancy-Bird Walton) Airport* depicted the 2 possible new training areas for use by the local general aviation community (Airservices Australia, 2023a). These possible training areas have been the subject of consultation by Aeria Management Group, the owners of Bankstown and Camden Airports, who have committed to working with the local general aviation community to refine the details of these areas and have them communicated in time for the opening of WSI.

Comments related to flight training areas as described in Airservices Australia's *Proposed changes to general aviation operations in the Sydney Basin in support of the new Western Sydney International (Nancy-Bird Walton) Airport* have been noted (Airservices Australia, 2023a). This industry briefing paper includes additional airspace changes in support of continued safe aircraft operations in the Sydney Basin. These changes have been consulted via CASA's Aviation State Engagement Forum (AvSEF). The timing for implementation of these changes is subject to completion of this process.

The issue of ILS training availability into the future was not within the scope of the Draft EIS and would be an issue for the individual airport facility owners in conjunction with air traffic control.

8.5.5 Air traffic control

Raised by

Community, Aeria Management Group, CFI Bathurst Soaring Club

Issue

Submissions questioned if air traffic control would be able to provide clearance to a VFR aircraft in the proposed airspace, either in Class C or Class G airspace (or above), noting current staffing constraints at Airservices Australia. It was suggested that providing the ability to manage VFR aircraft in Class C airspace in the Sydney Basin would be preferable.

Other submissions identified current delays in the provision of air traffic control services and concerns that this would increase. This was attributed to the resourcing constraints within Airservices Australia, the separation requirements for IFR aircraft within the Bankstown Airport control area, the increased complexity of the airspace regulations and requirements and/or the expected increase in aircraft movements and congestion.

Submissions requested provision of efficient and fit-for-purpose air traffic control services and control tower operational hours at Bankstown and Camden Airports.

8.5.5.1 Response

Clearances to VFR aircraft are expected to be provided, dependent on traffic disposition and air traffic control workload.

The provision of air traffic control services is a matter for Airservices Australia as the air navigation service provider (ANSP) and not within the scope of the Draft EIS.

8.5.6 Other general aviation airports in the Sydney Basin

8.5.6.1 Issue raised

Raised by

Community, Sydney Recreational Flying Club

Issue

Submissions questioned why other general aviation airports in the Sydney Basin, such as The Oaks Airport, were not considered in the Draft EIS. One submission criticised the exclusion of all aircraft movements within 46 nautical miles (nm) (or 85 km) of WSI when considering safety risks, such as those operating at The Oaks, Wedderburn and Wilton airports.

Submissions questioned why the Common Traffic Advisory Frequency (CTAF) boundaries associated with the Wedderburn and The Oaks airports were not identified in the Draft EIS. In doing so, submissions raised concern with the conflicts with the proposed airspace changes (such as flight training areas) with the CTAF boundaries of these airports.

8.5.6.2 Response

The various unlicenced airfields within the study area which are limited to daytime VFR operations with no specific instrument flight procedures or VFR routes in and out, are not directly impacted by the WSI airspace and flight path design. VFR access to all unlicenced private airfields will continue to be available where possible. General aviation operators have been widely consulted and CASA will consider this access regime during detailed design

The comments concerning conflicts with The Oaks operations are noted. CASA would consider any potential airspace conflicts to the proposed new southern flight training area as well as the proposed Bankstown Airport Southeast VFR corridor that would provide options for transits to the north and south during detailed design.

8.6 RAAF Base Richmond

8.6.1 General

8.6.1.1 Issue raised

Raised by

Community

Issue

A submission queried if changes to the RAAF Base Richmond to accommodate WSI can be avoided. Another questioned if changes to the training flight paths for the RAAF Base Richmond were being considered.

8.6.1.2 Response

While the Australian Government has made effort to minimise changes to the RAAF Richmond Base as a result of the introduction of the WSI flight paths and airspace, some changes are required to the arrival and departure procedures for RAAF Base Richmond flight paths to ensure future separation to the WSI flight paths. However, these changes do not involve any amendments to the RAAF Base Richmond Restricted Airspace, the final approach paths to either end of Runway 10/28, the initial departure track or the local noise preferred procedures for aircraft flying the SID.

The proposed changes to RAAF Base Richmond flight paths involve:

- 3 new STARs for arrivals from the north and west to position aircraft at the commencement of the existing approach paths for the base. These closely replicate how aircraft are currently processed and the STARs are well north or west of the Sydney Basin
- a new STAR for arrivals from the east to position aircraft to the existing approach path. This STAR would bring aircraft at a high altitude from the oceanic enroute airspace route to pass across the southern part of the Sydney Basin and into the RAAF Richmond Base airspace from the south at a high altitude
- a new SID for departures with eastern and some southern coastal destinations. The new SID would require aircraft to climb within the RAAF Richmond Base Restricted Airspace and would exit the restricted airspace once above 10,000 ft (3 km). Aircraft would then track above all proposed WSI and Sydney (Kingsford Smith) Airport operations within the Sydney Basin.

Based on 2019 data, up to 15 flights per day would use the proposed SID and STARs. The area overflown by the proposed new SID and STARs is currently frequently overflown with similar aircraft undertaking both IFR and VFR flights. On this basis, it can be expected that there would be little to no material change from current operations. Further information on these changes is provided in Chapter 8 (Facilitated changes) and Appendix F of Technical paper 13 of the EIS.

The military restricted airspace that is associated with RAAF Base Richmond facilitates military training flights on a regular basis. For training purposes military pilots may operate on random paths not associated with any SID/STAR or flight planned route, and not under any radar vectors by air traffic control. This would not change because of the project.

Chapter 9 Community and stakeholder engagement

This chapter provides a response to the issues raised in submissions specific to Chapter 9 (Community and stakeholder engagement) of the Draft EIS.

Overall, submissions made comment on the level and adequacy of engagement completed prior to and during the exhibition of the Draft EIS. Submissions also made comment on the engagement completed for the facilitated changes, and questioned what engagement would occur prior to the release of the finalised EIS and during the implementation of the project.

Extensive engagement on the project has occurred during the preparation of the Draft EIS and preliminary flight path design, and following the release of the preliminary flight paths and Draft EIS. A range of different communication tools have been used and numerous engagement activities have occurred with a broad number of stakeholders and communities across the Sydney Basin. This has included the online Aircraft Overflight Noise Tool, the online Digital EIS, stakeholder briefings, community information and feedback sessions, online briefings and community information stalls. This has provided many different ways for the community to engage with the project team and obtain information on the project and the facilitated changes. The Department of Infrastructure, Regional Development, Communications and the Arts (DITRDCA) has further adapted its engagement strategy over time to incorporate feedback on the communications needs and preferences of stakeholders and the community.

Airservices Australia will continue consultation with communities and stakeholders during detailed design and implementation in accordance with Airservices Australia's Community Engagement Standards for Flight Path and Airspace Change Proposals (Airservices Australia's Community Engagement Standards) (Airservices Australia, 2023b). The current Forum on Western Sydney Airport (FOWSA) will remain the stakeholder and community representative group until the end of the detailed design for the flight paths, at which point the WSI Community Aviation Consultation Group (CACG) would be established. The CACG is expected to be established in mid-2025 and will enable community engagement on WSI operations. WSA Co will work with Airservices Australia and other key stakeholders to ensure effective engagement processes are achieved.

9.1 Submission overview

9.1.1 Number and origin of submissions

A total of 493 submissions raised matters concerning community and stakeholder engagement completed for the project. The majority of these submissions originated from the Sydney Basin and surrounds as shown in Figure 9.1.

Around 30 per cent of the 493 submissions originated from the Western City District (Blue Mountains) followed by the Western City District (excluding Blue Mountains) and the Eastern City District at 23 per cent and 19 per cent respectively.

Each of the other districts in the Sydney Basin typically represented 5 per cent or less of the submissions. Less than one per cent of the submissions originated elsewhere in NSW and interstate. Almost 16 per cent if the submissions did not supply a postcode.

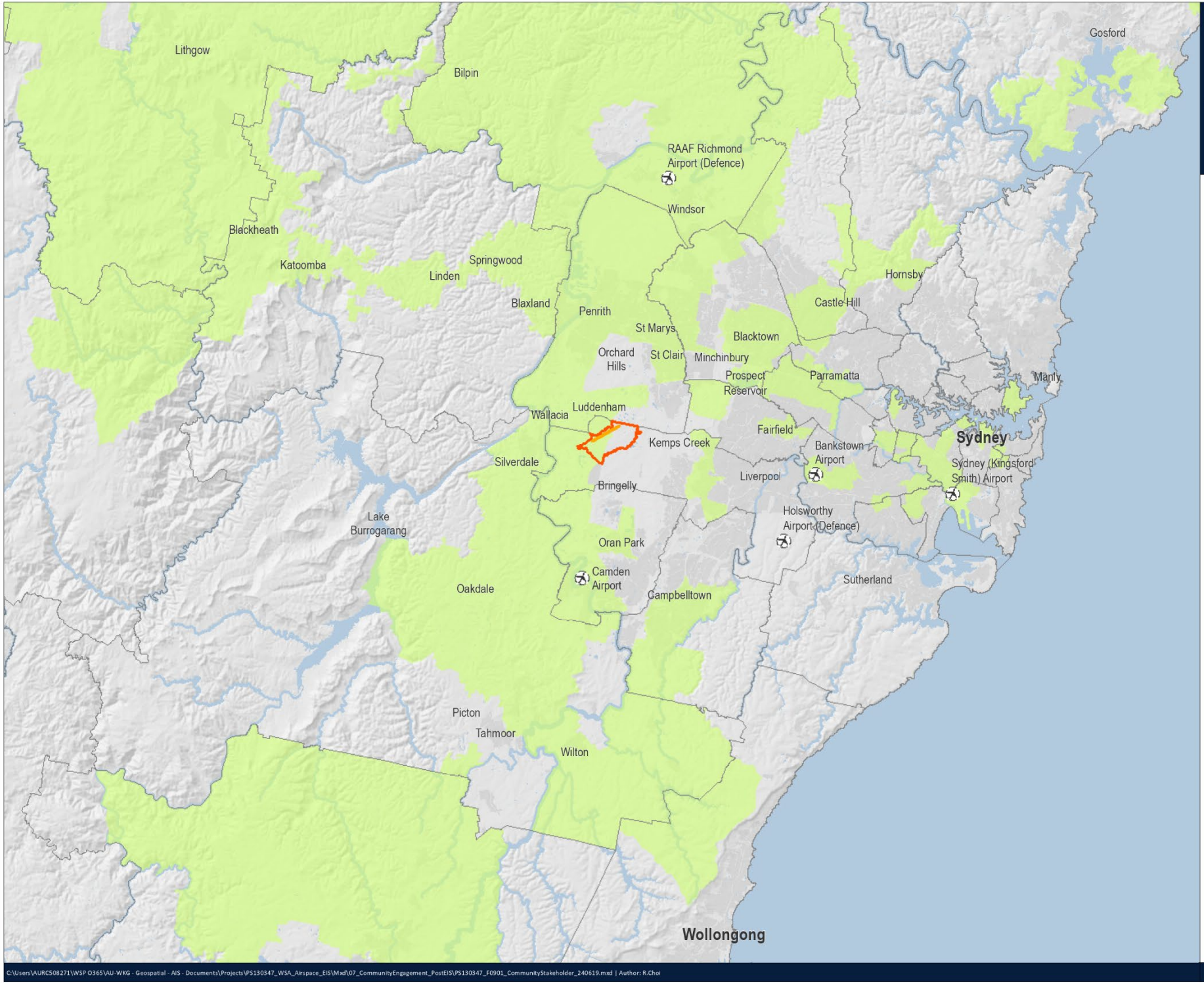


Figure 9.1

Origin of submission in relation to the community and stakeholder engagement of the project

Legend

- WSI Runway
- Western Sydney International (Nancy-Bird Walton) Airport land boundary
- Local Government Area

Number of submissions by postcode

- 1 - 50
- 51 - 100
- 101 - 150
- 151 - 200
- 201 - 250
- 251 - 300
- 301 - 350
- 351 - 400
- 401 - 450
- 451 - 500
- 501 - 550
- More than 550

0 5 10 km

Coordinate system: GDA 1994 NSW Lambert

Scale ratio correct when printed at A4

1:600,000 Date: 20/06/2024

Data sources: - DITRDC, DCS, Geoscience Australia
Esri, HERE, Garmin, (c) OpenStreetMap contributors, and the GIS user community
Airbus,USGS,NGA,NASA,CGIAR,NCEAS,NLS,OS,NMA,Geodatastyrelsen,GSA,GSI and the GIS User Community

9.1.2 Key issue breakdown

A breakdown of the sub-issues within this key issue and the percentage of total submissions that raised each of these sub-issues is outlined in Table 9.1.

Table 9.1 Breakdown of sub-issues in relation to the community and stakeholder engagement of the project

Sub-issue	Number of submissions that raised the sub-issue	Percentage of submissions that raised the sub-issue
Engagement during the preparation of the flight path design and Draft EIS	181	2%
Engagement during public exhibition of the Draft EIS	189	2%
Engagement on the facilitated changes	105	1%
Requests for further engagement	49	1%

Each sub-issue was raised more often by the Western Sydney District (Blue Mountains) closely followed by Western City District (excluding Blue Mountains), except for issues concerning engagement relating to facilitated changes. For this sub-issue, majority of the submissions originated from the Eastern City District (64 per cent). For other Sydney Basin districts, each district typically represented 15 per cent or less for each sub-issue.

Submissions from intrastate raised 5 per cent or less for each sub-issue, while interstate locations attributed less than one per cent of submissions that made comment on the engagement conducted for the facilitated changes. Up to 20 per cent of submissions in each sub-issue did not provide a location.

9.2 Engagement during the preparation of the preliminary flight path design and Draft EIS

9.2.1 Engagement Strategy

9.2.1.1 Issue raised

Raised by

Community, Camden Council, Fairfield City Council, Melissa McIntosh MP – Member for Lindsay (Federal), Wollondilly Shire Council

Issue

Submissions stated that the Airport Plan's guiding principle of engaging with the local community in determining the final flight paths has not been satisfied, that engagement did not meet ICAO (International Civil Aviation Organisation) guidance in terms of providing timely or consistent engagement, and the engagement strategy did not align with the International Association for Public Participation (IAP2). Submissions made similar statements on the Draft EIS exhibition engagement strategy.

Submissions expressed the view that the level of consultation during the design stage or Draft EIS preparation was inadequate or infrequent, and there was a lack of information distributed to the public. Submissions expressed the view that the flight paths have been imposed without any consultation.

9.2.1.2 Response

Consultation and engagement has occurred throughout the design of the preliminary flight paths and airspace.

The preliminary flight path design is guided by 12 Airspace design principles, which were developed in response to feedback received during the public exhibition of 2016 EIS and the 'proof of concept' flight paths depicted in that EIS. The design of the preliminary flight paths was overseen by an Expert Steering Group led by the DITRDCA, and including the Civil Aviation Safety Authority (CASA), Airservices Australia, Department of Defence and WSA Co Limited.

Consultation and engagement activities were developed in accordance with ICAO best practice (ICAO Circular 351-AT/194). This includes:

- developing a long-term engagement plan, commencing well ahead of the release of the preliminary flight paths and the Draft EIS
- providing an open and transparent source of information for the community as it becomes available, via the establishment of the Online Community Portal
- regularly seeking stakeholder input into the development of the Engagement Plan since 2022 (see below for a list of stakeholders consulted)
- presenting information in a range of formats and across a range of mediums to suit the communications preferences of diverse audiences. This includes letterbox drops, providing hard copies of the Draft EIS and project information at local libraries and council offices, geotargeted social media advertising, notices in local newspapers and in-person community information events. It also includes the development of an Online Community Portal with digital copies of all project information and the Draft EIS, the online Aircraft Overflight Noise Tool, and animated videos
- ensuring that the community are aware of what can and cannot be influenced during consultation.

Since 2022, consultation has been guided by an Engagement Plan (refer to Section 9.2 of the Draft EIS). The planning for engagement and awareness raising has been subject to an iterative process to incorporate feedback on the communications needs and preferences of stakeholders and the community.

This includes feedback received through:

- interviews/meetings with government and aviation stakeholders
- panel surveys with 1,011 randomly selected and representative residents within 27 nm (50 km) of the WSI site
- pulse surveys with 505 residents from within 27 nm (50 km) of the WSI site
- language-based focus groups
- community information stalls, (including a community member survey, which generated 804 responses)
- community information and feedback sessions
- briefings, meetings and interviews with key stakeholders, including elected representatives from all levels of government, council staff, State Government representative/special interest groups.

The Engagement Plan defines 6 principles which have guided engagement activities. These were developed based on feedback received from stakeholders and the community, and are aligned with the International Association for Public Participation (IAP2) Core Values and Public Participation Spectrum (IAP2 Australasia, 2019).

Figure 9.2 Engagement principles

From 2022 and building on the feedback received as part of the 2016 EIS, a range of consultation and engagement activities have been undertaken across the Sydney Basin, with the objectives to:

- build awareness and educate impacted communities and key stakeholders about the airspace and flight path design process, proposed changes and how it will impact them through information that's relevant, timely, consistent, coordinated, and accessible
- ensure impacted communities and key stakeholders understand how their feedback can influence airspace and flight path design
- ensure impacted communities and key stakeholders have felt they had the opportunity to have their say during public exhibition of the Draft EIS.

The extensive consultation and engagement activities that have occurred during this phase are detailed in Section 9.2.7 of the finalised EIS.

The Online Community Portal went live on 18 March 2023. This was regularly updated with new project information, including the time and location of upcoming community information events, copies of all current and previous project resources (including brochures and fact sheets), a virtual interactive information stall, and project team phone and email contact details for enquiries.

From 27 June 2023, the online Aircraft Overflight Noise Tool could be accessed via the Online Community Portal and provided the community with an interactive map illustrating the flight paths, and the projected aircraft altitudes and noise levels at specific locations. The online Aircraft Overflight Noise Tool release was supported by in-person community events, stakeholder briefings and supporting material in the form of brochures, videos and fact sheets.

Following the release of the Draft EIS on 24 October 2023, a Digital Draft EIS with downloadable versions of the chapters were made available on the Online Community Portal along with information on where community members could find hard copies of the Draft EIS. The Draft EIS exhibition was supported by in-person community events, landowner meetings and additional supporting material.

9.2.2 Engagement to inform the preliminary flight path design and Draft EIS preparation

9.2.2.1 Issue raised

Raised by

Community, Blue Mountains City Council, Luddenham Progress Association Inc

Issue

Flight path design

Submissions questioned whether the process to determine flight paths was open and honest. Submissions expressed concerns about the integrity of the process as described in the 2023 Draft EIS for WSI in relation to consultation on the flight path design.

Additionally, it was questioned what involvement or consultation occurred with local MPs, councillors and organisations from the impacted areas during the design process, or stated that they should have more influence in the design process.

Submissions claimed that the community, businesses, local councils and other key stakeholders have not been consulted or effectively consulted during the design process or during the preparation of the Draft EIS including at community information sessions in areas located within the N60 and N70 contours held prior to the exhibition of the Draft EIS. It was claimed that effective consultation was not conducted given the preliminary design had not been released and potential impacts were not known at this time. Submissions identified stakeholders that they considered should have been consulted or were not adequately consulted during the preparation of the Draft EIS. This included such as the NSW Minister for Sport, the NSW Environment Protection Authority, Western Sydney Amateur Astronomy Group (WSAAG), schools and its communities, and community sports clubs. Submissions stated that stakeholders listed in Chapter 9 of the Draft EIS shows an underrepresentation of certain stakeholder groups, such as those from the full range of educational and health facilities.

Submissions stated that consultation over the past decade has not addressed noise and flight paths concerns (such as those raised in response to the 2016 EIS), and only focussed on good news from WSI rather than the impacts.

Consultation with First Nations

Submissions questioned whether Traditional Owners or Indigenous stakeholders have been consulted during the preparation of the proposed flight path design or Draft EIS, whether their concerns have been ignored and if the project meets the broader management agreements.

UNESCO engagement

Submissions stated that UNESCO World Heritage Committee has not been consulted during the preparation of the Draft EIS and that the finalised EIS must include the outcomes of this engagement to inform the assessment on the Greater Blue Mountains World Heritage Area.

9.2.2.2 Response

Flight path design

One of the main objectives of the EIS process is to listen to the concerns of people and communities that will be impacted by the flight paths for WSI.

In order to ensure that community members are provided with ample time to understand and comment on the preliminary flight paths, the preliminary flight path routes and the associated noise contours were released through the online Aircraft Overflight Noise Tool, which was accessible via the Online Community Portal from 27 June 2023. This was well ahead of the release of the Draft EIS on 24 October 2023.

This tool provided highly-localised and relevant information for residents to understand the anticipated overflight movements and altitude for a chosen location, and the associated aircraft noise impacts. It also provided the ability to view 3D visualisations for each flight path.

Consultation with key stakeholders was ongoing throughout the design of the preliminary flight paths. This continued following the release of the preliminary flight paths for WSI and during the exhibition of the Draft EIS.

The flight paths design has been guided by 12 Airspace Design Principles from the Airport Plan. The principles were informed by community and industry feedback on the draft WSI Stage 1 Development EIS in 2015. Between 9 March 2022 and 24 March 2022, these briefings included:

- briefings with 3 general aviation bodies
- briefings with 3 NSW Government organisations, including the NSW Department of Planning and Environment, Sydney Metro – Western Sydney Airport, and the Western Sydney Parkland Authority
- a briefing with FOWSA
- a briefing with the Independent Community Commissioner.

Between 8 November 2022 and 24 October 2023 prior to the exhibition of the Draft EIS, these briefings included:

- 18 briefings with local councils
- 16 briefings with State and Federal MPs
- briefings with 28 NSW Government organisations, including the NSW Environment Protection Authority, NSW Department of Education, South-Western Sydney Local Health District, Western Sydney Local Health District, and NSW Ministry of Health
- briefings with 30 community and stakeholder organisations.

A full list of stakeholder groups engaged with during this stage is provided in Section 9.2.7 of the finalised EIS.

Specific stakeholder groups were identified based on research and discussions with key stakeholders. However, multiple engagement tools were used, including use of social and printed media, to reach other stakeholders during this phase to build awareness and educate impacted communities and key stakeholders about the preliminary flight path design and Draft EIS process, and to facilitate the opportunity for the community or stakeholder groups to provide feedback.

DITRDCA met with 2 representatives of the Trustees of the Linden Observatory, a representative of the Western Sydney Amateur Astronomy Group (WSAAG) and a non-affiliated individual associated with the observatory on 18 August 2023. This followed the release of the preliminary flight path design in June 2023. The Trustees of the Linden Observatory and WSAAG have made submissions on the Draft EIS, which have been responded to in Chapter 17 (Social) of this Submissions Report.

Representation of local communities also occurred through local governments and the FOWSA.

Consultation with First Nations

During the preparation of the Draft EIS, 18 First Nations groups including Traditional Owners and Local Aboriginal Land Councils were contacted to offer briefings, meetings, interviews and email and phone correspondence. The groups were also invited to attend a briefing session following the release of the preliminary flight path design in June 2023. This is further discussed in Chapter 16 (Heritage) of this Submissions Report.

Further contact was made following the release of the Draft EIS, providing information on the exhibition period, how the Draft EIS could be viewed and how submissions could be made.

The information gathered from individuals and organisations during engagement activities provided information about the cultural values, the places associated with them and concerns about perceived impacts. The assessment of Aboriginal heritage values has relied on the recorded heritage values and any values reported to DITRDCA by stakeholders.

UNESCO engagement

The Australian Department of Climate Change, Energy, the Environment and Water (DCCEEW) is responsible for direct engagement with UNESCO and the IUCN, which advises the World Heritage Committee on natural heritage matters. The DCCEEW have set requirements concerning the assessment of the GBMA within the EIS Guidelines. DCCEEW informed the UNESCO World Heritage Centre (the Secretariat to the World Heritage Committee) of the Draft EIS exhibition on 24 October 2023. The IUCN submitted a technical review of the Draft EIS following the exhibition period. The feedback from the IUCN has been taken into account in this Submissions Report and in the finalisation of the EIS.

9.2.3 Release of the preliminary flight path design

9.2.3.1 Issue raised

Raised by

Community, Melissa McIntosh MP – Member for Lindsay (Federal)

Issue

Submissions complained about finding out about flight paths from media and commented on the late night release of information. Submissions also complained that some communities that were not impacted by the 'proof of concept' flight paths presented in the 2016 EIS were not made aware of the new flight paths. This included communities in areas such as St Clair and Penrith.

9.2.3.2 Response

The release of the preliminary flight paths occurred after midnight on 27 June 2023. This time marked the beginning of the day that information was publicly available. The release of the preliminary flight paths preceded the commencement of the Draft EIS public exhibition period on 24 October 2023 by almost 4 months, to provide the community with as much time as possible to view and understand the flight path information and to understand how these differed from the previous 'proof of concept' flight paths presented in the 2016 EIS.

The preliminary flight paths for WSI and the associated aircraft noise contours were available to view through the online Aircraft Overflight Noise Tool, which could be accessed via the Online Community Portal.

The release of the preliminary flight path design was communicated through a range of communication tools, including stakeholder briefings, updates to the website and Online Community Portal, a letter box drop to 922,435 residential and business addresses across 12 LGAs, and notices in local newspapers. The release was also covered by multiple media outlets.

9.2.4 Forum on Western Sydney Airport (FOWSA)

9.2.4.1 Issue raised

Raised by

Community, Residents Against WSA Inc (RAWSA), Stephen Bali MP – Member for Blacktown (NSW), Western Sydney Amateur Astronomy Group Inc

Issue

Submissions made comment or criticised the operation of the FOWSA leading up to the Draft EIS display, specifically:

- questioned whether FOWSA represented impacted communities, claiming insufficient coverage of areas such as the mid-Blue Mountains or The Hills Shire, or exclusion of some local councils
- raised concerns about the effectiveness of and attendance by FOWSA members
- criticised the level of transparency and scrutiny of FOWSA, the inability for the general public to participate in FOWSA, and/or the dissemination of outcomes or minutes from FOWSA to the community
- that a more open forum be provided to Western Sydney residents, like what occurs for Sydney (Kingsford Smith) Airport
- if the Expert Steering Group achieved its terms of reference, which stated it would work collaboratively with FOWSA.

9.2.4.2 Response

Condition 16 of the Airport Plan requires the DITRDCA to establish a community and stakeholder reference group (FOWSA) until the end of the detailed design stage for airspace design. The FOWSA is a stakeholder engagement forum, and provides for the exchange of information and ideas between the community, government, stakeholders and the Western Sydney International (Nancy-Bird Walton) Airport (WSI) operator, WSA Co. The operation of FOWSA, including the membership of FOWSA, is governed by its Terms of Reference, which provides that the Minister, in consultation with the Chair of FOWSA, will determine membership.

It is the responsibility of members to adhere to FOWSA's Terms of Reference. This includes:

- attending at least 50 per cent of FOWSA meetings each year
- informing their communities about planning and progress of WSI
- raising community concerns to be discussed at FOWSA meetings.

The membership of FOWSA is often reviewed to ensure the effectiveness and efficiency of the forum. The Chair of FOWSA has placed continued emphasis on the attendance by representatives and reminded representatives of their obligation to report back to their individual constituencies with any new information on the project. In response to queries about the representation on FOWSA, the membership has a focus on communities and residences that will be most impacted by the WSI project and the flight paths.

The FOWSA Terms of Reference stipulate that meetings will not generally be open to the public and the Chair, at their discretion, may implement mechanisms for members of the public to engage with the work of FOWSA. Since its inception in 2017, FOWSA has held 3 open meetings for which members of the public have been able to attend.

FOWSA members are invited by the Secretariat to provide meeting topics at upcoming meetings, with minutes and presentations from meetings uploaded to the website www.westernsydneyairport.gov.au/fowsa as soon as practical after each meeting. FOWSA meetings were disrupted through 2020–2022 due to COVID-19, which affected the ability of stakeholders to fully participate, particularly aviation stakeholders who were focused on managing disruption to their aviation operations.

An Expert Steering Group, led by DITRDCA, is overseeing the planning and technical design process for the WSI's airspace arrangements and flight paths. Other members of the steering group include Airservices Australia, the Civil Aviation Safety Authority and WSA Co. An important function of the Expert Steering Group is implementing appropriate ongoing consultation with industry, government and the community. The key objective of FOWSA is to promote engagement between community and stakeholder representatives and the Expert Steering Group on issues relating to airspace management and flight paths. The independent Chair of FOWSA is a member of the Expert Steering Group and provides regular updates on FOWSA operations and achievements at Expert Steering Group meetings.

9.3 Engagement during public exhibition of the Draft EIS

9.3.1 Consultation process

9.3.1.1 Issue raised

Raised by

Community, Fairfield City Council, Wallacia Progress Association

Issue

While a number of submissions praised the level of communication about the project, others were critical of the consultation undertaken stating that it is inadequate or tokenistic or that the project has been imposed on residents without consultation. In this regard, submissions questioned if changes would be made to the preliminary flight path design, or issues addressed in the finalised EIS. Submissions cited their experience of the 2016 EIS exhibition in raising these concerns.

Submissions stated that there was almost no communication from the Australian Government, with submissions noting that they have not received any information on how the project would impact residents or that direct contact had not been made with the impacted individuals to understand their view on the flight paths.

Submissions also requested that support sessions for the community should be provided to enable the general public to understand impacts of the project and how to make submissions.

Submissions stated that there has been a lack of mental health support from the Australian Government following the release of the Draft EIS, citing experience with an incorrect number for an assistance hotline being supplied at community information and feedback sessions.

9.3.1.2 Response

Extensive consultation and engagement was undertaken from 2022 to ensure that community members were aware of the release of the preliminary flight paths and Draft EIS.

In the second half of 2022, 17 community information stalls were held across markets, shopping centres and other public places to raise awareness of the flight path design process and the upcoming release of the updated preliminary flight path designs and Draft EIS. To support this process, an open FOWSA meeting was held on 18 March 2023, with the Online Community Portal launched the same day. The Online Community Portal provided community members with a consolidated space to find out more about the preliminary flight path design process.

Following the release of the preliminary flight paths on 27 June 2023, a more extensive community engagement program was implemented to provide people with the opportunity to speak with a member of the project team to understand the preliminary flight paths and the associated noise contours in greater detail. Communications and engagement activities included letterbox drops to over 922,435 addresses across Western Sydney, community information and feedback sessions, community information stalls, email updates, geotargeted social media advertisements, and notices published in local newspapers.

Letterbox drops were selected as the primary method of notification, as this was identified as the preferred method of communication for most residents during market research.

Communications and engagement activities were further increased following the release of the Draft EIS, with an additional 20 community information and feedback sessions held across the Sydney Basin and one online information webinar. These were supported by activities such as a second letterbox drop to 1.6 million addresses across 26 LGAs, community information stalls at shopping centres and handing out of over 4,300 information postcards at 21 train stations in the week preceding community information sessions to drive attendance at these sessions and to spread awareness of the project, facilitated changes and Draft EIS. Train stations and shopping centres were targeted given these are typically high trafficked.

During the public exhibition of the Draft EIS, digital stakeholder information kits were also distributed to stakeholders and FOWSA members with details of local community information and feedback sessions. These kits included social media posts and text in languages other than English, links to project resources, and pre-written information that stakeholders could include in their messages or newsletters.

Other consultation and engagement activities conducted between the release of the Draft EIS on 24 October 2023 and the close of the Draft EIS public exhibition period on 31 January 2024 included:

- 11 community information stalls held by DITRDCA and one community information stall held by Airservices Australia. DITRDCA has also provided project material to WSA Co to make available to interested community members that attend the WSI Experience Centre or engage with WSA Co through WSA Co-led community stalls about WSI
- project and EIS updates
- geotargeted social media advertisements, generating more than 920,000 impressions and almost 280,000 clicks
- notices published in one national paper, 2 state newspapers and 7 local newspapers
- more than 150 posters put up on community noticeboards across 18 LGAs
- use of council and elected members networks to raise awareness of the Draft EIS exhibition and community information events
- extensive media coverage generated by briefings and media releases
- maintaining a dedicated project email and 1800 line throughout all phases of the project.

Community information and feedback sessions were designed to provide community members with an opportunity to sit with technical experts and project team members to understand the information presented in the Draft EIS and the online Aircraft Overflight Noise Tool. Computers, iPads and fact sheets were all made available to the public at both community information and feedback sessions and community information stalls to ensure community members were able to view all relevant project information.

In addition to the project fact sheets and brochures (with translated versions) that were made available on the Online Community Portal and at in-person events, 3 animations were produced to visually explain the flight path design process, the Sydney Basin airspace, and the EIS process. These animations were captioned in the top 5 languages spoken in Western Sydney other than English. Dubbed versions were subsequently added in response to feedback received from stakeholder organisations that represent culturally and linguistically diverse communities.

As part of consultation and engagement on the preliminary flight paths and Draft EIS, a support hotline to an assistance program was available for community members who felt distressed about the preliminary fight paths and their impacts. The Support Hotline was managed by a sub-contractor, and was not widely broadcasted as it was offered to distressed community members for a specific purpose.

In response to feedback received by some community members who contacted the Support Hotline, steps were taken with the sub-contractor to improve the caller experience during the Draft EIS exhibition.

9.3.2 Exhibition timing and duration

9.3.2.1 Issue raised

Raised by

Community, CFI Bathurst Soaring Club, Fitzgerald Creek Catchment Group, Gliding NSW, RAWSA, The Hon Jo Haylen MP – Member for Summer Hill (NSW), Susan Templeman MP – Member for Macquarie (Federal)

Issue

Submissions expressed concern that the exhibition period aligned with the summer school holiday period, with submissions stating that this time period is inconvenient and/or has provided insufficient time to respond to the project and Draft EIS. Submissions stated that many people may have difficulty responding over this period.

Submissions also requested an extension to the exhibition period.

9.3.2.2 Response

Designing flight paths for a new airport is a large, complex and technical task. As such, one of the key goals for the consultation process was to ensure that the community was provided with enough time to review, understand and comment on the preliminary flight paths and Draft EIS.

To achieve this, the preliminary flight paths were released almost 4 months in advance of the release of the Draft EIS to ensure that community members and stakeholders had ample opportunity to review any impacts to locations of interest prior to the publication of supporting technical studies.

The minimum statutory timeframe for consultation under the *Environment Protection and Biodiversity Conservation Act 1999* (Cth) is 20 business days. Given the complexity of the project and timing of consultation, the Draft EIS was subject to an extended consultation period of 67 business days or 14 weeks.

9.3.3 Advertisement of the Draft EIS display and information sessions

9.3.3.1 Issue raised

Raised by

Community

Issue

Concern was raised in several submissions that the release of the Draft EIS and/or the information sessions were not publicised sufficiently in the local community and that engagement strategies were not successful in some communities, such as St Clair. As such, there was low awareness of the Draft EIS exhibition or the community information sessions, including amongst the elderly, or that some people missed out on attending or submitting questions at information and feedback sessions.

It was further commented that communications should have used a greater variety of formats or been more widely distributed across the Sydney Basin including using television media, or mail notifications using ratepayer contact details from local councils. It was criticised that notices in local newspapers was limited to one notice.

9.3.3.2 Response

From the release of the preliminary flight paths on 27 June 2023 to the end of the public exhibition of the Draft EIS on 31 January 2024, 35 community information and feedback sessions, including supplementary sessions held by Airservices Australia were held across the Sydney Basin, each for a duration of 3–5 hours. The conversations between the project team and individual community members at the sessions were on average 20 to 30 minutes in length. More than 1,300 community members attended these sessions. During this period, 19 community information stalls were also held, each for a duration between a full day and half a day. More than 2,100 community members were spoken with at these events. During the Draft EIS exhibition, these stalls were timed to occur before the community information and feedback session in the relevant area, to build awareness of the event. Two (2) online sessions were also held between the release of the preliminary flight paths and the end of the public exhibition of the Draft EIS.

From 2022, communications and engagement activities were undertaken to raise awareness of the flight path design process and the upcoming release of the updated preliminary flight path designs and Draft EIS. A key component of this engagement involved encouraging community members to sign up for updates to stay informed about the project, and to be notified of upcoming community information events.

To improve community awareness of community information and feedback sessions and to increase attendance, a number of communications and engagement activities were undertaken.

These included:

- two (2) letterbox drops to addresses across the Sydney Basin, with the first to over 922,435 addresses across Western Sydney after the preliminary flight paths release and the second to 1.6 million residences across more than 26 LGAs. These flyers informed people about the flight paths release, the Draft EIS exhibition, displayed contact details for the project team, where to find more information and a QR code for all community engagement event details
- geotargeted social media advertisements: social media advertisements were targeted to appear in specific locations immediately prior to the nearby community information and feedback session. During the public exhibition period for the Draft EIS, social media advertisements generated more than 920,000 impressions
- project updates sent to email subscribers: from 2022, interested community members were able to sign up to receive updates. By 31 January 2024, more than 2,000 community members were subscribed to receive project updates
- notices published in 7 local newspapers
- postcards were distributed at 21 train stations across the Sydney Basin with more than 4,300 postcards distributed to morning peak commuters.

Digital stakeholder information kits were also distributed to stakeholders and FOWSA members with details of local community information and feedback sessions. These kits included social media posts and text in languages other than English, links to project resources, and pre-written information that stakeholders could include in their messages or newsletters.

Community information and feedback sessions and use of communication methods were informed by feedback received from community members leading up to and during the Draft EIS exhibition period. This included prioritising community information and feedback sessions in St Clair, increasing the number of social media posts to promote community information events during the Draft EIS exhibition, and multiple newspaper notices.

9.3.4 Community information sessions

9.3.4.1 Issue raised

Raised by

Community

Issue

Submissions questioned whether feedback provided at the community information and feedback sessions would be incorporated in the finalised EIS and it was noted that attendees were advised to provide formal written feedback.

A submission queried whether all the formal submissions received were appropriately recorded as this could not be confirmed at one of the community sessions.

Submissions were concerned on the equality or adequacy of the consultation sessions. The locations and quantity of the community events in particular areas (Hawkesbury, St Clair, Blue Mountains suburbs, Wallacia, Luddenham, Central Coast, Pitt Town, Fairfield, Horsley Park, Cecil Park and the Lindsay electorate) were deemed to be inadequate. Submissions stated that more community information sessions are required.

Submissions queried the information provided at these sessions with submissions stating that the brochures are too complex to understand. Concern was also expressed in the submissions that the community events only showed the community how to find the flight paths and noise impacts rather than providing more information.

Concern was also raised that some members of the consultation team were not locally based and had little knowledge of local area and the impacts. Submissions requested that the community be provided with more opportunities to speak directly with the authors of the technical assessments.

Submissions also raised concerns over the format of the information sessions, including that the format of these was confronting for some in the community and suggested that Q&As and town hall type meetings would have been better than the sessions provided.

9.3.4.2 Response

Feedback on engagement provided at community information and feedback sessions was recorded and incorporated into the community engagement process. This included informing the development of project resources, Frequently Asked Questions and the selection of preferred communications channels.

In order for their feedback to be considered in the finalised EIS, community members were advised to lodge a formal submission during the public exhibition period. All formal submissions are recorded, with each submission read and considered by the flight paths design team to finalise the EIS and flight paths for WSI.

The locations and quantity of community events were informed by the objectives of the Engagement Plan (refer to Section 9.2 of the Draft EIS), being to:

- build awareness and educate impacted communities and key stakeholders about the airspace and flight path design process, proposed changes and how it will impact them through information that's relevant, timely, consistent, coordinated, and accessible
- ensure impacted communities and key stakeholders understand how their feedback can influence airspace and flight path design
- ensure impacted communities and key stakeholders have felt they had the opportunity to have their say during public exhibition of the Draft EIS.

A range of project resources were prepared to ensure that community members were able to access the required information in a range of formats. The online Aircraft Overflight Noise Tool and the supporting project resources on the Online Community Portal were designed to provide information on the preliminary flight paths in an illustrative, visual format, in addition to the Digital Draft EIS.

Given the complexity and quantity of information presented in the Draft EIS and supporting project resources (including brochures and factsheets), community members with specific enquiries were encouraged to attend a community information and feedback session if they were experiencing difficulties accessing the website or if they wished to ask technical questions in person.

During the Draft EIS exhibition period, DITRDCA held 13 in-person community information and feedback sessions and one online session. These in-person sessions were designed to allow community members sufficient time to sit with specific project team members and discuss potential impacts or topics of interest in greater detail. Sessions were attended by technical experts from DITRDCA, Airservices Australia, WSA Co and the EIS assessment team. The locations of community information and feedback sessions were selected based on accessibility requirements and the capacity of the venue to host at least 50 people at any given time. Airservices Australia held 7 supplementary community information and feedback sessions.

The format of the community information and feedback sessions was chosen as it allowed community members time to discuss the impacts to specific locations of interest (e.g. residential addresses or business addresses) and to better understand why flight path design decisions had been made. The community information session style, rather than community town hall style, was employed as it provided a one-on-one setting for community members to ask questions about their specific address. A community town hall format may discourage questions by those who do not feel comfortable raising their concerns in an audience.

For community members unable to attend a session or those with follow-up enquiries, a project email and 1800 phone line was set up to respond to queries and provide technical support for those using the online Aircraft Overflight Noise Tool. Information on the Translating and Interpreting Service was provided on the Online Community Portal and on each project brochure.

The 20 community information and feedback sessions, the project email and 1800 phoneline deployed during the Draft EIS exhibition period has provided ample opportunity for the community to ask questions and gain information on the project.

9.3.5 Level of detail and accessibility of the supporting materials to the Draft EIS

9.3.5.1 Issue raised

Raised by

Community

Issue

Level of detail and accessibility – Online Community Portal and the Draft EIS

Submissions stated that the Online Community Portal (including the Digital Draft EIS) website was too complex and confusing, with an overwhelming amount of information provided, or that the online Draft EIS was difficult to access due to digital inequity or poor internet. Submissions stated that hard copies of the Draft EIS should have been easier to access. Submissions stated that the online submissions portal did not work over the Australia Day long weekend.

Submissions also expressed the view that the website was difficult to understand. Submissions made comment that the flight path maps in the Draft EIS and on the online Aircraft Overflight Noise Tool were useful in identifying where the flights paths are proposed.

Accessibility – Language

For supporting materials, submissions commented on the lack of detailed information in other languages. It was acknowledged that some videos were included in various languages but some supporting materials (e.g. flyers) were only in English.

Presentation of localised information

Submissions queried why specific details on the impacts to some suburbs were not included or inconsistently identified. It was suggested that more targeted information for each community / suburb should have been prepared to help understand the impacts at a local level.

Presentation of noise impacts

Submissions made comment that the technical detail presented in noise brochures and the Draft EIS in relation to noise are in different units of measurements (Australian Noise Exposure Concept (ANEC) versus decibels (dB)) making comparison difficult. Submissions stated that it was also difficult to understand what the noise levels would be like, noting that other tools should be available to provide a virtual experience of these noise levels.

Submissions stated that the information presented to the community was misleading or did not provide the community with an understanding of the full set of flight paths, the frequency and time using each runway mode, aircraft types operating from WSI, and noise impacts (including depiction of noise from all flight paths, depiction of levels lower than 60 dB(A) and comparison to ambient noise levels).

One submission referenced the one-on-one meetings held during the consultation process with those who would qualify under the draft Noise Insulation and Property Acquisition policy (NIPA). The submissions questioned the noise levels provided in the meeting stating that these are significantly different to the dB(A) guide from Chapter 10: Noise (aircraft) of the 2016 EIS.

9.3.5.2 Response

Level of detail and accessibility – Online Community Portal and the Draft EIS

Supporting fact sheets and brochures on dedicated topics were developed for the project, outlining principles, technical requirements and constraints that influenced the development of the preliminary flight paths. These included a preliminary flight paths brochure (explaining the flight path design process and considerations), an aircraft noise brochure (explaining how noise is modelled and measured), and the draft NIPA brochure.

Three (3) short animations were produced and housed on the project Online Community Portal to simplify the topics of:

- airspace and flight path design
- airspace constraints within the Sydney Basin
- the EIS process.

The project team were available to respond to community queries through the project email address and 1800 line. These details were distributed at community information events, on project information brochures and factsheets displayed at local council offices and libraries, on postcards handed out at train stations, and on flyers distributed via letterbox drop.

Technical experts were also in attendance at community information and feedback sessions to provide an in-person alternative to online engagement tools.

Hard copies of the Draft EIS were made available at 23 locations across the Sydney Basin, and these locations were published on the website.

Accessibility – Language

All animations and the 4 principal project brochures were translated into the 5 most frequently spoken languages in Western Sydney (Arabic, Hindi, Vietnamese, Simplified Chinese and Tagalog). All project information brochures and factsheets included instructions on how to access information in languages other than English, and how to access the Translating and Interpreting Service (TIS National). The animations were also dubbed into other languages following feedback from stakeholders during the Draft EIS exhibition.

Presentation of localised information

An online Aircraft Overflight Noise Tool was developed to provide localised information, which is able to be targeted to specific addresses to provide aircraft overflight and noise information in a summarised format for a chosen location. While some issues were experienced by users in the 2 days following the release of the preliminary flight paths, these were fixed within a few days. Isolated technical issues experienced by some users throughout the project were prioritised and fixed as quickly as possible.

The online Aircraft Overflight Noise Tool presents information drawn directly from the Draft EIS. This includes the frequency of aircraft overflying a location on an average day when the specified runway operation mode is in use, the projected altitude and noise levels at a given location, and the projected maximum noise levels from specified aircraft types.

Information on noise impacts

A range of noise metrics was presented in the Draft EIS and supporting project information. Each measurement is used to indicate a different aspect of the experience of noise, and are intended to be used in combination with each other to provide a more holistic understanding of level, intensity and frequency of aircraft noise impacts. To aid community members in understanding predicted noise impacts, a supporting noise assessment brochure was released to explain the noise metrics applied in the Draft EIS. The presentation of N60, N70, ANEC or single event metrics reflects the presentation of noise levels in Technical paper 1: Aircraft noise.

It is difficult to replicate sound levels virtually due to environmental factors (such as differing volume settings across devices or differing background noise levels). This could lead to inaccurate experiences of noise and create further confusion amongst users. At community information and feedback sessions, project team members referred interested community members to other resources available online that provide information on noise at different decibel levels and measures decibels of sound.

The Sydney Basin airspace is one of the busiest in Australia. Most areas, including Western Sydney, currently experience some level of daily aircraft overflight. The preliminary flight paths for each runway mode is presented separately in the online Aircraft Overflight Noise Tool and in the Draft EIS rather than all overlaid because in practice only one runway mode can operate at any one time.

While the online Aircraft Overflight Noise Tool provides an estimate of aircraft movements that may be experienced at a given location, the number of aircraft arriving and departing varies throughout the day and between days and months. Further discussion of the noise metrics presented in the Draft EIS is provided in Chapter 10 (Aircraft noise) of this Submissions Report.

At the one-on-one meetings with landowners and their families during the Draft EIS exhibition, DITRDCA staff discussed the predicted aircraft noise impacts at their location. The predicted impacts were taken from the online Aircraft Overflight Noise Tool, which reflects the Draft EIS. The predicted noise impacts for some locations may be different to that in the 2016 EIS because the 2016 EIS contained proof of concept flight path designs that differed to the preliminary flight paths in the Draft EIS.

9.3.6 Aircraft Overflight Noise Tool

9.3.6.1 Issue raised

Raised by

Community, Blacktown City Council, Burwood Council

Issue

The submissions have raised concerns on the online Aircraft Overflight Noise Tool which include:

- functionality of the online tool, including that maps are difficult to read, that the tool is too complex and highly technical, that 3D visualisations lacked metrics and identifying locations, or that it could have also been used to communicate visual impacts
- that the online Aircraft Overflight Noise Tool did not enable all flight paths or noise contours to be depicted at once, or did not effectively communicate noise impacts in a specific area
- that the information presented was misleading or incomplete, noting these concerns mostly relate to criticisms about the adequacy of the aircraft noise assessment in the Draft EIS. This included:
  - presenting results as N-above noise levels and not presenting noise levels when aircraft deviate from the centreline of flight paths
  - not providing details on the number of flights for 2040 and 2055
  - presenting a narrow range of aircraft types for the single event noise contours
  - not providing noise levels for single event between 2033 and 2055
- height shown is based off airport ground level and not height above the ground surface (especially in the Blue Mountains).

Submissions raised concerns regarding ambiguity around qualifying (and vague) statements in the online Aircraft Overflight Noise Tool, with an example being 'This location is not beneath a WSI flight path in the currently displayed runway operating mode and time of day, however you may still see and hear aircraft using WSI and other airports flying overhead'.

For the property report functionality, submissions criticised the late addition of this function but supported the enhancement. Concern was also expressed that the location tool did not provide an accurate output when generating property reports.

9.3.6.2 Response

Comments on the presentation of information and functionality of the online Aircraft Overflight Noise Tool are noted.

The online Aircraft Overflight Noise Tool is a communication and engagement tool that was developed to support users' understanding of the information contained in the Draft EIS. It reflects the aircraft noise modelling in the Draft EIS and enables users to obtain information relevant for a location or addresses. It has range of features to assist with the comprehension of the data, including:

- the ability to zoom in on specific locations for better legibility
- the ability to toggle between map and satellite view, with key locations, suburbs and roads clearly identified
- inclusion of geographical locations and a legend in the 3D visualisations in response to community feedback.

The 3D visualisations are intended to provide a visual aid for how aircraft are expected to travel along a preliminary flight path. Each visualisation shows how a common aircraft type for a particular preliminary flight path would fly on the track.

To support the community to navigate the online Aircraft Overflight Noise Tool, people were able to call the 1800 community line with enquires. In addition, community information and feedback sessions were designed to provide attendees with the opportunity to sit with a technical expert and review the information. The Aircraft Overflight Noise Tool also includes instructions to assist users to navigate the tool.

The Draft EIS provides modelled noise forecasts for 3 reference years: 2033, 2040 and 2055. The 3 years show the effects of growth in predicted air traffic over the first 30 years of operations at WSI. The first assessment year (2033) is 7 years after opening, when passenger numbers at WSI reach the planned design capacity for the initial Stage 1 Development of 10 million passengers per year. In 2040, the modelling represents the point when WSI is expected to reach 15 million passengers per year and 2055 represents the point when single runway at WSI is expected to reach capacity at around 37 million passengers per year. Issues concerning the adequacy of the aircraft noise modelling, which informed the online Aircraft Overflight Noise Tool, have been responded to in Chapter 10 (Aircraft noise) of this Submissions Report.

The presentation of N60, N70, ANEC or single event metrics in the online Aircraft Overflight Noise Tool reflects the presentation of noise levels in Technical paper 1: Aircraft noise. Single event metrics, as presented in the Draft EIS, reflect noise from a single aircraft. These forecasts are for all aircraft types that are expected to operate to and from WSI including narrow body jets, wide body jets and a smaller turbo-prop aircraft. Single event noise contours have not been prepared for the years between 2033 and 2055 because the aircraft types expected to use WSI are not likely to change from 2033 to 2055. The online Aircraft Overflight Noise Tool also shows a composite LAmax contour that superimposes each individual LAmax noise forecast contour – that is included in the Draft EIS – on top of one another to show users the single event maximum noise level for a situation where each aircraft type that is predicted to use WSI is operating at the same time.

Altitudes on the map are in reference to height above runway level rather than height above sea level. This is noted in the flight path information legend and on the flight paths explanation tab. While aircraft altitude has not been expressed as height above terrain, the aircraft noise impact assessment and the contours as shown on the online Aircraft Overflight Noise Tool has taken into account the elevation of the underlying terrain.

The qualifying statements on the online Aircraft Overflight Noise Tool were provided to ensure transparency to the community that aircraft may still be seen in the distance and heard at noise levels below 60 dB(A) once aircraft begin to use WSI.

The property report functionality was developed and added to the online Aircraft Overflight Noise Tool during the Draft EIS exhibition. This was in response to community feedback on the complexity of the online tool and/or the presentation of the flight paths and noise contours. This functionality enables residents to generate a report that consolidates the information presented in the online Aircraft Overflight Noise Tool by location. As this feature was developed in response to feedback, it was released toward the end of the public exhibition period.

The information presented in the property report function of the online Aircraft Overflight Noise Tool is drawn directly from the Draft EIS. The property report function underwent testing prior to release during the Draft EIS exhibition and the information presented in the report reflects the flight paths and noise information that is presented on the Noise Tool in a different format. People with queries or concerns about the report function can get in touch with the DITRDCA via wsiflightpaths@infrastructure.gov.au.

9.4 Engagement on the facilitated changes

9.4.1 Level of engagement

9.4.1.1 Issue raised

Raised by

Community, Blacktown City Council, City of Parramatta Council, General Aviation Advisory Network, Sydney Flight Paths Action Group

Issue

Submissions questioned the robustness of the public consultation process and stated that the consultation on the facilitated changes should be separated from the overall assessment of the project. This included criticism that the facilitated changes and impacts have not been widely communicated and that there is not enough general awareness within community, local councils and aviation groups. Submissions questioned what engagement had occurred during the design of the facilitated changes. Submissions requested that an independent consultative process should be undertaken to ensure the outcome is equitable.

Submissions also expressed concern about the timing and duration of consultation on the facilitated changes, with submissions stating that more time should be provided given the information was only released with the Draft EIS unlike the release of the WSI flight paths, and that the exhibition period should be extended.

Submissions queried why direct notifications were not provided and that the level of information supplied to the community does not align with the information supplied in support of other flight path or airspace changes within the Sydney Basin airspace.

Submissions stated that information on the proposed changes should also be included on the Airservices Australia's flight path change hub.

9.4.1.2 Response

The EIS Guidelines required the Draft EIS to identify and consider facilitated impacts. Facilitated impacts in the context of this project are the potential impacts that could arise from the adjustments to existing flight paths that are necessary to safely integrate the WSI control area and flight paths into the Sydney Basin.

To ensure local councils and community members are informed of the facilitated changes, a number of consultation activities were undertaken in relevant areas, including:

- briefings with 11 local councils on the facilitated changes alongside the WSI preliminary flight paths
- geotargeted social media advertisements with over total 900,000 impressions and almost 280,000 clicks
- postcards handed out at local train stations, including Marrickville, Granville, Belmore, Bankstown, Burwood, Strathfield, Central, Town Hall and Wynyard
- community information and feedback sessions, including at locations in St Peters, Granville, Bankstown, Strathfield and Arncliffe
- community information stalls, including at locations in Marrickville, Auburn, Clemton Park, and Bankstown.

A cobranded Airservices Australia and DITRDCA Draft EIS information flyer was also distributed across 26 LGAs in the Sydney Basin, including LGAs potentially impacted by the facilitated changes. This included Inner West, Bayside, Burwood, Strathfield, Canada Bay, Canterbury-Bankstown, Camden and Campbelltown LGAs.

Airservices Australia will engage with communities and stakeholders during the detailed design and implementation of the flight paths for WSI in accordance with Airservices Australia Community Engagement Standards (Airservices Australia, 2023b). Like all other projects Airservices Australia engages on, WSI will have a dedicated project page with communication and/or feedback channels for project specific queries or feedback. The Airservices Australia WSI project page is expected to be published in 2025.

A response to issues concerning the level of assessment of the facilitated changes is provided in Chapter 20 (Facilitated impacts) of this Submissions Report.

9.4.2 Level of detail

9.4.2.1 Issue raised

Raised by

Community

Issue

Submissions made comment on the detail presented on the facilitated changes and impacts as presented to the community, including the online Aircraft Overflight Noise Tool. This included that:

- the presentation of the information was too technical or lacked sufficient information to understand the total expected number of flights (including aircraft types) per day and the impacts (such as noise)
- the information on the proposed changes was difficult to access for those with language or technology barriers
- the level of detail on the changes differed to that presented for the WSI flight paths
- the Bankstown Airport flight paths were incorrectly labelled
- consultation materials did not provide information on how the changes related to the WSI preliminary flight paths or other Sydney (Kingsford Smith) Airport flight paths.

Submissions raised concerns about the facilitated impacts shown on the online Aircraft Overflight Noise Tool, including:

- facilitated impacts were not initially shown in the online Aircraft Overflight Noise Tool when it was released on 27 June 2023 and that the subsequent inclusion at the time of the Draft EIS display was not communicated in a transparent manner when launched
- it was hard to use, find or understand the presentation of the facilitated changes. This included difficulty in differentiating between current and proposed flight paths
- property reports not being able to be generated.

9.4.2.2 Response

The Draft EIS provided a description of the changes to the Sydney Basin airspace for other airports that are required prior to the opening of WSI in 2026 to enable the new flightpaths and airspace for WSI. Hard copies of the Draft EIS were made available to the affected communities during the formal exhibition period across number of LGAs. These included Blacktown, Burwood, Camden, Canterbury-Bankstown, Canada Bay, and Sydney.

In addition to the Draft EIS, information on facilitated changes is provided graphically in the *Changes required to flight paths for other airports* brochure to make it easier for community members to visualise the changes and to explain how the facilitated changes relate to the WSI preliminary flight paths. This is translated into the 5 top languages spoken in Western Sydney (Arabic, Chinese (Simplified), Tagalog, Hindi and Vietnamese).

Community information stalls and community information and feedback sessions were held in relevant locations, to provide community members with the opportunity to speak with technical experts from DITRDCA, Airservices Australia and the EIS team.

Community members with additional enquiries were also encouraged to contact the project team via the 1800 line or project email address.

In relation to the online Aircraft Overflight Noise Tool, the tool was updated for the Draft EIS exhibition to include a separate page for the facilitated changes and updated instructions for users on how to use the tool. Community members with questions were able to attend a community information and feedback session or contact the project team by phone or email. The labelling of the Bankstown Airport flight paths was corrected during the Draft EIS exhibition following receipt of the feedback.

A response to issues concerning the level of assessment of the facilitated changes is provided in Chapter 20 (Facilitated impacts) of this Submissions Report.

9.5 Requests for further engagement

9.5.1 Engagement to inform the finalised EIS

9.5.1.1 Issue raised

Raised by

Community, Blue Mountains City Council, Camden Council, Social Justice Committee – Holy Spirit Catholic Church St Clair, Westerns Sydney Regional Organisations of Councils, Wollondilly Shire Council

Issue

Submissions requested that further engagement with the community and key stakeholders occurs prior to the project proceeding. This included requests for more transparent, extensive and/or inclusive engagement, and improved collaboration about the flight path design. This included calls for further engagement with:

- the communities immediately surrounding the WSI Site or within the ANEC contours, as well as ongoing and personalised engagement in recognition of more significant changes that would occur for these residents
- communities and key stakeholders located in all impacted suburbs, suburbs located within the N60 and N70 contours, and the mid-Blue Mountains communities
- Indigenous community, particularly with Dharug and Gundungurra Traditional Owners and Custodians
- UNESCO, including the completion of an independent view by the World Heritage Committee and submission of a report to the 46th session of the World Heritage Committee in 2024
- aviation users, including gliding clubs.

Submissions requested that this additional engagement should include:

- additional surveys and interviews so that more people's views were considered, given the inadequate coverage provided for the Draft EIS assessments
- further information sessions or information to ensure residents understand the complex flight information.

One submission stated that the noise impact assessment presented in the Draft EIS should be referred to the Aircraft Noise Ombudsman (ANO), given it is responsible for dealing with future complaints.

9.5.1.2 Response

Consultation and engagement has occurred throughout the airspace design process and through the display of the Draft EIS in accordance with the EPBC Act and *Condition 16 of the Airport Plan:*

(2) The airspace and flight path design are to be developed by a steering group led by the Infrastructure Department and involving Airservices Australia and the Civil Aviation Safety Authority. After an Airport Lease is granted the ALC will also be invited to participate in the steering group. The Infrastructure Department must establish a community and stakeholder reference group (Forum on Western Sydney Airport) which will operate until the end of the detailed design stage identified in Table 10 in Part 2 of the Airport Plan.

(3) In developing the airspace and flight path design, the steering group must conduct public consultation with stakeholders who include the aviation industry, the community and state and local government authorities.

Additional consultation on proposals for RRO flight paths, developed in response to submission on the Draft EIS occurred in August 2024. The additional consultation is detailed in Chapter 9 (Community and stakeholder engagement) of the EIS and Chapter 24 (Refinements to the project since exhibition) of this Submissions Report. Chapter 24 (Refinements to the project since exhibition) also includes a description of the proposals. No further engagement by DITRDCA prior to the determination of the Draft EIS is proposed. Ongoing consultation would occur through FOWSA, until the establishment of the WSI CACG, to ensure appropriate community engagement on airport planning and operations. This is discussed further in Section 9.5.2.2.

As detailed in Section 9.2.2.2 of this Submissions Report, DCCEEW is responsible for direct engagement with UNESCO and the IUCN, which advises the World Heritage Committee on natural heritage matters. DCCEEW have set requirements concerning the assessment of the GBMA within the EIS Guidelines. DCCEEW informed the UNESCO World Heritage Centre (the Secretariat to the World Heritage Committee) of the Draft EIS exhibition on 24 October 2023. The IUCN submitted a technical review of the Draft EIS following the exhibition period. The feedback from the IUCN has been taken into account in this Submissions Report and in the finalisation of the EIS.

The role of the ANO is to conduct reviews of Airservices Australia's management of aircraft noise-related activities once WSI is operational. The ANO would also monitor and report on the effectiveness of the community consultation processes related to aircraft noise for WSI and the presentation and distribution of aircraft noise-related information. It is not the role of the ANO to review consistency or otherwise with the assessment outcomes of the Draft EIS.

9.5.2 Engagement during detailed design and implementation

9.5.2.1 Issue raised

Raised by

Community, Blue Mountains City Council, CFI Bathurst Soaring Club, Cumberland Shire Council, Gliding NSW, WSA Co, WSROC

Issue

Submissions requested transparent and ongoing communication with the community and local councils throughout the planning and implementation stages of the final flight paths.

Submissions criticised that the Draft EIS stated that the flight paths are subject to 'ongoing environmental assessment and final detailed design' and stated that the community should be engaged on any future changes or revised environmental assessments. Submissions also requested that any proposed changes should be placed on public exhibition alongside an updated online Aircraft Overflight Noise Tool.

Submissions requested involvement or queried what further engagement would occur during the next stages of the project. This included a request for further communication on the progress of the flight paths design and implementation, and/or participation in future engagement opportunities, such as public feedback sessions during the early operational stages.

Submissions requested further detail on the WSI CACG, including the detail on the role and functions of such an entity, and when this group would be established.

It was requested that a forum be established where all councils across Sydney, including Western Sydney Regional Organisation of Councils (WSROC), can participate with Airservices Australia, WSI and other Sydney Basin airport operators to discuss issues that may arise in future years including resolution at forums. It was also requested that this be addressed within the finalised EIS.

9.5.2.2 Response

The detailed design phase will include further evaluation and refinement of the proposed selected airspace design for implementation based on feedback received from the community and other technical stakeholders such as airlines and industry bodies. This includes refinement of the preliminary design based on the recommendations received from the Minister for the Environment and Water following the completion of the finalised EIS. This phase will also include:

- further development and simulation testing of the proposed airspace design and flight paths to ensure the operating procedures are fit for purpose and suitable for implementation
- further safety and hazard assessments to ensure that risks have been identified and managed to the lowest practicable level
- finalisation of noise abatement procedures.

Further engagement on the proposals to the preliminary flight paths since the Draft EIS exhibition in response to submissions has taken place. The outcomes of this engagement are presented in Chapter 9 (Community and stakeholder engagement) in the finalised EIS.

During the implementation phase, the aviation industry stakeholders and the community would be notified ahead of the commencement of air operations at WSI. This would be achieved through publication of revised Aeronautical Information Management data and stakeholder and airspace user briefings regarding the changed airspace design.

The WSI CACG will evolve from the current FOWSA. It is currently under development and expected to be launched early 2025. The WSI CACG will enable WSA Co, communities affected by WSI's operations and plans, and relevant stakeholders to engage with information on issues and impacts relating to WSI operations. WSA Co will work with Airservices Australia and other key stakeholders to ensure effective engagement processes are achieved.

Following 'opening day' there would continue to be ongoing monitoring of the operation of the design as part of standard business practices for new airspace and flight paths projects. Monitoring of the operation would be undertaken by key operational stakeholders, in particular Airservices Australia, the Department of Defence and CASA. It is standard practice for Airservices Australia to conduct a Post Implementation Review of significant airspace changes.

Airservices Australia will continue consultation with communities and stakeholders during detailed design and implementation in accordance with Airservices Australia's Community Engagement Standards (Airservices Australia, 2023b). An additional council forum is not proposed. FOWSA will remain the stakeholder and community representative group for WSI matters until the end of detailed design when the WSI CACG will be established.

Chapter 10 Aircraft noise

This chapter provides a response to the issues raised in submissions specific to Chapter 11 (Aircraft noise) of the Draft EIS.

Submissions expressed concern, objected to the project or objected to a component of the project (e.g. a flight path or hours of operation) due to the predicted aircraft noise levels and/or the impacts to amenity, liveability, lifestyle and health of the areas overflown. Submissions also raised a number of concerns about the impact assessment approach, and how these impacts would be mitigated, managed and/or monitored over time.

The assessment methodology and assumptions applied in the finalised EIS are based on accurate sources and current industry practice, and supported by model calibration and sensitivity analyses to test key assessment inputs. The outcomes presented in the finalised EIS illustrate what the community can expect to experience in the vicinity of WSI when operations commence and progressively increase in number over coming decades. However, it is acknowledged that modelling cannot replicate actual operations for every aircraft on every day or the human factors that can influence how an individual will respond.

Increased exposure to aircraft noise in areas in the vicinity of WSI and under proposed arrival and departure flight paths will be an unavoidable consequence of aircraft operations. It is acknowledged that there are concerns within the community about the level of aircraft noise in residential or natural areas in the vicinity of WSI as well as the number of aircraft movements in these areas over the day and/or night.

Noise abatement procedures have been included in the preliminary design for WSI, such as the use of noise preferential flight paths which direct aircraft operations away from noise sensitive areas, where possible, and the use of different flight paths during the day and night. Airservices Australia will further develop these procedures in consultation with stakeholders, including aircraft operators, airlines, WSA Co and Forum on Western Sydney Airport (and its future replacement, the WSI Community Aviation Consultation Group).

The Australian Government has finalised the Noise Insulation and Property Acquisition (NIPA) policy. The Australian Government will contact all landowners within the eligibility area to ensure that landowners are aware of the program and have the opportunity to apply. This will include public notifications, direct correspondence and visits to properties within the eligibility boundary. Further detailed information on the NIPA program, including the program guidelines and application processes, will be released prior to the implementation of the program in mid-2025.

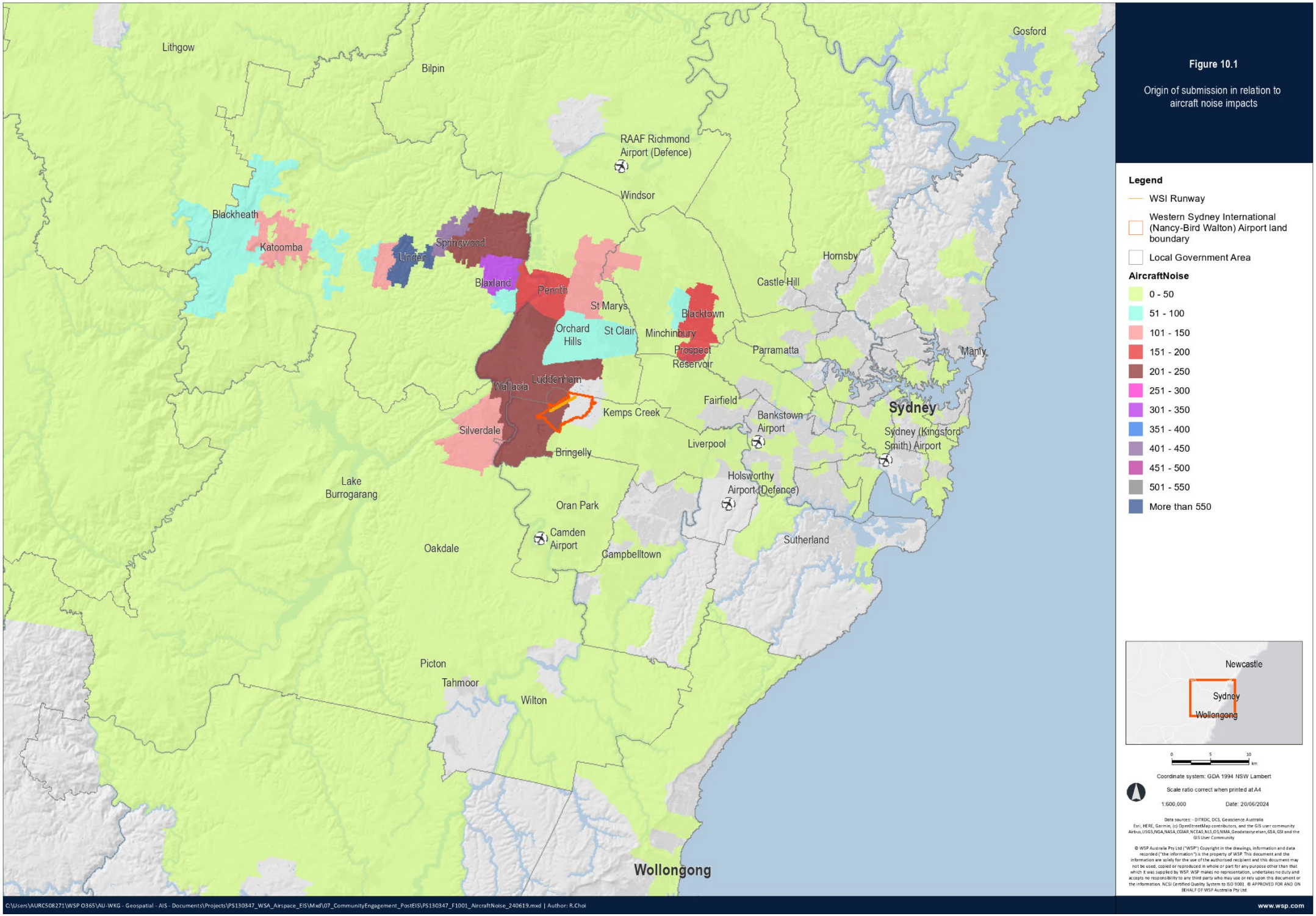
Refinements have been made to the preliminary design for RRO flight paths to reflect the concerns raised by the community in relation to the overflight of the mid Blue Mountains and Wallacia (including the introduction of a new night time (11 pm – 5:30 am) RRO noise abatement procedure (RRO-NAP)). This is discussed further in Chapter 24 (Refinements to the project since exhibition) of this Submissions Report.

10.1 Submission overview

10.1.1 Number and origin of submissions

A total of 4,872 submissions raised matters concerning aircraft noise impacts. The majority of these submissions originated from the Sydney Basin and surrounds. The distribution of submitters by postcode is shown in Figure 10.1. Around 13 per cent of submissions did not supply a postcode.

Around 53 per cent of the 4,872 submissions originated from the Western City District (Blue Mountain), 18 per cent of submissions originated from the Western City District (excluding Blue Mountains) and 10 per cent originated from the Central City District.


Lithgow
Bilpin
Gosford
RAAF Richmond Airport (Defence)
Windsor
Blackheath
Katoomba
Springwood
Linden
Blaxland
Penrith
St Marys
Orchard Hills
St Clair
Minchinbury
Blacktown
Prospect Reservoir
Castle Hill
Hornsby
Parramatta
Manly
Luddenham
Wallacia
Kemps Creek
Fairfield
Bankstown Airport
Sydney
Sydney (Kingsford Smith) Airport
Silverdale
Liverpool
Bringelly
Holsworthy Airport (Defence)
Lake Burrogarang
Oran Park
Camden Airport
Oakdale
Campbelltown
Sutherland
Picton
Tahmoor
Wilton
Wollongong
Figure 10.1
Origin of submission in relation to aircraft noise impacts
Legend
WSI Runway
Western Sydney International (Nancy-Bird Walton) Airport land boundary
Local Government Area
AircraftNoise
0 - 50
51 - 100
101 - 150
151 - 200
201 - 250
251 - 300
301 - 350
351 - 400
401 - 450
451 - 500
501 - 550
More than 550
Newcastle
Sydney
Wollongong
0
5
10
km
Coordinate system: GDA 1994 NSW Lambert
Scale ratio correct when printed at A4
1:600,000
Date: 20/06/2024
Data sources: - DITRDC, DCS, Geoscience Australia
Esri, HERE, Garmin, (c) OpenStreetMap contributors, and the GIS user community
Airbus,USGS,NGA,NASA,CGIAR,NCEAS,NLS,OS,NMA,Geodatastyrelsen,GSA, GSI and the GIS User Community
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10.1.2 Key issue breakdown

A breakdown of the sub-issues within this key issue and the percentage of total submissions that raised each of these sub-issues is outlined in Table 10.1.

Table 10.1 Breakdown of sub-issues in relation to aircraft noise

Sub-issue	Number of submissions that raised the sub-issue	Percentage of submission that raised the sub-issue
Impact assessment approach	907	11%
Ambient noise monitoring	61	1%
Aircraft noise impacts	3,266	39%
Sleep disturbance	1,801	21%
Mitigation and management – general	977	12%
Mitigation and management – insulation, acquisition, and other compensation	1,053	12%
Mitigation and management – monitoring and post-implementation management	58	1%

Each sub-issue was raised the most by the Western City District (Blue Mountains) followed by the Western City District (excluding Blue Mountains), except for monitoring and management of aircraft noise impacts issues. For this sub-issue, the Western City District (excluding the Blue Mountains) raised 30 per cent of the submissions followed by the Central City District at 30 per cent and the Western City District (Blue Mountains) at almost 12 per cent.

Submissions from other intrastate and interstate location also typically represented 6 per cent or less in each of the sub-issues. Up to 25 per cent of submissions in each sub-issue did not provide a location.

10.2 Impact assessment approach

Submissions made comment on the assessment methodology, including assessment metrics, assumptions and limitations of the aircraft noise modelling completed as part of the finalised EIS. These submissions often stated that as a result, the assessment is inadequate or that the noise impact would be greater than predicted, and that further assessment is required. Responses to these comments is provided in the following sections.

10.2.1 Identification and assessment of noise sensitive areas

10.2.1.1 Issue raised

Raised by

Community, Fairfield City Council

Issue

Submissions criticised or queried the selected noise sensitive areas presented in the Draft EIS, specifically:

- why certain locations had not been selected and results presented. An example is why Linden was presented, but not Faulconbridge and Woodford, or the rural-residential areas within Horsley Park and Cecil Park which are located within N60 and N70 contours

- there was an insufficient number of noise sensitive areas considered, including locations that would be impacted with high volumes of aircraft movements in the day and night.

Submissions expressed the view that the suburbs of the Blue Mountains should not be considered as a typical urban or suburban environment, and should be recognised as being of high sensitivity and vulnerability.

Submissions questioned why discrete results have been presented at key locations in the Greater Blue Mountains Area (GBMA) and not within the residential areas of the Blue Mountains.

10.2.1.2 Response

A diverse range of noise sensitive areas was selected to reflect various levels of sensitivity within the communities and environment around WSI. These comprised specific sensitive receivers or geographic points within the study area. The assessment has presented the maximum sound levels (L_{Amax}) and projected average sound levels (L_{Aeq}) at each noise sensitive area. Sensitive receivers included schools, community centres, hospitals, aged-care centres, childcare, residential areas, shopping malls, recreation areas and places of worship. These sensitive areas are comprised of:

- recreational areas and noise-sensitive receivers defined in the 2016 EIS
- additional sensitive areas within a 15 km radius from WSI (residential and public buildings)
- additional sites up to 50 km in rural areas and Blue Mountains residential areas where aircraft noise is more likely to be noticeable due to the lower ambient soundscape
- ambient noise monitoring sites (29 in total).

For each noise monitoring site, an average sound level variation was also calculated.

The noise sensitive areas are representative and are not an exhaustive list of noise sensitive areas within the study area.

In addition to the assessment of noise sensitive areas, the assessment of aircraft noise also presented the number of people and dwellings for the N-above contours, L_{Amax} and ANEC contours. The analysis of the dwelling and population counts applied to locations within the noise contours are based on the Australian Bureau of Statistics (ABS) 2021 census data (ABS, 2022).

The term ‘urban’ has been used in some instances when referring to the Blue Mountains residential areas in order to be distinct from the natural areas of the GBMA. Noise monitoring results for Linden and Blaxland from the 2 ambient noise monitoring sites when compared to the recommended ambient noise levels set in the NSW Noise Policy for Industry (NSW EPA, 2017) suggests that background noise levels would be consistent with levels recommended for suburban residential or rural residential (depending on the time of day). Further detail is available in Section 4.4 of Technical paper 1: Aircraft noise (Technical paper 1). The use of this term has not resulted in a different analysis of the residential areas.

Additional sites specific to the GBMA were presented to inform the assessment of the Matters of National Environmental Significance.

The online Aircraft Overflight Noise Tool was available to the public allowing the user to view specific addresses or locations geographically against the proposed noise contours to provide site specific information and context.

10.2.2 Assessment criteria/metrics – N60, N70, ANEC, L_{Amax} and L_{Aeq}

10.2.2.1 Issue raised

Raised by

Community, Blacktown City Council, Blue Mountains City Council, Fairfield City Council, Susan Templeman MP – Member for Macquarie (Federal), The Parks – Sydney's Parkland Councils, Western Sydney Regional Organisation of Council (WSROC)

Issue

N-above, ANEC and L_{Amax}

Some submissions stated that aircraft noise information has been presented in a range of formats consistent with current guidelines to identify areas potentially affected by aircraft noise, based on a completed peer review of Technical paper 1. However, other submissions criticised the metrics, criteria and language (e.g. maximum and typical) used in the assessment, as it made it difficult for the general public to understand the potential impacts (including the cumulative impact of all flight paths) and/or added complexity to the assessment.

Submissions stated that the use of N60 or N70 contours with a frequency of occurrence means that noise sensitive receivers may experience noise levels of 60 dB(A)/70 dB(A) or more at lower frequencies in areas outside the contours. As such, it was requested that the assessment clearly identify these areas in order for the community to understand the potential impacts of the project.

Submissions requested justification for why the Draft EIS had only shown the N60 and N70 contours, and requested that N50 and N40 contours (or even lower thresholds) should be produced in the finalised EIS as:

- it would explain the full geographical extent of aircraft noise and/or
- N60 is not considered to be appropriate in the context of the rural or suburban areas impacted by the project given the low ambient noise environment and/or
- the assessment would be misleading if these lower metrics are excluded.

Submissions stated that results should also be presented to reflect certain sensitive times (such as school times or typical sleeping hours) to understand noise impacts on sensitive land uses.

Submissions criticised or raised concerns with the presentation of noise levels averaged over time and that noise levels have been underestimated as a result. This included comments that:

- L_{Amax} data should be used to produce all N-above noise contour plots, with reference to submissions made to the 2023 Aviation Policy Green Paper
- use of averages (including averages of single event flyovers) artificially lowers noise forecasts
- the lessons learnt from other airport projects in Australia have not been applied as the Draft EIS has presented maximum noise impacts averaged over time. Examples included the third runway project at Sydney (Kingsford Smith) Airport and Brisbane Airport.

Submissions stated that ANEC should not be used to describe impacts, given the limitations of this metric, which predicts reaction to average noise exposure. Submissions also stated that the community does not understand ANEC and may incorrectly assume they would not be exposed to aircraft noise.

External and internal noise levels

Submissions questioned how external and internal noise levels have been considered.

10.2.2.2 Response

N-above, ANEC and L_{Amax}

The aircraft noise assessment has presented several metrics, including N-above and maximum noise levels (L_{Amax}), to gain a complete understanding of the potential noise environment. The EIS Guidelines (EPBC 2022/9143) issued for the project requested the assessment of impacts on people and communities should include relevant metrics such as the ANEC, ANEF (if available), N-above and L_{Amax} (but not N50 and N40 contours). The metrics listed in EPBC 2022/9143 are in line with the National Airports Safeguarding Framework (NASF), including *Guideline A: Measures for Managing Impacts of Aircraft Noise* and accepted industry practice. The assessment is consistent with recent Major Development Plans (MDPs) in Melbourne and Perth and with the Department of Infrastructure, Regional Development, Communications, and the Arts' (DITRDCA) Aviation Green Paper. The finalised EIS and supporting noise assessment brochure are clear in describing the purpose of the noise metrics, including the ANEC.

The N-above contours presented in the assessment provide an alternative noise metric to the ANEC. This measure is presented in decibels and indicates how many aircraft noise events are forecast to exceed a particular decibel level each day based on an average day of aircraft activity (over a 24-hour period, or over the night period (11 pm to 5:30 am)) in the adopted average meteorological conditions. The use of averages in aircraft movements and meteorological conditions is discussed later in this section.

The N60 and N70 contours presented in the finalised EIS include:

- N60 (24-hours) – 10, 20, 50, 100 and 200 events per day
- N70 (24-hours) – 5, 10, 20, 50 and 100 events per day
- N60 (night) – 2, 5, 10, 20 and 50 events per day.

The N60 and N70 contours have been prepared for the 3 assessment scenarios in 2033, 2040 and 2055. A composite scenario has also been presented, which combines the 3 assessment scenarios to create a maximum outer envelope of potential impacts of aircraft noise for each assessment year. It is acknowledged that variations in meteorological conditions, pilot technique, actual daily airline scheduling and aircraft loads would result in slight variations to overflight noise levels, both higher and lower than the modelled average.

Lower N-above contours are not a requirement of the NASF or the EIS Guidelines. There are limitations in the prediction of aircraft noise at lower thresholds at a sensitive receiver due to a number of variables, specifically:

- the number of environmental factors that can influence noise propagation as the distance from the noise source increases. This includes factors such as temperature, cloud cover, wind and obstacles (or shielding)
- the lateral and horizontal position of aircraft above 10,000 feet (ft) (3 kilometres (km)). At these altitudes, the position of an aircraft can be highly variable and difficult to reflect within a model.

It is acknowledged that locations beyond each N-above contour boundary may still be subjected to noise exposure from aircraft overflights, and aircraft noise would be audible beyond these boundaries particularly in low ambient noise environments. For this reason, the finalised EIS presents the maximum noise (L_{Amax}) contours as well as the maximum noise level at each noise sensitive area. The assessment of respite was also undertaken for each noise sensitive area regardless of the sound level of the overflight events. Further detail of this analysis is presented in Appendix A of Technical paper 1.

The ANEC is a cumulative noise measure which illustrates aircraft noise exposure based on operating scenarios and shows expected exposure levels from an average day's anticipated aircraft movements, calculated over a 12-month period. The ANEC contours are a land-use planning tool, with their application outlined in AS 2021:2015 Acoustics – Aircraft noise intrusion – building siting and construction (AS 2021:2015) (Standards Australia 2015). The inclusion of this metric was to comply with the EIS Guidelines and informed the development of the NIPA.

The use of N-above contours in the finalised EIS show that the aircraft overflight noise impact extends beyond the traditional ANEC contours. This was one of the key lessons learned from the Sydney Third Runway project. Aircraft noise levels in the US FAA's (Federal Aviation Administration (United States)) AEDT (Aviation Environmental Design Tool) software were also calibrated based on actual data recorded by Airservices Australia's Noise and Flight Path Monitoring System (NFPMS) at Brisbane, Melbourne and Perth Airports. The calibrated noise profiles for aircraft were carried

forward into the assessment to better reflect actual noise levels. The influence of the calibration is presented in contour figures in Section 9.8.4 of Technical paper 1. The analysis found that the calibration process had a material impact on the predicted noise levels.

A select number of schools have been assessed as a noise sensitive area. Noise levels have been presented as average noise levels and the maximum noise level for all 3 assessed scenarios during daytime hours.

External and internal noise levels

The N60, N70, maximum noise level and average noise levels presented in the finalised EIS are external noise levels. The assessment does identify that a reduction of 10 dB(A) can be assumed for a typical building with doors and windows open. For example an external noise event of 70 dB(A) (such as aircraft flyover) can lead to in an indoor sound level of 60 dB(A) when windows are opened (enough to disturb conversation).

10.2.3 Assessment criteria/metrics – Annoyance, L_{den} and L_{night}

10.2.3.1 Issue raised

Raised by

Community, Wallacia Progress Association

Issue

Submissions queried how annoyance or sensitivity to noise had been considered in defining criteria or factored in the prediction of noise levels, particularly in rural or natural landscapes. Submissions referred to:

- the International Civil Aviation Organization's (ICAO) Balanced Approach to Aircraft Noise Management (ICAO, 2008) – specifically that "consider aircraft operations occurring between the hours of 10 pm and 7 am to be ten decibels louder than operations occurring during the daytime to account for the increased annoyance when ambient noise levels are lower and residents are sleeping". An example given was that predicted noise levels for a narrowbody jet (Airbus A320) would be around 70 dB(A) (L_{Amax}), and that this adjustment would result in a perceived noise level of 80 dB(A) at night
- annoyance criteria recommended in WHO's *Guidelines for Community Noise* (1999), including an external L_{Aeq} 55 dB(A) for external areas.

Submissions expressed the view that the noise assessment should apply recommended noise criteria identified in *Environmental noise guidelines for the European Region* (WHO, 2018a), with submissions stating that the WHO have recommended that new targets are incorporated into national policies. This included thresholds of 45 dB L_{den} for day and 40 dB L_{night}.

10.2.3.2 Response

It is acknowledged that locations beyond each N-above contour boundary may still be subjected to noise exposure from aircraft overflights. Even at low exposure levels, individuals may still experience annoyance, because individual reaction to aircraft overflight noise is highly subjective.

The noise metrics presented in the finalised EIS, including the maximum noise levels (L_{Amax}) and N-above contours (N60 and N70) are unweighted and based on modelled noise levels.

The assessment has presented the N70 and N60 over a 24-hour period and presented N60 for the night period (11 pm to 5:30 am). The N60 is 10 dB(A) below the N70 threshold to reflect expected lower ambient noise levels. The assessment has also presented a lower threshold of N60 for night, commencing at 2 to 4 movements per night compared to the 10–19 movements presented in the N60 and N70 contours for the 24-hour period. The calculation of the ANEC also applies a penalty of 6 dB(A) to any aircraft movement between 7 pm and 7 am. This is equivalent to a weighting of 4 times per movement.

For the assessed noise sensitive areas, the L_{Aeq} levels are generally all below 55 dB(A) except near the boundary of the Airport Site by the time single runway operations are nearing capacity in 2055. The L_{Aeq} for the night period (11 pm to 5:30 am) is also presented in the assessment. Further detail of these results is provided in sections A2 to A4 of Appendix A of Technical paper 1.

The human health assessment evaluated the health effects of aircraft noise using robust, internationally recognised studies based on exposure-response relationships determined from a range of community or epidemiological studies specific to populations exposed to aircraft noise. Evaluation includes effects considered to be subjective, such as annoyance. The assessment has considered L_{den} and L_{night}, noting that L_{den} has been considered as an average noise level over a 24-hour period. This has been discussed further in Chapter 19 (Human health) of this Submissions Report and is discussed in depth in Chapter 6 of Technical paper 12: Human health (Technical paper 12).

10.2.4 Assessment criteria/metrics – Night and sleep disturbance

10.2.4.1 Issue raised

Raised by

Community, Blacktown City Council, Blue Mountains City Council, Camden Council, Campbelltown City Council, Friends of Fernhill and Mulgoa Valley Inc, Penrith City Council, The Hills Shire Council, The Parks – Sydney's Parkland Councils, WSROC, Wollondilly Shire Council

Issue

Submissions criticised the definition of day and night for the project, as this does not align with industry standard or accepted practice for describing aircraft noise impacts (11 pm – 7 am). Submissions suggested that the:

- noise predictions as presented in the Draft EIS have been impacted by this definition, and masks the potential impact on overflown communities, and/or
- noise predictions and assessment of impacts and mitigation should be revised to consider a broader defined night time period.

Submissions also criticised sleep disturbance criteria, noting awakening would occur as a result of maximum noise levels, not averaged noise levels. Submissions supported the use of the percentage of highly sleep disturbed (%HSD) metric in the Draft EIS but recommended this should be completed by an event-based threshold (like N60).

Submissions also stated that the assessment criteria should be more stringent during the night than daytime.

10.2.4.2 Response

The definition of 'night' for the purposes of the finalised EIS reflects the specific night-time airspace design for WSI. The preliminary airspace design took advantage of additional airspace flexibility available at night (11 pm to 5:30 am) with Sydney (Kingsford Smith) Airport under curfew between 11 pm and 6 am (local time), to design an alternate suite of flight paths. The Sydney (Kingsford Smith) Airport curfew applies to aircraft operations between 11 pm to 6 am (local time). With aircraft scheduled to land at Sydney (Kingsford Smith) Airport at 6 am already in the adjacent Sydney Basin airspace prior to this time, the flexibility for implementing WSI flight paths at night is limited notionally to between 11 pm to 5:30 am.

This definition of Night applies to all metrics assessed in the aircraft noise assessment, except the ANEC. The ANEC weights flights between 7 pm and 7 am more than at other times meaning they have a larger impact on the cumulative contours. For this assessment, flights at night are weighted more than the flights during the day meaning that they have a larger impact to the cumulative contours.

At night, a maximum noise level of 60 dB(A) represents an indoor maximum noise level of 50 dB(A) with windows open. This level was found to trigger awakenings with some people.

As discussed in Section 10.2.2, the finalised EIS presents N60 contours at night in recognition of the sensitivity and potential sleep disturbance that could occur as a result of the night time flight paths. It also presents N60 contours at lower thresholds for night time movements compared to the N60 (24-hour) periods. The minimum threshold of 2 movements per night as presented in the finalised EIS is more stringent than the recommended 6 movements as prescribed in the NASF.

Further discussion on the impacts of aircraft noise in sleep disturbance (including %HSD) is provided in Sections 19.2.2 and 19.3.2 of this Submissions Report.

10.2.5 Influence of topography and meteorological conditions

10.2.5.1 Issue raised

Raised by

Community, Blue Mountains City Council, Cumberland Land Conservancy, Friends of Fernhill and Mulgoa Valley Inc, Mount Wilson Progress Association and Mount Irvine Progress Association, Social Justice Committee – Holy Spirit Catholic Church St Clair, Susan Templeman MP – Member for Macquarie (Federal), The Hills Shire Council, WSROC, Wollondilly Shire Council

Issue

Submissions criticised the limitations in the assessment to account for topography, and/or expressed concern that local topography and meteorological conditions had not been accounted for in the aircraft noise assessment. Submissions were concerned that noise levels would be greater than predicted as a result.

Specific comments included:

- the presence of undulating terrain, valleys, cliffs, ridges, escarpments and canyons would cause noise to reverberate/echo, reflect and intensify, leading to higher noise levels or persistent noise. This was raised in the context of features in Western Sydney to the north, south and west of the Airport Site, and in combination with meteorological conditions. Many submissions identified this in the context of the Nepean Gorge, features in the Hawkesbury area and the Blue Mountains (including the broader GBMA area), and examples of existing aircraft activity attributed to Sydney (Kingsford Smith) Airport being audible
- altitude of residential areas had not been accounted for in the noise assessment, and therefore noise levels would be greater than predicted. This was often raised in the context of altitude of suburbs in the Blue Mountains but also included other locations such as Silverdale, and in combination with concerns about variations in aircraft position on a particular flight path
- the prevailing wind direction, temperature inversions and the lack of obstacles would cause predicted noise levels to be higher than predicted and/or would mean that aircraft noise would be audible over greater distances. Locations identified in submissions included (but are not limited to) the Upper Blue Mountains, and areas in the Hawkesbury region
- noise should be predicted under all weather conditions
- the assessment should account for the influence of temperature and other atmospheric conditions on predicted noise levels, including the impacts of climate change (extreme temperatures) and how this affects aircraft performance and noise levels at ground level
- that AEDT modelling has not accounted for meteorological influences and is a known limitation of the modelling software
- the noise assessment only accounts for annual average weather conditions and does not consider periods of the year which give rise to increased aircraft noise levels. The finalised EIS should include a discussion on the frequency of periods of the year in which meteorological conditions would result in increased aircraft noise levels.

10.2.5.2 Response

The noise modelling completed for the project is underpinned by wide-ranging assumptions as summarised in Table 8.1 of Technical paper 1, including meteorological conditions, terrain and atmospheric absorption.

The model takes into account meteorological conditions in the assessment of aircraft performance, noise propagation and runway usage (based on wind direction and speed). For meteorological conditions, the annual average of temperature, wind speed and humidity was applied. This was sourced from the Bureau of Meteorology (BoM).

A sensitivity analysis was completed to account for the average maximum for temperature, humidity and wind speed for the Australian winter and summer. This found that meteorological conditions would have limited impact on the outcomes of the assessment. The single most important factor in how meteorological conditions influence the noise assessment outcomes is related to how wind direction and speed influences the use of the preferred runway mode of operation or the ability to use Reciprocal Runway Operations (RRO) at night. This is discussed further in Section 10.2.7 of this Submissions Report. Further detail is provided in Section 9.8.1 of Technical paper 1.

Hot weather conditions are factored into aircraft departure procedure design to ensure aircraft can comply with Standard Instrument Departure (SID) requirements with less than optimum performance capability. Extreme temperature operations have not been accounted for in the modelling but it could result in areas being subject to single event exposure when SIDs for hot weather operations are used.

The terrain of the study area has been accounted for in the assessment, however the modelling has not taken into account the line-of-sight (shielding of receivers from a noise source). Terrain data was sourced from the United States Geological Survey (USGS)'s Digital Elevation – Shuttle Radar Topography Mission (SRTM) Non-Void Filled. The data was processed in to eliminate any void areas that could impact the modelling. This is discussed in Section 8.12 of Technical paper 1.

The assessment did not assess the dynamic contribution of weather conditions (e.g. wind, cloud ceiling, temperature, inversions) however average atmospheric absorption was included in the AEDT modelling using static weather conditions. The AEDT model used the inherent atmospheric absorption according to SAE-ARP-5534 which means that noise data was adjusted for temperature, relative humidity, and atmospheric pressure values (study-specific airport conditions).

10.2.6 Variation in aircraft noise and respite

10.2.6.1 Issue raised

Raised by

Community, Blue Mountains City Council, RAWSA, The Parks – Sydney's Parkland Councils, WSROC

Issue

Some submissions stated that the modelling has provided a reasonable representation of the noise impacts for the flight tracks modelled, based on a peer review of Technical paper 1.

However, other submissions expressed concern or made comment that noise levels or the level of respite predicted in the Draft EIS or the online Aircraft Overflight Noise Tool would vary due to the assessment assumptions or limitations of the assessment, specifically:

- the Draft EIS and online Aircraft Overflight Noise Tool does not account for variations in the position of the aircraft on a particular flight path (horizontal or vertical) (including those taken at the direction of air traffic control), and therefore noise would extend further than shown, or areas may be exposed to higher noise levels than shown
- the Draft EIS and online Aircraft Overflight Noise Tool has not presented the impacts from aircraft that may fly at lower altitudes depending on weather and operational conditions. This was often raised in the context of communities within the Blue Mountains

- queried how respite had been determined when factoring in horizontal variations in aircraft position on a flight path or when accounting for altitude differences, or why respite had not been calculated for a locality. An example identified in submissions was in relation to Woodford and Faulconbridge, where submissions expressed concern that respite had not been calculated in the Draft EIS for these suburbs but that these areas could experience similar levels of respite as predicted for Linden (between 0 and one per cent by 2055) as these suburbs would be overflown by the same flight paths.

There was criticism that the community was required to determine the altitude separation between certain suburbs or locations to the flight path as this was not done in the Draft EIS or the online Aircraft Overflight Noise Tool when expressing altitudes, or that the separation should be expressed in the metric system and/or communicated in the context of current aircraft activity (e.g. 20 per cent lower than aircraft associated with Sydney (Kingsford Smtih) Airport) in order to understand the difference in noise impacts. Submissions stated that re-calculation was required to understand what the change (increase) in noise level would be.

One submission recommended that respite is presented differently within the finalised EIS, including figures that provide the daily range of movements (minimum and maximum movements) in addition to average daily movements, the number of movements in that corridor as an annual percentage of all movements at WSI, and the percentage of days per year with no movements). This submission acknowledged this may require a suite of figures to account for potential variation over different times of the day, weekday or seasons.

Submissions queried how tonal noise had been accounted for in the assessment.

10.2.6.2 Response

Flight paths are 3-dimensional routes that safely guide aircraft between origin and destination airports. In the finalised EIS they are shown as a broad band or corridor, based around a centreline (backbone) track. Unlike a train on a railway track, an aircraft cannot track precisely along a designated path without any deviation. This is influenced by meteorological conditions, pilot techniques and variations in aircraft performance. It is noted that aircraft can deviate laterally from SIDs and Standard Instrument Arrivals (STARs) due to a number of reasons such as air traffic control operational requirements. Flight path procedures for WSI and off-procedure manoeuvring operations are discussed in detail in sections 7.3.2 and 7.5.7 of the finalised EIS, respectively.

The modelling of flight paths assumes most aircraft would be concentrated around the centreline path, with decreasing proportions allocated towards the outer edge of the corridor. For other airports this corridor is derived from radar data of actual paths flown by each aircraft over a period (day, week, month or year). Operations have not commenced at WSI and therefore no WSI historic data or baseline can be applied.

Instead, actual radar track data from recently implemented Performance Based Navigation (PBN) based SIDs and STARs at Brisbane Airport was used as a basis to inform the allocation of proportion of aircraft within a flight path corridor. The flight path corridor spread from Brisbane Airport is considered a closer representation of the proposed similar PBN based air traffic procedures at WSI than that associated with Sydney (Kingsford Smith) Airport, which operates on a different flight path design and airspace management model. The dispersion of aircraft within the flight paths have also taken into account any qualifications that Airservices Australia may have considered for local operational reasons.

As discussed further in Section 10.2.8 of this Submissions Report, a sensitivity analysis and calibration process has been undertaken to account for variation to the vertical position of an aircraft. In particular, the calibration was found to have a noticeable outcome on the results of the assessment, ensuring a conservative assessment is achieved. Equally, variations in the position of the aircraft on a particular flight path (horizontal or vertical) may have a positive effect in reducing the areas exposed to noise levels.

Distances in the finalised EIS have been expressed in altitude (ft) and nautical miles (nm), with equivalent conversion into metres (m) or kilometres (km). It is acknowledged that the altitudes of aircraft referenced in the finalised EIS and as presented in the online Aircraft Overflight Noise Tool do not subtract the altitude of the underlying terrain. As addressed in Section 10.2.5, the terrain and altitude of residential areas was included in the AEDT aircraft noise model. As the assessment has accounted for terrain, there is no need to recalculate the noise levels as presented in the finalised EIS or on the online Aircraft Overflight Noise Tool.

The respite charts have been presented in the finalised EIS and focus on individual flight paths. The respite charts in the finalised EIS show the percentage of days and nights when no aircraft movements are expected on a specific arrival or departure flight path. Figures are based on annual movements for the relevant assessment years (2033, 2040 and 2055). Separate charts are shown for day (5:30 am to 11 pm), night (11 pm to 5:30 am) and RRO (11 pm to 5:30 am) flight paths. Respite ranges from zero per cent (no respite – at least one daily movement every day of the year) to 100 per cent (full respite – no projected movements on all days of the year). These are presented in Appendix B of Technical paper 1.

The daily range of movements (minimum, average and maximum) for each assessment scenario and year (2033, 2040 and 2055) are included in the flight path movement charts as presented in the finalised EIS. These are presented in Appendix B of Technical paper 1.

A further analysis of the proportion of respite by noise sensitive area is also provided in Section A6 of Appendix A of Technical paper 1. This informed the analysis presented in Section 9.7.3 of Technical paper 1. This respite assessment is based specifically on aircraft overflights within a one km distance from a flight path, regardless of the predicted sound level. Other noise metrics including L_{Amax} and L_{Aeq} can be combined to provide a more complete assessment of aircraft noise impacts on the community and environment surrounding WSI.

Most modelling is based on A-weighted noise product. The ANEC however, is based on the Effective Perceived Noise Level (EPNL). The human ear does not perceive sound the same way across all frequencies. To take account of the variation of this perception, various methods of frequency weighting have been developed. The decibel A-Weighted scale (dB(A)) is the most used scale for sound impacting humans because it gives lower weight to low and high frequency noises which are less perceptible to the human ear. Further information is provided in Chapter 3 of Technical paper 1.

10.2.7 Assessment scenarios

10.2.7.1 Issue raised

Raised by

Community, Blacktown City Council, The Parks – Sydney's Parkland Councils, WSROC

Issue

Some submissions stated that the modelling has provided a reasonable representation of the operating scenarios modelled, based on a peer review of Technical paper 1. However, these submissions stated that the assessment did not appear to provide sufficient information about the frequency of each operating mode (acknowledging this is influenced by meteorological conditions) and that the finalised EIS should provide further discussion on the frequency and feasibility of the operating modes (including RRO, noting the limited conditions that this would occur. Submissions also questioned why the assessment years modelled in the Draft EIS had been selected.

Other submissions expressed concern with the scenarios assessed in the Draft EIS and that the assessment underestimates the impacts of the project, specifically:

- the assessment did not consider peak operating periods, and only considered averages
- the assessment should consider 'worst-case' impacts or provide a sensitivity analysis to account for variability in the operation of the flight paths
- that the assessment should identify the likelihood of when noise abatement procedures are compromised, and assess when noise abatement procedures are not in place, given these procedures would be compromised by weather conditions (such as extreme heat)
- 'Hold down procedures', 'departure transition areas' and 'radar vectoring areas' have not been assessed in the Draft EIS, and as a result, the predicted noise levels have been underestimated (including in the GBMA).

It was also queried why the assessment applied data from Brisbane Airport to discuss implications of hold down procedures, given the community reaction to Brisbane Airport flight paths.

Submissions questioned the use or suitability of using AEDT. This included a comment that while the use of AEDT for calculating maximum noise levels is considered reasonable, any such calculations should be primarily used to understand the range of potential noise levels and to compare different scenarios, rather than the direct prediction of the maximum noise level expected to be measured in practice.

Submissions also stated that the Draft EIS had not modelled or considered existing aircraft noise despite available data, for example within the Blue Mountains. The assessment should account for existing aircraft noise, given the potential noise intrusion in the natural areas of the GBMA.

10.2.7.2 Response

Several runway operating scenarios were modelled to generally cover the envelope of potential impacts of aircraft noise for each reference year (2033, 2040, 2055). These years were selected to represent the short, mid and long-term projection of operations at WSI and reflect the change in noise impact as airport traffic increases. The scenarios presented in the finalised EIS represent:

- 'No preference', meaning that runway use was determined based on prevailing wind direction, resulting in balanced usage (approximately 50 per cent on both Runway 05 and Runway 23) in terms of runway direction and runway end exposure. This indicated that both runway ends are exposed to a similar proportion of arrivals and departures on an annualised basis
- 'Prefer Runway 05', meaning that the use of Runway 05 (Day) and RRO (Night) is preferred
- 'Prefer Runway 23', meaning that the use of Runway 23 (Day) and RRO (Night) is preferred.

For the finalised EIS, the implications of noise exposure due to the inability to apply RRO is modelled using the 'No preference' scenario.

Key inputs into the assessment scenarios include the projected demand schedules supplied by WSA Co for 2033, 2040 and 2055 and the modes of operations priority (based on meteorological data and air traffic management rules).

Each aircraft movement was allocated to a runway based on the criteria of each operating scenario, using actual weather conditions from the last 10 years (2012-2021). Figure 8.11 and Figure 8.12 of Technical paper 1 present the resulting cumulative runway end exposure and runway usage for each scenario and projected activity level, for daytime and night-time operations respectively. The number of aircraft movements and exposure of aircraft noise is provided in the flight path movement charts and respite charts provided in Appendix B of Technical paper 1.

The RRO mode of operation (and RRO-NAP) can only be used at night (11 pm to 5:30 am). Based on meteorological conditions only, RRO mode of operation could operate as much as 78.4 per cent of the time at night if prioritised. Table 10.2 provides the projected frequency of each mode of operation by assessment scenario based on the 10 years of historical wind data.

Table 10.2 Projected frequency of each mode of operation by scenario using averaged historical wind data (2012–2021)

Mode of operation	Frequency of use by scenario		
	No preference	Prefer Runway 05	Prefer Runway 23
Runway 05 – Day	45.9%	73.4%	17.9%
Runway 23 – Day	54.1%	26.6%	82.1%
Runway 05 – Night	54.0%	3.6%	2.9%
Runway 23 – Night	46.0%	18.0%	18.7%
RRO – Night	0.0%	78.4%	78.4%

For the night time operations, the 'No preference' scenario is balanced with a similar proportion of arrivals and departures on an annualised basis. However, the other scenarios introduce the RRO mode of operation which consists of arrivals on Runway 05 and departures in the opposite direction on Runway 23. In these scenarios, almost 90 per cent of night-time movements could operate over the south-west end of the Airport Site on an annualised basis.

Modelling has assumed that the RRO mode of operation can be sustained across the night when weather conditions are suitable. However, as demand grows over time and approaches the RRO capacity limits (represented by years 2040 and 2055), availability and usage of RRO will be more limited. This would in turn progressively increase the proportion of movements at the north-east end of the Airport Site.

The potential limitation in usage was not accounted when determining the runway allocation given this would ultimately be determined by the actual schedule for WSI (along with any natural day-to-day variation from schedule). Because of this, the noise assessment process has not considered the potential reduction in RRO availability in the 2040 and 2055 forecast schedules and assumed the application of RRO to the extent possible, only constrained by weather conditions based on the trend analysis of 10 years of meteorological data. For the finalised EIS, the implications of noise exposure due to the inability to apply RRO is modelled by the No preference scenario. This is complemented by sensitivity testing.

The assessment has combined average noise levels, frequency of movements and maximum sound levels to provide a holistic view of the types of impacts likely to be experienced by a given community. A 'peak' operating period would only present impacts for a very discrete period of time as it would be dictated by the origin and destination of the aircraft (i.e., the flight path used) and the runway in use (based on operating scenario and wind direction/speed).

A sensitivity analysis was conducted as part of the assessment to consider the variability of the scenarios should movements occur all on the same runway for a given day. This unidirectional scenario resulted in minimal differences when comparing the results to the composite N70 contour. A range of other sensitivity analyses was also completed to understand what influence of other factors such as weather (including extreme heat), fleet mix variation, weekday versus weekend, and seasonality could have on the outcomes of the assessment.

The sensitivity analysis found that the single-most important variable is the flight schedule, which includes the number of movements, the aircraft type, the time of day and the origin-destination. Variables such as weather, temperature and wind direction have been found to have minimal material impacts on cumulative noise exposure compared to other variables. However, some single events for specific aircraft may be perceptible when the use of SIDs procedures for hot days are required. Further information can be found in Section 9.8 of Technical paper 1.

Noise abatement procedures included in the preliminary design include the use of noise preferential flight paths which, where possible, direct aircraft operations away from noise sensitive areas and the use of different flight paths between 11 pm and 5.30 am, when additional airspace flexibility is available as a result of substantially diminished Sydney (Kingsford Smith) Airport operations during this period. The noise abatement procedures would be further developed by Airservices Australia during detailed design. This is discussed further in Section 10.6.1.

As acknowledged in the finalised EIS, aircraft could deviate off a flight path for many reasons, including safety. Air traffic control may cancel the tracking and altitude requirements of a SID and STAR, and provide the pilot with instructions to leave the published route either by the use of radar vectoring or direct tracking to an off-procedure waypoint. This includes transitioning areas, which are required to account for when WSI is transitioning between changed runway modes of operation that require a different approach and/or departure. Radar vectoring areas have also been identified for certain WSI flight paths in Section 7.5 of the finalised EIS.

It is not feasible to predict, depict, nor quantitively assess the impact of such operations. Some communities located under radar vectoring areas could be seldomly exposed to WSI aircraft noise. Accounting for radar vectoring in the assessment could also result in an underestimation of WSI aircraft overflight noise impacts in the community directly under the new flight paths and more frequently exposed to overflight.

The flight paths include level restrictions across some of the proposed procedures. The altitude restrictions being proposed for departing WSI traffic include level hold downs at specific waypoints with altitudes ranging between 4,000 ft (1.2 km), and 15,000 ft (4.5 km). Hold downs may be occasionally cancelled when traffic permits, but it is important to note that the opportunity to cancel procedures decreases as traffic levels at WSI increase beyond 2033.

The use of hold down procedures is subject to the discretion of air traffic control. The use of hold down procedures has been subject to a sensitivity assessment and is detailed in Section 9.8.5 of Technical paper 1. This assessment shows that these procedures can elongate the noise footprint of a specific operation and have the potential to generate a standalone noise impact (a “noise island”) further along the flight path, often where the altitude restriction is eased.

Analysis of hold downs also showed in the assessment that the communities impacted by hold downs are the same communities that are impacted by continuous climb operations. This is because the noise contours do not represent the start or end of noise annoyance: they represent a noise metric threshold. Since hold downs involve a variation of altitude and thrust along the same flight path, the same communities would be impacted. This analysis also assumed an altitude restriction based on WSI-specific AEDT model profiles, which may be more conservative than airlines chose to operate.

The limitations of the noise model are summarised in Section 8.14 of Technical paper 1. As highlighted elsewhere within this chapter, the calibration of the baseline aircraft models in AEDT was undertaken based on actual noise monitoring data at the Brisbane, Perth and Melbourne airports. While this provided an additional conservative layer to the assessment, the noise levels would depend on meteorological conditions, individual pilot actions or procedures such as hold downs and other measures that could impact the altitude or engine thrust levels.

It is acknowledged in the finalised EIS that the areas surrounding WSI are already impacted by aircraft overflight noise and that these operations were perceptible based on the ambient noise monitoring described in Section 4.5 of Technical paper 1. These impacts have not been subject to a quantitative analysis. This is further discussed in Section 21.2.2 of this Submissions Report.

10.2.8 Aircraft assumptions

10.2.8.1 Issue raised

Raised by

Community, Blue Mountains City Council, Friends of Fernhill and Mulgoa Valley Inc, RAWSA, WSROC

Issue

Some submissions stated that the selected aircraft types in the assessment are appropriate and has included a conservative approach by assuming all future aircraft operations are characterised by the noise emissions of existing aircraft, based on a peer review of Technical paper 1.

However other submissions expressed concern with the assessment or that impacts had been understated given the assumptions applied for aircraft, specifically:

- noise levels would be higher due to freight aircraft typically being louder and/or older, and the Draft EIS has not clearly stated the assumptions on the frequency or what type of aircraft would operate from WSI (and at what time) or assessed the impact of these aircraft. This comment also related to the results as presented via the online Aircraft Overflight Noise Tool
- the assessment has applied simulated noise levels from aircraft to predict noise levels as opposed to using actual noise level data from existing aircraft activity. As such, this approach was criticised as it lacked any validation of the predicted results
- Airbus A380 should be included in the assessment and online Aircraft Overflight Noise Tool
- the aircraft selected for the assessment represent the quietest in the current possible fleet operating to/from WSI, or that the assessment relied on quieter aircraft being adopted in the future
- there is no guarantee that aircraft assumptions would be as predicted, given the lack of regulation in Australia on noise standards
- queried the justification for aircraft noise levels varying according to stage length as assumed in the assessment and stated that a more accurate assessment of variation in aircraft noise based on flight duration is required.

Submissions referred to monitoring (completed by others) of existing aircraft activity at similar altitudes that WSI aircraft would operate which suggests noise would be louder than what has been predicted in the Draft EIS. As a result, the submissions suggest that the predictions in the Draft EIS are inaccurate.

Submissions criticised the exclusion of ground noise contributions from aircraft given this would contribute to noise levels experienced at sensitive receivers, and that this would also worsen under certain meteorological conditions (such as temperature and humidity, air pressure, wind speed and direction).

10.2.8.2 Response

The aircraft types used in the assessment are based on demand schedules projected by WSA Co, which includes freight aircraft. The assessment did not include Airbus A380 as this aircraft type is not identified in the demand schedule for WSI. The types of aircraft considered in the assessment and the number of movements on an average day in 2033, 2040 and 2055 are detailed in Section 8.6 of Technical paper 1 (including Table 8.7).

Aircraft types assessed and modelled for the finalised EIS are conservatively based on those currently in service, and not all types of aircraft listed in the finalised EIS are expected to still be in operation by 2055. The AEDT model inputs include a suitable and considered mix of current and future aircraft types that are expected to operate based on the demand schedules. While there is an observed ongoing trend towards the operation of quieter aircraft, the assessment is based on a conservative assumption around the introduction of new aircraft. Progressive improvements in noise and emissions generation associated with the ongoing evolution of aircraft models would result in noise reductions and community benefits. This includes freight aircraft.

While most aircraft types used the default aircraft noise modelling profile in AEDT, some aircraft have an equivalent model (substitution) with adjusted noise levels to reflect the differences between the substitute aircraft and the new modelled aircraft. This is especially applicable to newer aircraft types that have yet to be included in the AEDT database. For example, the Boeing B777-9 was substituted by the existing Boeing B777-300ER without adjustments in the absence of certified noise data for the Boeing B777-9.

While it is agreed that there is no legislative requirement on noise standards to guarantee these improvements, the assumptions are based on industry intelligence and advice from major operators in regard to their future fleet renewal plans. The flight schedules modelled is a key assumption that will differ to actual flights when WSI opens in 2026. However, a quieter fleet is an expected outcome because of the new generation aircraft that are being certified against Chapter 14 of the ICAO's Annex 16, and given the commercial imperative for airlines to operate a cost-effective fleet, which means cleaner and quieter aircraft types. This is further discussed in Section 10.3 of Technical paper 1.

The modelling of aircraft reflects the noise data collected from Airservices Australia's Noise and Flight Path Monitoring System (NFPMS) at Brisbane, Melbourne and Perth Airports. The NFPMS measures sound levels of aircraft overflights through a series of strategically positioned fixed noise monitoring terminals in communities near major Australian airports.

The latest version of AEDT (Version 3e) was used, as it has the widest range of latest aircraft types as listed in Table 8.7 of Technical paper 1. The detailed specifications on the climb profile and adjusted stage length used in AEDT are provided in Technical paper 1. In line with current practice and methodologies for MDPs at Melbourne and Perth airports, individual aircraft types were adjusted through the modification of the stage length assigned to each operation. The calibration was conducted using NFPMS data for the year 2019, using correlated noise and radar data. Where the modelled noise levels differed with actual monitored noise levels, the departure and/or stage length were modified to provide better alignment. This was completed in consultation with Airservices Australia.

In the AEDT software, departures are defined for several 'stage lengths', representing different distances to the destination using calibrated aircraft details. The standard approach to developing stage length specifications in AEDT is described in the Technical Manual for the software and include parameters such as: representative trip length; load factor; fuel load; and cargo assumptions. The calibration of the AEDT noise profiles was based on noise data collected at Brisbane, Perth and Melbourne airports. The stage length is used in the noise model as a proxy of aircraft weight. This accounts for the fact that departing aircraft with longer flights generally require more fuel, which increases weight and require more engine power (thrust) and/or a shallower climb rate. For arriving aircraft, noise is generally independent of the distance flown because minimal thrust is required and most of the noise on arrival is generated by air flowing over and around the airframe.

The AEDT model considered the take-off roll and landing roll of aircraft only. Ground noise associated with aircraft taxiing between the single runway and aircraft parking stands, aircraft engine run-ups and other airport operations was assessed in the 2016 EIS. The Draft EIS is specifically focussed on the assessment of aircraft overflight noise from the use of the new airspace structure and flight paths introduced by WSI.

10.2.9 Other issues

10.2.9.1 Issue raised

Raised by

Community, Camden Council, Social Justice Committee – Holy Spirit Catholic Church St Clair, WSROC

Issue

Submissions questioned the reliability of the assessment given it depends on forecasts. Submissions suggested that the noise assessment should be independently verified. Questions were raised about what validation had occurred, including the use of monitoring.

Submissions raised questions about why Sydney (Kingsford Smith) Airport aircraft at higher altitudes can be heard now whereas the WSI modelling suggests lower flying planes would not result in high levels of noise.

Submissions raised concern that the assessment failed to:

- consider low ambient noise environments, and that it did not account for the fact that aircraft noise would not be masked by other noise sources (when it occurs in a city environment)
- predict noise levels at a dwelling level with confidence, and therefore does not satisfy legislative requirements.

Submissions expressed concern that the Draft EIS had not considered future population growth and has not accounted for the future dwelling and population exposure. There was concern that the Draft EIS had not considered the impact on future residential areas as a result, and the opportunities to avoid and minimise impacts have not been considered.

Some submissions suggested the use of test flights for the community to understand aircraft noise or claimed that this is already occurring. Other submissions requested an aircraft noise assessment of alternative flight paths.

10.2.9.2 Response

The model has been subject to calibration and sensitivity analysis as discussed in Sections 10.2.2 to 10.2.8 of this Submissions Report. The technical paper has been prepared by suitably qualified specialists, and subject to review by Airservices Australia.

Noticeability and annoyance are separate concepts and are subjective to an individual. Noticeability is the ability to hear aircraft sounds over natural or urban ambient noise levels. Annoyance can be triggered by a frequency of different sound level thresholds. The noise contours presented in the Draft EIS are aimed at capturing areas more likely to be annoyed by a combination of loud single-events or repetitive events of noise level thresholds that could impact daily activities (60–70 dB(A)).

Low ambient noise environments have been considered in the assessment of different average noise exposure levels. The noise sensitive areas assessed sites up to 50 km from WSI in rural areas and Blue Mountains urban areas where aircraft noise could be more likely to be noticeable due to the lower ambient soundscape. Some increased noise impacts as a result of exposure from aircraft noise in these areas under the preliminary flight paths would be an unavoidable consequence of WSI operations.

The assessment does consider noise at dwelling levels as far as reasonably practicable and in accordance with the preliminary design status of the project. The analysis of dwellings and population has been presented using 2021 census data at a mesh block level.

Areas within the vicinity of WSI, such as Luddenham and the South West Growth Area (SWGA) are, or have been, rezoned with the aim of connecting new suburbs with WSI and the future Aerotropolis. For example within the SWGA, 9 precincts have been rezoned with a focus on providing new residential areas to support Western Sydney's growth. It is acknowledged that some of these areas would be overflown by the preliminary flight paths identified in the finalised EIS. The rezoning of these areas have been based on a holistic land use approach by the NSW Government.

10.3 Ambient noise monitoring

10.3.1 Adequacy of ambient noise monitoring

10.3.1.1 Issue raised

Raised by

Community, Blue Mountains City Council, Blue Mountains Conservation Society, Fairfield City Council, Greater Blue Mountains Advisory Committee

Issue

Submissions queried what ambient noise monitoring had occurred and where this occurred or expressed concerns about the ambient noise monitoring that had been completed for the Draft EIS. Submissions expressed the opinion that insufficient noise monitoring had occurred to accurately assess the existing ambient noise environment or the diverse noise environment across the study area, that monitoring had only focused on typical urban or suburban environments, and that this results in the Draft EIS underestimating the impacts from aircraft noise. Concerns related to both the number of monitoring sites, the appropriateness of the selected locations and the duration of monitoring (2 to 4 weeks).

The submissions predominately related to the characterisation of ambient noise in the Blue Mountains urban areas or within the GBMA, and the assessment of aircraft noise, including:

- noise monitoring in the Blue Mountains was influenced by road traffic noise due to the selected monitoring sites and that this was not reflective of the low noise environment
- the 2 noise monitoring locations within the Blue Mountains were insufficient to understand the ambient noise environment and to assess impacts on the residential areas and the GBMA (including declared wilderness areas) as it only considered 2 locations (Linden and Blaxland)
- noise monitoring was not completed to quantify the wilderness soundscape of the GBMA
- monitoring did not account for how sound behaves in the Blue Mountains
- ambient noise monitoring results in the Blue Mountains accurately describes the current low noise environment that is valued by residents and reasons why it is a high noise sensitive area. Alternatively, other submissions expressed the view that noise monitoring measurements completed by others suggests that ambient noise levels are lower than what has been reported in the Draft EIS (for example, 20–25 dB(A))
- further noise monitoring is required to inform the assessments within the finalised EIS
- queried how existing aircraft noise had been captured in the monitoring completed for the Draft EIS, as existing aircraft activity is noticeable, causes disturbance to residents and can be heard indoors.

Other submissions stated that monitoring in Greendale had been influenced by construction works from the Airport Site and high construction vehicle volumes, which invalidates the data collected for the Draft EIS.

10.3.1.2 Response

A comprehensive field study using noise monitoring terminals was conducted from August to October 2022 to establish ambient noise levels in areas surrounding WSI. Twenty-nine (29) terminals were installed to continually measure ambient sound levels for a 2-to-4-week period. The location of these terminals is provided in Figure 4.2 of Technical paper 1.

The L_{Aeq} descriptor represents the level of average noise energy over the period of measurement and takes account of noise peaks and fluctuations. It was determined over an assessment period (day, evening and night) at each terminal. Each site was attended for a total period of one hour for each period of the day (i.e. day, evening and night).

Noise monitoring terminals were deployed in accessible areas and subject to landowner agreement. It is acknowledged that these locations are in urban or residential areas.

The ambient noise monitoring in Linden (M25) and Blaxland (M24) reflects the low noise levels expected in these areas, with Rating Background Levels (RBL) at night of 28 dB(A) and 26 dB(A) respectively. On some nights, this dropped below 25 dB(A). Noise monitoring at these locations also highlighted, despite the small sample, that these areas are overflown by aircraft movements over 50 dB(A) and possibly as high at 60 dB(A).

The noise monitoring terminal in Greendale (M19) is not located near construction areas within the Airport Site or the main construction access roads. Attended noise monitoring only highlighted the occasional light and heavy vehicle traffic on Greendale Road.

No additional monitoring is proposed to inform the finalisation of the finalised EIS. Further discussion on future monitoring by Airservices Australia is provided in Section 10.8 of this Submissions Report.

10.3.2 Application of ambient noise monitoring results

10.3.2.1 Issue raised

Raised by

Community

Issue

Submissions queried why background noise levels are not used to set noise criteria or metrics for the noise assessment, with some submissions referencing the *Noise Policy for Industry* (NSW Environment Protection Authority (EPA), 2017) which defines intrusive noise and sleep disturbance based on ambient noise levels.

Submissions queried how the ambient noise monitoring had been used in the assessment (particularly at night) and how these results had informed the proposed preliminary airspace and flight path design. This included questions on how the modelled averaged sound levels predicted for aircraft noise during the day and night are lower than the ambient noise monitoring results.

Submissions asserted that the Draft EIS applied ambient noise monitoring results to assess significance of impact and that this was not suitable given the lower ambient noise environment of natural landscapes, rural areas or the suburbs of the Blue Mountains.

10.3.2.2 Response

The ambient noise levels have been applied in the assessment to identify the change in average noise levels associated with aircraft operations at WSI at the noise sensitive areas (as discussed in Section 10.2.1 of this Submissions Report). The preliminary flight path design was guided by the 12 guiding airspace design principles, this included minimising impacts on the GBMA and to minimise the overall number of dwellings and noise sensitive facilities overflown as far as possible. This was not informed by noise monitoring data.

The average background noise level (L_{Aeq}) and Rating Background Level (RBL) noise levels from the noise monitoring sites are presented using the guidance provided in the NSW Noise for Industry (EPA, 2017).

The accepted industry practice is to consider changes within the defined (or selected) ANEC, N70 (24-hour), N60 (night) and N60 (24-hour) contour levels. With the exception of the ANEC, these are maximum noise levels (L_{Amax}) and are not directly comparable to the L_{aeq} or RBL.

10.4 Aircraft noise impacts

10.4.1 General

10.4.1.1 Issue raised

Raised by

Community, BAPS Swaminarayan Santha Australia Ltd, Blue Mountains City Council, Camden Council, Cumberland City Council, Campbelltown City Council, Fairfield City Council, Fitzgerald Creek Catchment Group, Greater Blue Mountains Area World Heritage Property Advisory Committee, Hon Angus Taylor MP – Member for Hume (Federal), Hon Jo Haylen MP – Member for Summer Hill (NSW), Melissa McIntosh MP – Member for Lindsay (Federal), Mount Tomag and Berambuing Community Association, Penrith City Council, Susan Templeman MP – Member for Macquarie (Federal), WSA Co, WSROC

Issue

Submissions expressed concern, objected to the project or objected to a component of the project (e.g. a flight path or hours of operation) due to the predicted aircraft noise levels and/or the impacts to amenity, liveability and lifestyle of the areas overflown. Submissions had issue with the introduction of aircraft noise or a specific level of aircraft noise impacts, and/or that these impacts would only increase over time. Submissions stated that certain areas or suburbs should not be exposed to aircraft noise (including natural areas), and that the aircraft noise concerns of the general public have not been addressed.

Other submissions expressed support for an airport, but objected to the flight path design due to noise impacts.

Submissions stated that:

- the preliminary flight path design has not minimised noise impacts, particularly at night
- the results of the noise assessment demonstrates that the project, as proposed, does not comply with Condition 16 of the Airport Plan
- the economic benefits of WSI needs to be balanced with the well-being and safety of residents
- there is an inequitable distribution of noise exposure
- there is a lack of meaningful respite, and there should be greater flexibility to provide communities in Western Sydney with respite (inclusive of Blue Mountains, south west Sydney and north west Sydney regions).

Submissions that expressed concern about the frequency of impact and/or lack of respite were typically in response to 24-hour operations at WSI, the presence of multiple WSI flight paths within a particular location or the use of a particular mode of operation (e.g. RRO). Submissions objected to or had issue with the predicted noise levels or frequency of movements in areas of high population density, while other submissions were of the view that areas of low density have been disproportionately impacted and have been provided no or minimal respite. The locations included (but is not limited to) Wallacia, Silverdale, Warragamba, Mulgoa, St Clair, Claremont Meadows, Penrith, Cobbitty, Werrington, Greendale, Emu Plains, Wollondilly, Linden, Woodford and Faulconbridge.

There was some acknowledgement that land use controls had minimised the number of community members that would be highly impacted by aircraft noise. However, aircraft noise would still have an impact on amenity for those most affected.

Other specific concerns, objections or comments on the aircraft noise assessment outcomes included:

- the predicted noise levels are not acceptable or result in significant impacts, with many submissions stating that this occurs where recommended criteria for suburban and rural areas as identified in the NSW Government guidelines or WHO Guidelines are exceeded, where noise levels of 60 dB(A) or more occur, or where residents would be exposed to 10 or more events greater than 60 dB(A) over a 24-hour period
- that aircraft noise levels would be higher than predicted, and/or would impact a greater area
- the impacts of aircraft noise or annoyance during the day and/or night, particularly where ambient noise levels are low
- the impacts of aircraft noise or annoyance where aircraft is at low altitudes or where flight paths pass over Blue Mountains communities
- aircraft noise has the potential for higher levels of disturbance, annoyance and stress than continuous noise, even if the average decibel levels are comparable, as it would fluctuate or would be intermittent.

Submissions also stated that the flight path design has included sharp turns, which has maximised noise impacts over densely populated areas.

Submissions objected to additional aircraft noise. In doing so, they identified other aircraft activity in the area (such as RAAF Base Richmond, or Sydney (Kingsford Smith) Airport). Other submissions made comparison to aircraft associated with Sydney (Kingsford Smith) Airport, stating that they were already disruptive, and expressed concern that aircraft associated with WSI would be lower in altitude, more frequent and at more sensitive times of the night. This issue predominately related to existing experiences in the Blue Mountains. This issue was also raised in the context of sleep disturbance (see Section 10.5) and the impact assessment approach.

Submissions expressed concern that the project would impact future residential areas or that these areas had not been considered in the Draft EIS. For the latter, this included opportunities to avoid and minimise impacts.

10.4.1.2 Response

Increased exposure to aircraft noise in areas in the vicinity of WSI and under proposed arrival and departure flight paths will be an unavoidable consequence of aircraft operations. It is acknowledged that there are concerns within the community about the level of aircraft noise in residential or natural areas in the vicinity of WSI as well as the number of aircraft movements in these areas over the day and/or night.

As the single runway approaches capacity in 2055, over a 24-hour period, between 7,000–12,200 residents may experience 5 or more aircraft noise events above 70 dB(A) which can lead to in an indoor sound level of 60 dB(A) (enough to disturb conversation) when windows are opened. The number of residents affected by different levels of aircraft noise depends on the runway operating scenario adopted. Comparison of the 3 key scenarios indicates that while there is limited variability of noise exposure levels in close proximity to WSI, the choice of runway operating strategy has a more pronounced effect on communities further away over a 24-hour period.

For N60 (Night) there is a more pronounced effect of the runway operating strategy on the number of residents that would experience 2 or more aircraft noise events above 60 dB(A). By 2055, around 84,500 residents would experience 2 or more events during the No preference scenario, and up to 23,800 residents would experience 2 or more events during the Prefer Runway 05 and Prefer Runway 23 scenarios. For N60 noise events of 5 of more, this number is halved ranging from around 12,700 during Prefer Runway 05 and Prefer Runway 23 scenarios to 47,100 residents during No preference scenarios. These predicted levels in 2055 do not take into account any noise improvement to the fleet mix.

The preliminary airspace design has been developed on the basis that WSI would operate 24-hours, 7 days a week consistent with the approved 2016 EIS and Airport Plan. The airspace design process for WSI did include the use of noise preferential flight paths which, where possible, direct aircraft operations away from noise sensitive areas. This included the use of different flight paths between 11 pm and 5.30 am to take advantage of the additional airspace available as a result of diminished Sydney (Kingsford Smith) Airport operations during this period. This includes the identification of the RRO mode of operation which will provide opportunities (where certain factors such as during Sydney (Kingsford Smith) Airport curfew hours, when appropriate weather conditions and aircraft traffic demand levels permit) to allow for minimisation of overflight of residential and other sensitive receivers during evening and early morning periods. As noted

above, the particular runway operating strategy, in particular RRO, is expected to have a pronounced effect on residents' exposure to WSI aircraft noise.

The single runway geometry limits the potential for respite for communities near WSI. The broadening of the area over which the preliminary flight paths are distributed sought to minimise the overflight of residential areas, reduce the impact of aircraft noise and provides a more equitable distribution of flight paths across all of the communities within Western Sydney and the Blue Mountains.

It is acknowledged that in achieving a more equitable distribution of flight paths (and their associated impacts) across a broader area of the Sydney Basin that additional suburbs would therefore be subject to some level of flight path impact. Further discussion on the design process is provided in Chapter 6 (Project development and alternatives) of this Submissions Report.

Some refinements have been identified to the RRO flight paths which are detailed in Appendix G (Assessment of the refinements to the project) of the EIS. This would provide some overall improvement for some communities to the west and north of WSI at night, but some additional noise impacts to Silverdale and Warragamba would occur when these adjusted flight paths are in use.

In raising concerns, some submissions have referred to a range of different criteria or frequency of an impact that should be considered, or have directly compared the maximum noise level against criteria established in the *Noise Policy for Industry* (NSW EPA, 2017). As identified in Section 10.2.2, there are no legislative mechanisms or guidelines that set a criterion for aircraft noise. The NSW EPA's noise amenity criteria for rural and suburban areas are based on an averaged noise level (L_{Aeq}) over a defined period (day, evening and night) and the guideline does not apply to the assessment of flight paths. Averaged noise levels also cannot be compared directly to the N60 or N70 contours as these represent the number of aircraft noise events that exceed a maximum noise level of 60 dB(A) or 70 dB(A).

While the guideline criteria do not apply, the predicted averaged noise levels from WSI flight paths in operation have been presented in the finalised EIS for noise sensitive areas. These predicted average noise levels showed the majority of noise sensitive areas would be below the rural noise amenity criteria for the day, evening and night (50 dB(A), 45 dB(A) and 40 dB(A) respectively) in 2033, 2040 and 2055. The tabulated results are provided in Appendix A of Technical paper 1 and presented spatially in Appendix D of Technical paper 1.

As the L_{Aeq} noise metric averages the noise levels and can obscure the peak or maximum noise events associated with an aircraft overflight. An analysis was carried out to identify suburbs (using the noise sensitive areas) that are likely to be more impacted by aircraft noise, by representative year, by time of day and by operating scenario. It looked at the relationship (or correlation) between the predicted maximum noise levels and average noise levels at these locations.

The analysis found that suburbs that experienced maximum noise levels greater than 70 dB(A) and higher average noise levels during the day, evening and night by 2055 would be Luddenham, Greendale and Silverdale, irrespective of the assessment scenario (No preference, Prefer Runway 05 and Prefer Runway 23). Other suburbs that would experience maximum noise levels greater than 70 dB(A) and higher average noise levels in this analysis would vary according to the time of day or assessment scenario, but were typically located in proximity to the Airport Site (such as Wallacia, Mulgoa, Kemps Creek, Cobbitty, St Clair, Claremont Meadows and St Marys).

It is acknowledged that noise would be audible beyond the noise contours presented in the finalised EIS, and that an individual's response to aircraft noise varies according to a range of factors, including individual sensitivities and the level and type of existing background noise. The finalised EIS has assessed a range of health effects where there is robust evidence that aircraft noise results in adverse health outcomes, such as annoyance as well as physiological responses to noise exposures that include sleep disturbance, cognitive impairment (for children) and more significantly cardiovascular effects. The assessment of health effects of aircraft noise has drawn on and utilised the WHO studies. The health assessment identified impacts at a number of locations located close to the runway and under proposed arrival and departure flight paths close to the Airport Site. This has been discussed further in Chapter 19 (Human health) of this Submissions Report.

With respect to the inclusion of 'sharp turns', does provided for flight paths that incorporate aircraft operating on Required Navigation Performance (RNP) procedures provide a high level of navigation accuracy for both air traffic control and pilots which may appear more 'sharp' than some flight path movements. RNP procedures differ from conventional procedures as they allow suitably equipped and authorised aircraft (i.e., newer generation and generally more advanced aircraft such as the Boeing 737, Airbus A320, Airbus A350 and Boeing 787) to follow a continuous curved path (trajectory)

that guides the aircraft to the runway, with a short final approach aligned to the runway's centreline. RNP-Authorisation Required (RNP-AR) procedures provide a higher degree of navigational accuracy with a shorter final approach leg aligned with the runway. This allows aircraft using an RNP-AR to line up with the runway much closer to WSI than if using the more conventional Instrument Landing System (ILS) approach. The incorporation of RNP and RNP-AR procedures into the WSI preliminary airspace design, as presented in the finalised EIS, has been used to minimise noise on arrival and departure flight paths (and also to reduce fuel burn, emissions while helping to maintain reliable all-weather operations) when safe to do so, by avoiding densely populated areas and other noise sensitive areas wherever practicable to reduce aircraft noise impacts or community overflight. The impact of flight path turns was considered as part of the AEDT noise modelling. Based on the turn radius, a bank angle was applied to each aircraft which impacts engine thrust to maintain lift (i.e. increases the sound level at the source) and modifies the lateral attenuation of noise due to noise shielding attributed to the location of the engines on the aircraft wing or fuselage for each aircraft type.

It is acknowledged that the surrounding areas are already subject to aircraft noise. The principal sources of this aircraft noise are from existing operations associated with Sydney (Kingsford Smith) Airport, Bankstown and Camden airports, and RAAF Base Richmond. This aircraft noise is audible and noticeable within the Sydney Basin.

10.4.2 Impacts – GBMA, declared wilderness or natural landscapes

10.4.2.1 Issue raised

Raised by

Community, Blue Mountains City Council, Blue Mountains Conservation Society, Blue Mountains World Heritage Institute, Greater Blue Mountains Area World Heritage Property Advisory Committee, The Parks – Sydney Parklands' Councils, Wallacia Progress Association, WSROC

Issue

Submissions objected to or expressed concern about the level of aircraft noise in the GBMA and other natural environments (e.g. Nepean River). This included impacts to the tranquillity, solitude and enjoyment of these areas, impacts to biodiversity, declared wilderness areas and the World Heritage Area status, impacts to social and economic value of these areas (including tourism), and the enjoyment of these areas. Submissions expressed the view that noise impacts within the GBMA had not been sufficiently assessed, had been underestimated or impacts had been dismissed. This was often raised in the context of the adequacy of the assessment.

Submissions questioned the criteria and metrics applied to the GBMA, given the sensitivity of this area and its values (including declared wilderness and amenity). Submissions stated that use of 60 dB L_{Amax} does not adequately account for the impacts in these areas, and that the finalised EIS should include noise level information at lower thresholds supported by validation work to improve the reliability of predicted noise level data (as low sound pressure levels are below the validated range of practical noise modelling tools). It was suggested that the assessment and development of criteria for wilderness or national park areas should be based on international literature review and guidelines. Any assessment criteria should account for annoyance and lower thresholds of noticeability.

Submissions also stated that:

- the project would impact the natural soundscape of the GBMA and would significantly impact the amenity of the GBMA that is enjoyed by residents, campers, hikers and visitors to the region
- the predicted noise levels would impact declared wilderness areas and are inconsistent with the values of these areas (for example, areas that have not been substantially modified by humans and their works, and is capable of providing opportunities for solitude and appropriate self-reliant recreation)
- declared wilderness areas (such as Kanangra Boyd and Grose declared wilderness areas) should not be subject to aircraft noise or regular aircraft noise and that flight path altitudes should be maximised in these areas
- aircraft noise would be noticeable and would persist, given the very low noise environment and topography of the GBMA

- the predicted noise levels, frequency of overflight and 24-hour operations were not appropriate in the context of the GBMA
- the project would impact camp sites, and would disturb sleep for people using these facilities. The Draft EIS has not considered how impacts to these locations would be minimised
- the Draft EIS does not recognise the concept of 'natural quiet' and its importance in natural areas, particularly wilderness areas.

Submissions also questioned the results presented at discrete locations, for example, Ruined Castle lookout has higher noise levels despite it being located at a lower altitude than Echo Point.

10.4.2.2 Response

DITRDCA acknowledged that there are concerns within the community about the level of aircraft noise in GBMA and other natural areas in the vicinity of WSI, as well as the number of aircraft movements in these areas over the day and/or night. Areas of the GBMA, including declared wilderness areas, are currently subject to overflight including aircraft flying at low levels.

The assessment of aircraft flying over natural areas was considered as part of the overall noise assessment. Average background and ambient noise levels were established through a comprehensive on-site field study using noise monitoring terminals conducted between August and October 2022. As part of this monitoring program, noise monitoring terminals were installed in Linden (M25) and Blaxland (M24) to collect existing baseline noise data as representative locations for Blue Mountains communities and the GBMA (refer to Section 4.5 of Technical paper 1). The results of the noise monitoring terminals in Linden and Blaxland were used to account for the low ambient noise levels when assessing the difference in maximum and average noise exposure levels. Rating Background Levels (RBLs) for these areas at night were identified as being 28 dB(A) and 26 dB(A) respectively.

With respect to specific aircraft noise criteria, there are a range of noise metrics that have been used to describe aircraft noise impacts. A few are included in national regulatory standards for land use planning such as AS 2021:2015 (Standards Australia 2015), while others have evolved to become national or international accepted best practice in similar airspace and flight path environmental assessments and community information initiatives. No specific aircraft noise criteria for conservation and wilderness areas have currently been developed.

In Australia, assessments of new airport developments use the 70 dB(A) L_{Amax} and 60 dB(A) L_{Amax} noise exposure levels as impact thresholds for day and night time operations respectively. The overflight noise assessment for the project shows that a majority of the broader GBMA is largely outside the area predicted to experience aircraft noise at or above these threshold values. Additionally, while the noise contours within the assessment were illustrated with a 60 dB(A) threshold, Appendix A5 of Technical paper 1 also provided a more granular assessment of maximum sound levels, including levels below 60 dB(A) including sound levels down to 50 and 40 dB(A). It is acknowledged that modelling of sound levels below 60 dB(A) resulting from aircraft overflight are highly variable and subject to influences such as meteorological conditions and terrain.

However, noise modelling has limitations associated with the fleet mix (based on a nominal schedule), the calibration of aircraft noise levels and actual aircraft performance (such as altitude and engine power (thrust) levels) that can impact the accuracy of the results in low-noise environments. More importantly, the finalised EIS present an assessment of aircraft noise impacts and not noise audibility. Assessing the impacts of noise levels below 60 dB(A) is not a simple correlation against the ambient noise levels, which can be quite low in rural and semi-rural areas and communities. Various non-acoustic factors will impact community reaction to aircraft noise beyond the acoustic sound levels of aircraft overflights.

Time-above noise metrics were not used as part of the noise assessment for the project. Time-above assessment metrics are seldom used in Australia. The *Guidance Material for Selecting and Providing Aircraft Noise Information* (Department of the Environment and Heritage, and Department of Transport and Regional Services, 2003) identified that experience has shown that 'macro' whole of airport Time-above contours do not describe noise in a way that relates to a person's experience and can therefore be highly misleading. This guidance further states that a person does not normally gauge the amount of aircraft noise exposure by adding up the number of seconds from each overflight which are 'loud' but rather in terms of the number of overflights.

The average sound level (LAeq), maximum sound level (L_{Amax}) and N-above contours provide a similar outcome by assessing the range of sound levels and frequency. The application of these metrics in noise assessment is consistent with NASF and current Australian industry practice for the assessment of airspace proposals.

Overall, the assessment identified that, while the vast majority of the overall GBMA would not experience significant noise increase, there would be some areas of the GBMA that would experience maximum noise levels of 60 dB(A) and greater. The areas of greatest impact would typically be in the region between the Great Western Highway and Lake Burragorang (Warragamba Dam).

Differences between discrete locations could be attributed to the distance to the flight path and the aircraft type projected to use the flight path.

Further discussion on matters raised on the GBMA is provided in Chapter 22 (Matters of National Environmental Significance) of this Submissions Report. Chapter 6 (Project development and alternatives) of this Submissions Report provided further responses to concerns about the design of the preliminary flight paths.

10.4.3 Impacts – Non-residential receivers or activities

10.4.3.1 Issue raised

Raised by

Community

Issue

Submissions stated that aircraft noise resulting from the project would impact educational facilities, home businesses or working from home arrangements, teaching outside formal settings, health facilities and wellness businesses (e.g. mediation etc), Linden Observatory, parks and open spaces, and facilities that contain equipment or conduct research that is noise or vibration sensitive (e.g. university laboratories).

Some submissions also expressed concern about impacts to animals (including livestock) or wildlife reserves.

10.4.3.2 Response

A diverse range of noise sensitive areas were selected to reflect various levels of sensitivity that would be experienced in the communities and environment around WSI. Noise sensitive areas comprise specific sensitive receivers or geographic points and were used to report on the maximum sound level (L_{Amax}) and the projected average sound level (L_{Aeq}). Noise sensitive areas included schools, community centres, hospitals, aged-care centres, childcare, residential areas, shopping malls, recreation areas and places of worship. They are representative of a range of types of sensitive receivers and are not an exhaustive list.

Technical paper 1 provides modelled average sound levels at sensitive receivers during the day, evening and night for each of the operating scenarios in 2033, 2040 and 2055 at Appendices A2 to A4. Appendix A5 shows modelled maximum sound levels at each sensitive receptor. Appendices A6 to A8 show the proportion of respite from WSI aircraft noise at sensitive receivers in 2033, 2040 and 2055 respectively. Technical paper 1 describes the potential aircraft noise impacts at sensitive receivers across the WSI operating years, as well as levels of respite and proposed mitigations. Potential impacts to the Linden Observatory are discussed in Section 17.5.1.2 of this Submissions Report. Facilities that contain equipment or conduct research that is noise or vibration sensitive, such as hospitals are broadly encompassed in the definition of sensitive receivers used in this assessment.

The impacts from aircraft noise and vibration on medical equipment are outside the scope of the EIS.

The assessment of aircraft noise impacts on livestock, pets and wildlife reserves was not identified in the Ministers Guidelines (EPBC 2022/9143) and has not been assessed as part of the EIS.

10.4.4 Impacts – Vibration

10.4.4.1 Issue raised

Raised by

Community

Issue

Submissions expressed concern about vibration from aircraft movements, and the contribution to annoyance or noise experienced within the home, or damage to property.

10.4.4.2 Response

With typical light building structures, noise induced vibration may begin to occur where the maximum external noise level reaches approximately 90 dB(A). The effect is more common on departure than for arrival because the noise spectrum for a departure close to WSI has stronger low frequency noise components.

The occurrences of 90 dB(A) events are generally contained within WSI's property boundary. This is depicted in Figure 11.57 of the finalised EIS. There are a small number of properties within the area where this may occur at the south eastern end of Runway 23.

While noise-induce vibration is not an eligibility consideration of NIPA, the finalised EIS acknowledges that where practical the following acoustic design principles should be taken into account when considering the treatment of buildings in areas identified to experience noise-induced vibration:

- increasing the weight or density of the element (e.g. adopting concrete or masonry wall constructions, increasing the glazing thickness of windows, and adding additional layers of plasterboard)
- increasing the width of the cavity between 2 construction elements (e.g. implementing timber stud constructions and double glazing). The sound energy dissipates across the air gap introduced by the cavity.

Refer to Section 10.7.3.2 of this Submissions Report for more detail on noise-induced vibration mitigation.

10.5 Sleep disturbance

10.5.1 General

10.5.1.1 Issue raised

Raised by

Community, Social Justice Committee – Holy Spirit Catholic Church St Clair, The Hills Shire Council, The Parks – Sydney Parklands' Councils, Wallacia Progress Association, Varuna – The National Writers House, Wollondilly Shire Council, WSROC

Issue

Submissions expressed concern that the project would result in sleep disturbance for residents overflown by flight paths (including quality of sleep and sleep patterns) or that the assessment of sleep disturbance is not adequate. These concerns were often raised alongside concerns to human health, way of life and productivity, an objection to a particular flight path(s), mode of operation or frequency of movements, or a request for a curfew at WSI. Issues concerning health impacts, way of life, productivity and hours of operation at WSI are captured elsewhere in this Submissions Report (refer to Chapter 7 (The project), Chapter 17 (Social) and Chapter 19 (Human health)).

Submissions also stated that:

- sleep disturbance would be greater than what the Draft EIS has predicted, as:
  - aircraft noise would be more noticeable or invasive due to the low ambient noise environment in areas
  - aircraft could fly lower due to operational reasons
  - the assessment has used averaged noise levels
  - noise would propagate due to meteorological conditions or topography
  - has not accounted for vibration in addition to noise when calculating sleep disturbance
- night time noise levels would exceed WHO guidelines or the Australian Department of Health guidelines, or that there is no guarantee that noise would not exceed recommended levels
- it is unreasonable for residents to be exposed to the predicted noise levels at night or the frequency proposed, and that impacts would be significant with some submissions often identifying a range of noise levels (e.g. 50 dB(A), 60 dB(A) to 75 dB(A) or more (and its equivalent noise source provided in the public brochures)
- the assessment has identified areas that are afforded no or little respite at night, resulting in continual sleepless nights, and that operations at WSI need to consider noise sharing or equity of impact. This included concerns that certain modes of operation (e.g. RRO, Runway 23) would disadvantage some communities (such as Wallacia) and benefit others when in use, and that the number of sleep disturbance events would only increase over time
- residents would be adversely affected due to sleep disturbance, with some raising specific concern for shift workers (including health workers), people that commute or drive to/for work, the elderly, children, people with sensory sensitivities or disability, and people with pre-existing health conditions
- some submissions identified that aircraft associated with Sydney (Kingsford Smith) Airport at higher altitudes or helicopters can be heard at night and causes sleep disruption, and expressed concern that aircraft associated with WSI would be lower in altitude, more frequent and would occur at more sensitive times of the night.

As outlined in Section 10.2.4 of this Submissions Report, some submissions, based on the peer review of Technical paper 1, stated that the EIS clearly and commendably documents sleep disturbance using the measure of per cent highly sleep disturbed, and that this should be completed by an event-based threshold like N60 to identify more clearly the residential areas that have severe impacts.

10.5.1.2 Response

Increased exposure to aircraft noise in areas in the vicinity of WSI and under proposed arrival and departure flight paths will be an unavoidable consequence of aircraft operations. As detailed in Section 10.4.1, the airspace design process for WSI has included the use of noise preferential flight paths which, where possible, direct aircraft operations away from noise sensitive areas. This included the use of different flight paths between 11 pm and 5.30 am (when appropriate weather conditions and aircraft traffic demand levels permit) to allow for minimisation of overflight of residential and other sensitive receivers during evening and early morning periods.

Aircraft noise would be more noticeable due to the low ambient noise environment at night. As a result, the analysis of events above 60 dB(A) was used to identify areas likely to be exposed to at least 2 movements above this threshold per night. The external single event noise level of 60 dB(A) equates to the indoor sound level of 50 dB(A) specified in AS2021 for sleeping areas.

Matters concerning the use of averages, the influence of meteorological conditions and terrain, and variations in how aircraft would fly have been responded to in Section 10.2. Aircraft could fly off procedure however the proposed arrival and departure flight paths were designed to maximise the use of Continuous Descent Operations (CDO) and Continuous Climb Operations (CCO) to provide for better noise outcomes.

It acknowledged that there would be a level of sleep disturbance to some in the community. The human health assessment in the finalised EIS assess the potential sleep disturbance impacts associated with aircraft noise and presented the percentage of highly sleep disturbed within a population (%HSD). There are no specific guidelines available for determining what would be an acceptable, or unacceptable level of %HSD for a specific project. The assessment has identified areas, as suburbs and localities, where sleep disturbance as a result of aircraft noise is considered to be of potential significance. This is where the calculated percentage of the population in the area as a result of aircraft noise is 3 per cent or more higher than the percentage of people highly sleep disturbed from existing environmental noise. This is based on a recommendation from the WHO (WHO, 2018a).

The assessment identified that the areas of highest potential for increases in sleep disturbance impacts would occur in areas closest to WSI being Luddenham, Greendale, Silverdale, Wallacia and Kemps Creek. The maximum percentage of these populations that are highly sleep disturbed as a result of aircraft noise ranged from between around 19 per cent in Kemps Creek (in 2033) to 40 per cent in Luddenham (by 2055).

Some refinements have been identified to the RRO flight paths which are detailed in Appendix G (Assessment of the refinements to the project). This would provide some overall improvement for some communities to the west and north of WSI at night, but some additional noise impacts to Silverdale and Warragamba would occur when these adjusted flight paths are in use.

Most of the impacts on community health that are considered to be significant are located within the existing or predicted ANEC 20 contours where existing and potentially future land use planning controls are in place to prevent future noise sensitive development, which includes new residential development. By 2055 there are some additional locations, outside of the modelled ANEC 20 contours where impacts on community health may be of significance. Changes in noise as a result of operations between 2033 and 2055 would be expected to be gradual, and hence the significance of the impacts identified may be influenced by community adjustment to the presence of aircraft noise in the environment. These changes, however may remain of significance to some members of the community.

For existing residential properties located in the existing ANEC 20 contours, there is the potential for the community to experience increased and significant levels of sleep disturbance. The NIPA is aimed to provide noise mitigation to those residents.

Further discussion on mitigation and management measures, and the NIPA is provided in Section 10.6.

10.6 Mitigation and management – General

10.6.1 Noise abatement strategies

10.6.1.1 Issue raised

Raised by

Community, Blue Mountains City Council, Camden Council, Luddenham Progress Association, RAWSA, Stephen Bali MP – Member for Blacktown (NSW), The Hills Shire Council, The Parks – Sydney's Parklands Councils, Varuna – The National Writers House, Wallacia Progress Association, WSROC

Issue

Submissions criticised the lack of detail in the Draft EIS concerning the noise abatement procedures and stated that the project does not include any or sufficient protections from aircraft noise, including impacts to amenity, way of life and sleep. Submissions stated that operational restrictions are required to achieve ICAO's Balanced Approach to Aircraft Noise Management (ICAO, 2008), and the Draft EIS has not included any strategies to mitigate 'as far as is reasonably possible' where significant exposure to aircraft noise has been identified.

Submissions stated that additional measures are required, particularly for communities that are frequently overflown or are subject to sleep disturbance. Locations identified in submissions included (but is not limited to) Silverdale, Wallacia, St Clair, St Marys, Castlereagh, Cranebrook, Llandilo, Werrington, Emu Plains, Claremont Meadows, Luddenham (Luddenham Village and Twin Creeks), and the Blue Mountains.

Submissions requested further consideration of noise reduction strategies or controls, including:

- require use of CDO to decrease engine noise
- implementation of aircraft noise reduction technologies, such as GPS technologies
- additional noise abatement controls or increased provision of respite to minimise impacts on communities during the night. This includes periods between 5:30–7 am and 10–11 pm as these periods are included in the standard definition of night
- adjust flight paths to remove any concentrations over certain communities, for example at Linden, or to move to unpopulated areas as quickly as possible
- development of a noise sharing policy and movement caps (particularly where flight paths are concentrated, and includes caps on maximum movements on a particular flight path) to provide respite and equitable distribution of impacts, similar to Sydney (Kingsford Smith) Airports Long Term Operating Plan, or request for a consistent approach to noise abatement in the Sydney Basin. These matters were often raised alongside a request for a curfew or request for change in flight path design (including changes to Sydney (Kingsford Smith) Airport)
- that flight paths or operational strategies should be designed to meet certain noise levels, for example, achieve a night time exposure criterion of 40 dB(A) as per WHO and UN guidance, or lower in areas above the GBMA
- restrictions on older aircraft using WSI or certain aircraft operating at night or over the GBMA to minimise noise levels
- that missed approach procedures are designed to minimise noise levels
- that the RRO early right turn night procedure is banned when traffic permits
- request for a sharp turn (20 degree left turn) following take off from Runway 23 at night
- establishment of minimum altitude requirements for flight paths over communities.

Submissions queried if a steeper incline or decline during take-off or arrival and removal of long approaches/departures would provide any noise benefit for overflown communities.

Submissions requested that the final flight path design should occur with the community and stakeholder reference group to minimise the impact of aircraft noise (to the extent practicable), having consideration of overflight avoidance, overflight dispersion and overflight mitigation procedures.

Submissions criticised the lack of mitigation measures in response to predicted noise levels within the GBMA. This included impacts to soundscapes and declared wilderness areas. Submissions suggested flight paths should not occur in these areas or during the night, that movements should be minimised, that aircraft should operate at higher altitudes, or that certain aircraft should not operate over the GBMA.

Submissions stated that noise management strategies for the ultimate operating capacity of WSI should be implemented now to minimise uncertainty in the community about how noise impacts would be managed.

Airport Site controls

Submissions identified specific controls relevant to managing noise generated within the Airport Site or as aircraft depart from WSI:

- a ban on ‘Reverse thrust above idle’ at night after landing, noting this is a requirement in other airports internationally
- a ban on maintenance engine runs between 10 pm and 6 am
- request for ‘Start of the runway take-off’/use of the full runway length to increase the altitude of aircraft when departing to minimise aircraft noise.

10.6.1.2 Response

The preliminary airspace and flight path design has been developed on the basis that WSI would operate 24-hours, 7 days a week consistent with the approved 2016 EIS and Airport Plan.

Noise abatement procedures can include:

- preferred arrival and departure routes and/or runway modes of operation subject to certain meteorological conditions applicable to crosswind, tailwind and runway conditions (wet, damp or dry) specified in the Aeronautical Information Publication Australia, Part 2 – En Route (AIP ENR). This can include directing aircraft to depart over green space or away from more densely populated areas at night
- flight track dispersion or concentration, which can also rely on RNP
- approach procedures such as CDO and Low Power/Low Drag (LPLD) techniques, reduced wing flap settings on approach and/or delayed deployment of undercarriage (landing gear), steep approach procedures
- departure procedures such as CCO, departure speed controls below certain altitudes, modified flight path angles to adjust climb gradients and specifying noise abatement departure procedure (NADP) 1 or NADP 2 (refer to Figure 10.2 and Figure 10.3 of Technical paper 1). NADPs require aircrew to operate their aircraft in ways which minimise the aircraft's noise footprint by changing Flap and power settings, while maintain safety levels at all times.

Noise abatement procedures included in the preliminary design for WSI include the use of different flight paths between 11 pm and 5.30 am, when additional airspace flexibility is available as a result of substantially diminished Sydney (Kingsford Smith) Airport operations during this period. The WSI SIDs and STARs have also been designed to the latest RNP (using GPS technology) standards and maximise the ability for aircraft to undertake CDO or CCO to the extent that is practical without unduly compromising the safe operation of WSI. This would deliver benefits to the community and the environment, such as reduced engine noise.

Runway 23 would be the preferred mode of operation during the day. At night, the use of RRO mode of operation would be prioritised (when weather conditions are suitable and air traffic volumes are low enough to permit safe operations), followed by Runway 23. However, as demand grows over time and approaches the RRO capacity limits (represented by years 2040 and 2055), availability and usage of RRO will be more limited. This would in turn progressively increase the proportion of movements at the north-east end of WSI. As detailed in Chapter 24 (Refinements to the project since exhibition), adjustments to RRO flight paths have been incorporated into the project design in response to submissions.

Hourly movements at WSI would be limited by the maximum capacity of the single runway at WSI, being around 49 movements per hour. It is acknowledged that WSI's single runway system limits noise sharing options compared to Sydney (Kingsford Smith) Airport which operates staggered parallel runways and a cross-runway. It is Australian Government policy that operating restrictions will not be considered for WSI. Restrictions on Sydney (Kingsford Smith) Airport are not directly comparable, given the density and proximity of residential areas to the airport. Land use planning in the vicinity of WSI has been ongoing for over a decade and is well established in existing planning instruments. Further, the NIPA for WSI is aimed at residents that are in areas close to the Airport Site who would experience increased and significant levels of sleep disturbance.

In accordance with the Air Navigation (Aircraft Noise) Regulations 2018 (Cth) (Aircraft Noise Regulations), most aircraft operating in Australia must meet ICAO Standards and are issued a Noise Certificate by Airservices Australia. This limits noise at the source (aircraft). Restriction on what aircraft can operate at WSI is not considered useful as aircraft types which can operate in Australia are already regulated based on noise produced in accordance with ICAO Standards.

Missed approach procedures can be a critical stage of flight where the priority is for the aircraft to safely establish a positive rate of climb prior to considering any manoeuvring. Missed approach procedures are an infrequent occurrence and are designed to provide a safe flightpath with initial terrain clearance and clear of other operating aircraft. Noise reduction cannot be a feature of their design due to overriding safety requirements.

Refinements have been incorporated into the preliminary flight path design during RRO mode of operation in response to submissions, including the removal of the Runway 23 Departure Northeast Night (RRO) flight path for jets and reallocating those to the Runway 23 Southeast Night (RRO) flight path, and the development of the RRO noise abatement procedure for the night time period. This is detailed further in Chapter 24 (Refinements to the project since exhibition) of this Submissions Report.

Minimum safe altitude requirements are a fundamental consideration of the flight path design, along with opportunities to minimise environmental, community and social impacts to the extent practical.

In response to the request for the final design to consider overflight avoidance, overflight dispersion and overflight mitigation procedures or specific controls:

- due to the density and frequency of aircraft operations in the Sydney Basin area, WSI SIDs, STARs, flight paths and procedures have incorporated 'Safety by Design' principles to ensure safe separation standards and operational efficiencies including CCO and CDO profiles. This key design principle which reflects contemporary international practice utilises modern satellite-based guidance and flight management systems, and requires aircraft to adhere closely to procedures limiting dispersion from designed flight paths
- the broadening of the area over which the preliminary flight paths are distributed seeks to minimise the overflight of residential areas, reduce the impact of aircraft noise and provides a more equitable distribution of flight paths across all of the communities within Western Sydney and the Blue Mountains. Given the nature of the project complete avoidance of overflight of the GBMA is not possible
- overflight dispersion could be seen as a noise mitigation tool that enables noise sharing. This would be contingent on demand levels and the ability to ensure operational safety outcomes. Traffic dispersion and radar vectoring could be strategies to further minimise average sound levels, and maximise periods of respite.

Noise abatement procedures are to be further developed by Airservices Australia as the Air Navigation Service Provider (ANSP) prior to the commencement of WSI operations in 2026. Advanced mitigations such as NADP climb profiles would be considered in the detailed design phase. While some of the noise abatement procedures would deliver marginal noise reductions, the cumulative impact of those measures would be beneficial.

Airservices Australia will further develop these procedures in consultation with stakeholders, including aircraft operators, airlines, WSA Co and the Forum on Western Sydney Airport (FOWSA)/WSI Community Aviation Consultation Group (CACG). The WSI CACG is expected to be in place by early 2025. This is reflected in mitigation measure N2 in the finalised EIS. The noise abatement procedures would be published as part of the Aeronautical Information Publication by Airservices Australia and implemented by air traffic control, airports or airport owners.

Community feedback would be sought on operations as part of the Post Implementation Review for WSI (mitigation measure N6). As part of this, complaint data is reviewed to understand where improvements should be considered. Industry inputs are also considered to understand where flyability, efficiency and operational predictability can be improved. This is discussed further in Section 10.8. Noise management strategies for the ultimate capacity of the WSI.

Any future project to introduce additional runway operations and associated flight paths would be subject to further formal environmental assessment and community consultation at that time in accordance with requirements under the *Airports Act 1996* (Commonwealth), and EPBC Act (or their equivalents at the time of assessment).

Airport Site controls

The suggested controls identified in the submissions would be considered by Airservices Australia as it finalises the noise abatement procedures.

10.6.2 Legislative controls

10.6.2.1 Issue raised

Raised by

Community, RAWSA

Issue

Submissions expressed concern with the lack of legislative protections for communities overflown by aircraft, concerning a maximum permitted noise level or a maximum cumulative noise level experienced by sensitive receivers, or controls to limit noisy aircraft operating in Australia.

With respect to controls on aircraft operating in Australia, submissions stated that Air Navigation (Aircraft Noise) Regulation 2018 (Cth) is ineffective, noting there is no legislation or regulation to enable an Australian agency (including Airservices Australia) to police noise levels once an aircraft achieves certification. It was recommended that:

- legislation/regulations be changed to provide the ability for Airservices Australia or another Government body to enforce minimum performance standards in aircraft operating in Australia
- noise based fees be introduced to incentivise or pressure the implementation of noise reducing technologies or retirement of older aircraft
- Australian Government adopt ICAO's 2006 noise standards in line with international standards, as opposed to the ICAO 1977 standards.

Submissions queried why legislative controls similar to Sydney (Kingsford Smith) Airport have not been proposed (with reference to the *Sydney Airport Curfew Act 1995* and *Sydney Airport Demand Management Act 1977*).

10.6.2.2 Response

There are no Australian regulations which specify a maximum allowed level of aircraft noise within the community. Aircraft noise reporting, the operational management of WSI and proposed mitigation measures are discussed further in Section 10.8.2 of this Submissions Report. The regulation of aircraft noise is not considered to be within the scope of the EIS for WSI. Aircraft manufacturers must comply with noise standards for aircraft set by the ICAO under Annex 16 to the Convention on International Civil Aviation (Chicago Convention). These standards are implemented into Australian law by the Air Navigation (Aircraft Noise) Regulations 2018 (Aircraft Noise Regulations). Under Section 6(4) of the Aircraft Noise Regulations, it is an offence for the operator of an aircraft to engage in air navigation without a noise certificate for the aircraft (or other relevant approval). Airservices Australia is responsible for issuing certificates to Australian-registered aircraft that comply with the noise standards. The Aircraft Noise Regulation refers to Chapter 4 of the 2006 ICAO Standards and Chapter 14 of the current ICAO Standards, which are consistent with ICAO Balanced Approach to Aircraft Noise Management (ICAO, 2008).

The preliminary airspace design has been developed on the basis that WSI would operate 24-hours, 7 days a week consistent with the approved 2016 EIS and Airport Plan.

10.7 Mitigation and management – Insulation, acquisition and other compensation

Submissions made comment or raised concerns on the draft NIPA. This included comment on the eligibility of the draft NIPA, the management and cost of the policy, as well as comments or concerns where homes or other building types are not covered by the draft NIPA.

10.7.1 Assessment year

10.7.1.1 Issue raised

Raised by

Community, Blue Mountains City Council, Hon Angus Taylor MP – Member for Hume (Federal), The Parks – Sydney's Parkland Councils, WSROC

Issue

Submissions stated that the final policy should be based on 2055 projected noise levels to address impacts to the community beyond 2040 and/or until a second runway is constructed. Submissions stated that the community must be provided assurance that impacts beyond 2040 would be mitigated.

10.7.1.2 Response

The use of the 2040 assessment year represents a balanced approach that provides noise mitigation to those residents that will be most severely impacted by aircraft noise in the first 10 to 15 years of WSI's operations.

Since WSI is not currently operational, assessments have been developed solely based on current forecasts. Once WSI is operational, future planning for WSI beyond 2040 can be based on an accurate understanding of the number and types of aircraft. This will provide a more accurate representation of aircraft noise impacts.

The NIPA reflects flight paths for a single runway operation. Any further noise amelioration, including to reflect a dual runway operation, would be subject to decisions by WSA Co in consultation with the Australian Government at that time. There may be opportunities for any future noise amelioration program to take into account improvements in noise insulation treatments as well as expected ongoing reduction in aircraft noise emissions due to improved aircraft technology.

10.7.2 Eligibility for acquisition and insulation – Residential

10.7.2.1 Issue raised

Raised by

Community, Blacktown City Council, Blue Mountains City Council, Camden Council, Fairfield City Council, Hon Angus Taylor MP – Member for Hume (Federal), Melissa McIntosh MP – Member for Lindsay (Federal), Penrith City Council, Stephen Bali MP – Member for Blacktown (NSW), Susan Templeman MP – Member for Macquarie (Federal), The Parks – Sydney's Parkland Councils, Wollondilly Shire Council, WSROC

Issue

Submissions sought clarification if a residence would be eligible, or requested compensation and/or noise treatment for residential properties (including a specific type of treatment) with some submitters identifying the frequency of aircraft movements or mode of operation (e.g. RRO) and the resulting impacts to lifestyle, amenity and sleep as reasons why treatment should be offered.

Examples of residential areas mentioned in submissions included (but is not limited to) Luddenham, Wollondilly, Narellan, Bass Hill, Caddens, Claremont Meadows, Werrington, Wallacia, Silverdale, Twin Creeks, Orchard Hills, St Clair, Bella Vista, Glenfield, Narellan, St Marys, Mulgoa, Cecil Park, Horsley Park, Penrith or the mid- and lower-Blue Mountains.

Specific to the eligibility criteria developed for the draft NIPA, submissions made the following comments or concerns:

- that the acquisition trigger for residential properties should be re-examined to determine a trigger that is more appropriate to the WSI context (such as 24-hour operations), noting that AS2021 deems new residential development as being 'unacceptable' in areas within ANEF 25 or more and that the ANEC 40 criterion appears to be based on the Sydney (Kingsford Smith) Airport scheme
- criticism on the limited eligibility of the draft NIPA, particularly in the context of the impacts on the broader community or imposition of land use controls on a broader area – for example, submissions stated that:
  - the criteria should not rely or only consider ANEC, rather that criteria should be based on WHO guidelines or include a 'peak event' metric
  - the criteria did not account for residents having to close windows and doors to achieve internal noise levels for sleeping or lounge areas in accordance with AS 2021:2015 (Standards Australia 2015) (50 dB(A)), which would impact passive ventilation and is non-compliant with the Building Code of Australia
  - the draft NIPA should account for:
    - frequency of overflight, N60 or N70 contours, or where noise levels are predicted to be above a certain noise level (ranging from 45 dB(A) to 80/85 dB(A))
    - night time noise levels, the level (or lack) of respite and sleep disturbance impacts
    - impacts in low noise ambient environments, including those immediately surrounding the Airport Site and those further afield
    - properties that have land use restrictions, including those impacted by the ANEC contours identified for future stages of WSI
    - impacts to external areas
- questioned why residences located on or immediately adjacent to the ANEC 20 contour are not being considered in the draft NIPA, and requested greater flexibility in these instances given these residences would be significantly impacted
- sought clarification if cumulative aircraft noise from WSI and other airports should or has been accounted for
- stated that the draft NIPA should consider the older housing stock or heritage listed properties impacted by aircraft noise, or acquire properties where a building cannot be treated to achieve internal noise levels. This included older and/or non-brick dwellings in proximity to the Airport Site in Luddenham and Mulgoa
- concern that the type of noise treatment being offered required closed windows and that any scheme should also account for appropriate temperature control (such as air conditioning) and/or include rebates to support installation of solar systems to reduce operational costs
- that criteria should include consideration for people with chronic health conditions, disability or noise sensitivities.

Submissions also queried the reliance on noise modelling to identify eligibility, as the contours arbitrarily capture some dwellings and not others, despite little difference in location relative to WSI and flight paths (e.g. Twin Creeks, or Luddenham), questioned how natural boundaries should be considered, or how properties with multiple dwellings would be considered when only one is eligible.

10.7.2.2 Response

The primary metric used in Australia for representing aircraft noise impacts in areas surrounding airports is the Australian Noise Exposure Forecast (ANEF). The ANEC is used to plan airports that do not yet have measurable air traffic – as is the case with WSI. ANEC and ANEF contours are comparable for the purpose of noise impact assessment.

The use of the ANEF/C contours has been an effective noise metric used in Australia, as recommended by the National Airports Safeguarding Framework, and has a direct link with AS 2021:2015 (Standards Australia 2015) for land planning in areas close to airports.

The ANEF/C system is based on average daily sound pressure levels, which are measured in decibels. Noise exposure levels are calculated in ANEF units, which take into account the following factors of aircraft noise:

- the intensity, duration, tonal content and spectrum of audible frequencies of the noise of aircraft take offs, approaches to landing, and reverse thrust after landing
- the forecast frequency of aircraft types and movements on the various flight paths
- the average daily distribution of aircraft arrivals and departures in both daytime and night-time (daytime defined as 7 am to 7 pm, and night-time defined as 7 pm to 7 am). Night time movements are represented with a 6 dB(A) adjustment in the ANEF calculation.

Use of the ANEF/C contour to determine eligibility is consistent with the previous noise insulation programs at Sydney (Kingsford Smith) and Adelaide airports.

DITRDCA considers that use of the ANEC contours represents a consistent and satisfactory measure that should continue to be applied. The NIPA proposed a lower eligibility threshold ANEC (ANEC 20) than previous programs for noise insulation, which recognises the 'greenfield' development nature of the site, the existing low ambient noise levels, the fact that properties are semi-rural and large plot and the 24 hour operations at WSI.

The NIPA addresses the impact of aircraft overflight noise from direct operations at WSI and does not reflect the impacts of cumulative noise from flights from other airports, nor noise from other sources such as road traffic. There is no intention to change this.

The NIPA is intended to support those people who reside in pre-existing eligible properties that are significantly impacted by aircraft overflight noise. Past Australian practice has been to adopt the ANEC/ANEF contour to determine the eligibility boundary and this has been adopted for the WSI NIPA policy. For the WSI NIPA program, the ANEC 20 contour for the year 2040 assessment year was selected which offers a lower noise threshold than programs implemented at Sydney (Kingsford Smith) and Adelaide airports. However, landowners living outside the final eligibility boundary will be able to submit an application to participate in the NIPA program and these will be assessed.

The effectiveness of noise reduction measures applied to a home or dwelling requires the external windows and doors to be kept closed. Any open windows or doors can substantially limit the level of aircraft noise reduction that could be achieved. Where there are requirements to close windows and doors to achieve noise reduction targets, installation of mechanical ventilation and cooling systems will be considered when recommended as part of the treatment plan. The program will not pay for ongoing operational or maintenance costs for ventilation/cooling systems or installed treatment works.

As detailed in the NIPA, eligibility for the final program will include consideration of ‘natural boundaries’ beyond the ANEC 20 contour, for example to include both sides of a particular street, or an area up to a park or green space. This is based on the lessons learnt from previous Australian programs.

10.7.3 Eligibility for acquisition and insulation – Vibration

10.7.3.1 Issue raised

Raised by

Community

Issue

Submissions questioned how vibration from aircraft had been accounted for when determining eligibility, or how this would be addressed through the insulation program (including structural damage).

10.7.3.2 Response

The purpose of the NIPA is to provide noise mitigation to those residents who reside in eligible properties that are significantly impacted by aircraft noise. The NIPA uses noise measurement metrics to determine eligibility. Noise-induced vibration is not an eligibility consideration.

The finalised EIS does, however, acknowledge that at very high noise levels, approaching 90 dB(A) vibration due to low frequency noise may be noticeable (refer to Section 11.7.7 of the finalised EIS). There are a small number of properties within the area where this may occur at the south eastern end of Runway 23.

As detailed in Appendix F (*Background to the Western Sydney International (Nancy-Bird Walton) Airport Noise Insulation and Property Acquisition policy*) of the finalised EIS, low frequency noise can be difficult to attenuate because of its acoustic characteristics. It is further noted that to improve the low frequency sound insulation performance of building elements, the following 2 principles apply:

- increasing the weight or density of the element (e.g. adopting concrete or masonry wall constructions, increasing the glazing thickness of windows, and adding additional layers of plasterboard)
- increasing the width of the cavity between 2 construction elements (e.g. implementing timber stud constructions and double glazing). The sound energy dissipates across the air gap introduced by the cavity.

Where practical, these acoustic design principles should be taken into account when considering the treatment of buildings in the identified areas where noise-induced vibration may be noticeable.

10.7.4 Eligibility for acquisition and insulation – Non-residential

10.7.4.1 Issue raised

Raised by

Community, Hon Angus Taylor MP – Member for Hume (Federal), Penrith City Council, Stephen Bali MP – Member for Blacktown (NSW), Social Justice Committee – Holy Spirit Catholic Church St Clair

Issue

Submissions queried how other noise sensitive uses had been accounted for or stated that these types of uses should be considered for acoustic treatment (such as double-/triple-glazed windows, ventilation upgrades or other noise insulation solutions). This included schools (pre-schools, primary and high schools), child-care centres, disability accommodation, refuges and boarding homes, community buildings (e.g. Luddenham Progress Hall), religious buildings, businesses (if service delivery is impacted) and aged care facilities.

A submission also raised concern about the impacts to 110 existing public school sites based on estimates of internal noise levels. Specifically that these sites would need to either close windows and doors to maintain desired noise levels, require architectural upgrades to permanent buildings to maintain desired noise levels, or require upgrades to demountable school buildings to maintain desired noise levels. The submission requested the Australian Government to:

- use the NSW Education Technical Standards which prescribe internal noise level targets for various school facilities including 35 dB L_{Aeq} for standard teaching spaces and 30 dB L_{Aeq} for special purpose rooms in the noise assessment of the finalised EIS
- consider the extent of treatment required at these sites
- undertake modelling of internal noise areas to validate its estimates
- include these locations in the final policy, including ventilation upgrades where doors and windows need to remain closed
- engage with schools to determine an appropriate response to demountable classrooms, which move around according to demand.

10.7.4.2 Response

Noise sensitive non-residential properties are included within the scope of the NIPA, using the same ANEC 20 eligibility contour as is used for residential properties. The focus for this element of the program will be on noise-sensitive non-residential uses, including public buildings, educational facilities, medical facilities and places of worship.

The assessment of impacts on noise sensitive areas, including schools, in accordance with AS 2021:2015 (Standards Australia 2015) is considered in the finalised EIS.

10.7.5 Eligibility for acquisition and insulation – Other matters

10.7.5.1 Issue raised

Raised by

Community, Luddenham Progress Association, The Hills Shire Council

Issue

ANEC 20 contour changes since the 2016 EIS

Submissions, predominantly within Luddenham, questioned why the ANEC 20 contour had changed between the 2016 EIS and the Draft EIS, which has resulted in residences being ineligible. These submissions stated that these residences should remain eligible, requested an explanation for this change, and queried what would be done for these residences if these changes are driven by the exclusion of ground noise sources from the Airport Site.

Development of the draft NIPA

Submissions queried if the draft NIPA provides the same protections provided to homes impacted by aircraft noise generated by Sydney (Kingsford Smith) Airport flight paths, while other submissions stated that eligibility for insulation should be more stringent than that implemented for Sydney (Kingsford Smith) Airport given the 24-hour operations at WSI. Submissions questioned what lessons learnt from Adelaide or Sydney airports had been applied in the development of the draft NIPA.

Submissions also questioned why the eligibility criteria differed to that used by the NSW Government for road traffic noise.

10.7.5.2 Response

The preliminary flight paths for WSI presented in the finalised EIS differ from those that were presented in the 2016 EIS. Those earlier flight paths were presented as a 'proof-of-concept', with the intention that WSI's final flight paths would be subject to further detailed design and assessment. The design of the preliminary flight paths contained in the finalised EIS consider the 12 Airspace design principles set out in the Airport Plan, which was developed following public consultation on the 2016 EIS. The noise metrics used to assess the impacts of the preliminary flight paths presented in the finalised EIS differ to those presented in the 2016 EIS, and provide a more accurate assessment of the noise impact.

The assessment of noise impacts contained in the finalised EIS includes certain elements of noise produced from aircraft while they are on the ground, during take-off or landing (refer to Section 11.1 of the finalised EIS), including:

- on departure:
  - from the point at which an aircraft commences its departure roll
  - proceeds along the runway to the point of leaving the ground
- on arrival:
  - from the point at which an aircraft touches down
  - slows down along the runway to the point of exiting onto a taxiway
  - uses reverse thrust if that is required to slow the aircraft down on the runway.

The separation of these noise sources from other on-ground sources such as engine ground start-ups and runs, aircraft taxiing and aircraft at the terminal is consistent with the noise classification in the Airports (Environment Protection) Regulations 1997 (Cth). Ground-based noise from such sources was considered in the 2016 EIS and is outside the scope of this assessment.

Development of the draft NIPA

As detailed within the finalised EIS, the NIPA at WSI has a lower eligibility threshold compared to the previous noise insulation programs for Sydney (Kingsford Smith) and Adelaide airports. For WSI, the ANEC 20 unit contour (composite, 2040 assessment year) is used as the eligibility contour for treatment of residential properties. At Sydney and Adelaide the 30 unit contour was instead used as the residential eligibility threshold. The practical result of this is that the area of eligibility at WSI extends further from the runway ends than at Sydney (Kingsford Smith) and Adelaide airports. The use of a lower eligibility threshold at WSI acknowledges the green field nature of WSI development, the lower background noise levels in surrounding areas, and the 24-hour nature of WSI's operations.

Further information on the previous Sydney (Kingsford Smith) and Adelaide noise insulation programs is contained within Appendix F (*Background to the Western Sydney International (Nancy-Bird Walton) Airport Noise Insulation and Property Acquisition policy*) of the finalised EIS.

Development of the WSI NIPA program, including how it is administered and delivered, will take into account the learnings from the numerous reviews and audits of the previous noise insulation programs, as well as from other comparable programs such as the 2009 Home Insulation Program.

DITRDCA continues to consult with Transport for NSW (TfNSW) to understand and apply lessons from the Road Noise Policy and Transport Noise Abatement Program. The different nature of road noise (including being generally unidirectional at ground level), and the use of different noise measurement metrics means that some elements of the TfNSW programs, such as eligibility criteria and certain treatment types, are not directly transferrable to an aircraft noise amelioration program.

10.7.6 Management and cost of the draft NIPA

10.7.6.1 Issue raised

Raised by

Community, Blacktown City Council, Blue Mountains City Council, Camden Council, Campbelltown City Council, Fairfield City Council, Luddenham Progress Association, Melissa McIntosh MP – Member for Lindsay (Federal), Penrith City Council, Stephen Bali MP – Member for Blacktown (NSW), The Parks – Sydney Parklands' Councils, Wollondilly Shire Council

Issue

Submissions queried the type of treatments being offered, how the draft NIPA would be managed and the total cost to the Australian Government to implement the policy, specifically:

- clarification regarding what type of noise treatment would be provided (including if it would meet AS2021:2015), when would treatment be provided (with requests for immediate treatment), if multi-dwelling units would be captured, how residents can apply for noise treatment, how treatments would be delivered (e.g. cash payment or trades)
- clarification on the duration of the program, how eligible landowners would be notified (specifically that written notification is provided), how new owners of properties within the eligibility boundary can access treatments where offers were originally declined, and if offers are transferrable with property title
- concern on the cost of the draft NIPA, how funds would be raised (such as levies)
- clarification on how properties constructed in accordance with current land use controls would be accounted for and/or excluded from the policy
- requested that monitoring occurs after the installation of insulation to confirm performance/effectiveness of the treatment, and that further work be implemented if internal noise levels do not achieve 50 dB(A)
- how would the final NIPA be announced when finalised or amended in the future (to account for change in movements or technology).

Submissions also noted the engagement fatigue, uncertainty and stress being experienced by members of the community, particularly those in Luddenham and surrounding areas, and requested compassionate and honest engagement in the future concerning appropriate noise abatement and other assistance to enable people to remain in their homes.

10.7.6.2 Response

The Australian Government will contact all landowners within the eligibility area to ensure that landowners are aware of the program and have the opportunity to apply. This will include public notifications, direct correspondence and visits to properties within the eligibility boundary. Further detailed information on the NIPA program, including program guidelines and application processes, will be released prior to the program's implementation in mid-2025.

It is expected that the implementation of the program will run for 3 years from mid-2025, with a lengthy timeframe in which applications can be made. The program will not exclude properties where a previous owner has declined to apply, if applications are made within the specified timeframes.

The types of noise mitigation treatments to be delivered through the NIPA will be refined as the program is developed. It is expected that this will involve the assessment of buildings by specialist acoustic engineers to develop an individual treatment plan that takes into account the unique circumstances of the property (for example, building type, materials, age, noise reduction target required).

It is expected that treatment works could include:

- sealing gaps around doors and windows
- solidifying external doors
- closing vents in walls and ceilings
- improving roof and ceiling insulation
- increasing thickness of windows
- installation of different wall cladding materials.

Installation of mechanical ventilation and cooling systems will be considered where recommended as part of the treatment plan. The program will not pay for ongoing operational or maintenance costs for ventilation/cooling systems or installed treatment works.

Property owners will be consulted during the development of treatment plans and will have the ability to specify aesthetic and stylistic preferences, where appropriate.

The program will include quality assurance reviews to determine whether treatment works meet the specified targets, as well as meeting all required building standards.

The program is funded by the Australian Government as part of its investment in developing WSI. The Australian Government will directly manage the engagement of contractors who will undertake the assessment of properties and deliver the noise reduction treatment works. These will be delivered in consultation with the landowner.

10.7.7 Mitigation or compensation for properties not eligible for insulation or acquisition

10.7.7.1 Issue raised

Raised by

Community, BAPS Swaminarayan Santha Australia Ltd, Luddenham Progress Association Inc, Social Justice Committee – Holy Spirit Catholic Church St Clair, Stephen Bali MP – Member for Blacktown (NSW), Susan Templeman MP – Member for Macquarie (Federal)

Issue

Submissions expressed concern about the financial expense or the ability to install noise treatment within homes, where they are not eligible under the draft NIPA, and/or the cost of installing and/or running air conditioning (as a result of closing windows to mitigate aircraft noise). Submissions also objected to having to rely on these approaches to mitigate impacts of the project, that cost on the community should be accounted for in the Draft EIS, and that Australian Government should provide financial assistance to residents that would experience impacts, particularly sleep disturbance and amenity (such as by-back schemes, relocation costs, subsidies, electricity rebates, or other incentives). Submissions also identified that homes had built on an expectation that noise levels would not be at the levels now identified in the Draft EIS and the online Aircraft Overflight Noise Tool (for example 70–85 dB).

A submission stated that a more comprehensive program is required as it is expected that there would be additional acoustic requirements for the construction of new and altered buildings as a result of aircraft noise, which would impact construction costs and housing affordability.

10.7.7.2 Response

Comments regarding potential further scope of the noise insulation are noted. The purpose of the NIPA is to provide noise mitigation to those residents who reside in eligible properties that are significantly impacted by aircraft noise in the first 10 to 15 years of WSI's operations. The program is not intended to provide compensation.

Properties outside the eligibility area will still see and hear aircraft, however these will not be those properties most severely impacted by aircraft overflight noise.

The land planning framework put in place by the NSW Government and local councils (the *State Environment Planning Policy – (Precincts – Western Parkland City) 2021* (NSW)) requires new development to have regard to future noise impacts from WSI and to meet the AS 2021:2015 (Standards Australia 2015), and in many cases, to undertake noise insulation as a condition of the development. These planning restrictions, in one form or another, have been in place in areas surrounding the Badgerys Creek site since the land was first identified as a potential site for a second Sydney airport in 1986.

10.8 Mitigation and management – Monitoring and post-implementation management

10.8.1 Aircraft noise monitoring

10.8.1.1 Issue raised

Raised by

Community, Blue Mountains City Council, Campbelltown City Council, Friends of Fernhill and Mulgoa Valley Inc, Susan Templeman MP – Member for Macquarie (Federal), The Parks – Sydney's Parkland Councils, Varuna – The National Writers House, WSROC

Issue

Submissions criticised the lack of detail or requested detail on the noise monitoring program for the project, specifically:

- detail of where monitoring would be conducted (including a temporary and permanent network), at what frequency (e.g. daily, random days) and the duration of the program (e.g. long term, short term)
- request for continuous monitoring, particularly for night time noise
- if this network would be integrated with Airservices Australia's NFPMS network and reporting systems
- how aircraft noise levels would be reported, including if this would be compared against current background noise levels and if this would be provided on the WSI website.

With respect to the monitoring network, submissions also requested:

- monitoring at a specific location, suburb or area – such as a specific residential area or property, or locations in the GBMA
- implementation of an 'Effective Perceived Noise Level' monitoring system, as implemented overseas (Germany), which comprises a permanent network and temporary or mobile measurements (on request), noting this could also be funded by fees imposed on airlines using WSI
- further baseline monitoring to support the future environmental reporting and/or the performance of the measures within the final NIPA policy.

Submissions stated that an aircraft noise monitoring program should occur in order to proactively identify and address issues once WSI operations commence, including:

- completion of user experience and aircraft noise surveys to develop a dose-response relationship specific to the GBMA
- monitoring of community annoyance, supported by surveys, to inform the review of noise abatement procedures or other controls.

10.8.1.2 Response

Selection of locations

All noise monitors must be located in areas that effectively capture noise data from arriving and departing aircraft and therefore Airservices Australia try to locate monitors as close to flight paths as possible. The decisions on final locations of monitors take into account a number of other factors, including security, licensing, facilities and background noise levels.

Airservices Australia use the following criteria when identifying suitable locations for a long-term noise monitor:

- site suitability to capture all major aircraft types and operations so that the noise data represents the range of aircraft noise in that community
- site ability to effectively capture sufficient noise data (i.e. if aircraft are too far away and therefore produce low noise levels these generally won't be captured effectively by a noise monitor)
- the site is compliant with acoustic standards that ensure the operational aspects for monitoring can be achieved
- the technical aspects of the site, including security, mobile data coverage, access to power, protection from wildlife, and a location within air traffic control radar coverage
- the site is a public or commercial property (for example schools, council depots, childcare centres, and private residences are not suitable for long-term noise monitor locations)
- consideration of background noise levels that can diminish the effectiveness of the noise monitor.

Long-term noise monitoring

Long-term noise monitoring locations may be determined through engagement with future WSI CACG and with the community.

Noise monitoring is not undertaken to determine compliance as there are no Australian regulations which specify a maximum allowed level of aircraft noise within the community. Rather long-term noise monitoring is undertaken to:

- provide accurate information on aircraft flight paths and noise to the community, external stakeholders (such as the Aircraft Noise Ombudsman), and for internal use by Airservices Australia
- reduce uncertainty around aviation noise impacts on the community, while ensuring Airservices Australia provide safe and efficient air navigation services
- provide data to determine potential environmental (noise) impacts from existing and proposed new flight paths and noise abatement trials, including post-implementation reviews
- provide data to validate aircraft noise modelling results produced using specialist software for a range of purposes (including environmental impact assessment of proposed flight path changes)
- provide a framework to identify the acoustic impacts of current and historic aviation activity, and to guide decisions on proposed future changes to aircraft operations
- integrate WSI into Airservices Australia's NFPMS network and reporting systems. Integration is part of the project plan, to occur prior to implementation and operation of WSI.

DITRDCA is responsible for the delivery of the NIPA program. This will include program-specific assessment and quality assurance reviews of noise reduction results at locations where amelioration works have been undertaken.

10.8.2 Aircraft noise reporting and performance management

10.8.2.1 Issue raised

Raised by

Community, Blacktown City Council

Issue

Submissions criticised the lack of detail provided in the Draft EIS or requested detail on how the performance of the project would be monitored and reported, and how the results would be reported to the community, airport authorities and regulators. This included:

- post-implementation review and validation of the flight path noise levels, with corrective actions that would be taken if the impacts in the Draft EIS are greater than predicted (including flight path adjustments, additional noise abatement procedures, further noise attenuation or compensation)
- definition of triggers or criteria that would determine when an investigation is required or when a change in operations is required. This includes community annoyance.

Submissions also requested:

- an annual review of noise standards to ensure continual improvement in the environmental performance of the project (and WSI)
- noise levels not to exceed certain noise levels and that financial penalties are imposed if noise levels are exceeded
- collaboration with the community on the results on noise monitoring and environmental performance, and/or engagement with affected communities to understand and address specific concerns
- reporting and enforcement of flight path altitudes
- enforcement of quieter aircraft at WSI.

10.8.2.2 Response

In accordance with Airservices Australia's *Environmental Management of Changes to Aircraft Operations – National Operating Standard* (National Operating Standard) (NOS) (Airservices Australia 2022a), Post Implementation Reviews are conducted 12 months after airspace and flight path changes to confirm actual noise and aircraft operations and to identify opportunities to improve outcomes for communities.

Airservices Australia compares actual operations data with forecasts modelled during the preliminary flight path design to identify any variances and the reasons for this. Community feedback is sought on operations and complaint data is reviewed to understand where improvements should be considered. Industry inputs are also considered to understand where flyability, efficiency and operational predictability can be improved.

Airservices Australia will engage community and industry on the Terms of Reference for the WSI Post Implementation Review. Airservices Australia's engagement process is outlined in the *Community Engagement Standards for Flight Path and Airspace Change Proposals* (Airservices Australia's Community Engagement Standards) (Airservices Australia 2023).

Airservices Australia may propose changes to flight paths and airspace for a variety of reasons including:

- safety and/or efficiency enhancements to respond to current or forecast increases in volume or changes to aircraft operations at a location or in Australian airspace
- safety and/or efficiency improvements based on feedback from air traffic control, airlines and/or pilots
- directives from Civil Aviation Safety Authority (CASA)
- recommendations from CASA airspace reviews, compliance audits and re-validation of flight procedures

- community-suggested safe and feasible noise improvements
- technological advancements in aircraft navigation or aircraft performance
- airport infrastructure changes resulting in new or changing flight paths.

Airservices Australia undertakes a multi-step flight path and airspace change process, dependent on the scale and breadth of the change. A number of screening and assessment steps are involved to progress a change proposal through to implementation. These ensure that flight paths and airspace are safe, operationally feasible, and meet Airservices Australia's environmental responsibilities.

As stated in Section 10.8.1.2, there are no Australian regulations which specify a maximum allowed level of aircraft noise within the community. The noise metrics presented in the finalised EIS are used to guide land use planning (ANEF) in areas surrounding an airport or are used to describe the level of aircraft noise that a community are likely to experience (the 'Number above' and the maximum noise level (L_{Amax})). The latter may be included in airport master plans and MDPs. This is not a regulatory requirement and DITRDCA does not approve or verify these metrics.

WSA Co in consultation with the community will be required to draft its 20-year master plan. Once finalised, this will need to be renewed every 5 years. The master plan will set out the strategic direction of WSI and will provide transparency to the community on the use of the site and the environmental strategies for WSI over time.

Airservices Australia is committed to minimising the impact of aircraft operations on the community in accordance with the *Air Services Act 1995* (the Air Services Act). The Air Services Act defines the roles and responsibilities of Airservices Australia. Airservices Australia uses tools such as flight path design and noise abatement procedures to minimise the impact of aircraft operations on the community. However, there are other factors that influence aircraft noise which are not in the control of Airservices Australia, including how pilots choose to fly their planes.

Aircraft noise and flight path data is collected by Airservices Australia. This data is available to the community through Webtrak (www.airservicesaustralia.com/community/environment/aircraft-noise/webtrak/). This provides users with:

- information on aircraft operations and noise in their area (including altitude)
- an overview of how often a particular flight path is used on a monthly, quarterly or annual basis, by time of day or weekday/weekend
- information on whether the aircraft operation is typical or not, which suburbs are overflown more frequently than others and the seasonal variations for flight paths.

It is expected that WSI would be incorporated into this online tool.

The altitudes of aircraft over an area can vary according to:

- the airport the flight is coming from or going to
- whether the aircraft is coming in to land, taking off or in level flight
- the specific requirements of the flight path
- the need for air traffic control to maintain vertical separation between aircraft.

The Civil Aviation Safety Authority (CASA) have regulations for how low aircraft can fly. These are outlined in the Manual of Standards for Air Traffic Services and air traffic controllers use them to safely manage air traffic.

Aircraft manufacturers are responsible for the design and manufacture of aircraft, which can affect the level of noise produced. Newer models of aircraft tend to be quieter than older aircraft, due to improvements in engine technology. Some older aircraft can also be retrofitted with devices to reduce noise levels.

Aircraft manufacturers must comply with noise standards for aircraft set by the ICAO under Annex 16 to the Convention on International Civil Aviation (Chicago Convention). These standards are implemented into Australian law by the Air Navigation (Aircraft Noise) Regulations 2018. Under Section 6(4) of the Aircraft Noise Regulations, it is an offence for the operator of an aircraft to engage in air navigation without a noise certificate for the aircraft (or other relevant approval). Airservices Australia is responsible for issuing certificates to Australian-registered aircraft that comply with the noise standards.

10.8.3 Independent reviews, committees and complaints handling

10.8.3.1 Issue raised

Raised by

Community, Blacktown City Council, Stephen Bali MP – Member for Blacktown (NSW)

Issue

Submissions requested certain roles or committees be established to provide independent oversight on the minimisation and management of aircraft noise. This included:

- an independent body or appointment of a Noise Protection Officer to provide the community with a point of contact to raise noise issues, to assist in noise monitoring requests or to complete independent noise monitoring for the project
- an independent body or an Aircraft Noise Committee (appointed by the Australian Government) that can provide advice on noise abatement measures to manage and minimise noise levels over time, and reports to the Australian Government on the environmental performance
- a WSI Community Forum, similar to the Sydney Airport Community Forum.

Submissions made comment or raised concerns about how complaints would be handled, resolved and reported over time once WSI is operational, specifically:

- further detail on how Airservices Australia's Noise Complaints and Information Service would apply
- a complaints system should be capable of reporting on trends over time and addressing unforeseen impacts outside the area of influence identified in the Draft EIS.

10.8.3.2 Response

Complaints or enquiries about aircraft operations and Airservices Australia's community engagement activities must be directed to Airservices Australia's Noise Complaints and Information Service (NCIS) in the first instance. Although this is not an independent service, complaints must be raised with Airservices Australia before these can be advanced to the Aircraft Noise Ombudsman (ANO) for review. Airservices Australia does use complaints and enquiries made to the NCIS to identify areas of concern and possible operational improvements which may be considered in a Post Implementation Review.

The independent functions identified in submissions are broadly already being serviced by the ANO. The ANO conducts independent reviews of Airservices Australia's management of aircraft noise-related activities. The functions of the ANO are to:

- review administrative actions related to the handling of noise enquiries and complaints by Airservices Australia
- make recommendations to the Board for improvements in noise enquiry and complaints handling
- monitor and report on the effectiveness of Airservices Australia's community and engagement activities
- monitor and report on the effectiveness of noise related information provided to the community
- undertake systemic reviews of aircraft noise management by Airservices Australia.

Independent advisory forums are not mandatory but have been established on a needs basis.

The WSI CACG is currently under development and expected to be launched early in 2025. As a major engagement forum, the CACG will be consulted on the Post Implementation Review as well as other key programs and initiatives to support the operations of WSI. WSA Co will work with Airservices Australia and other key stakeholders to ensure effective engagement processes are achieved.

10.8.4 Communication tools

10.8.4.1 Issue raised

Raised by

Community, Blacktown City Council

Issue

Submissions queried what online tools would be made available to the community to understand expected noise levels from the project over time and to provide transparency to the community. This includes real time reporting of forecast and actual noise levels, and aircraft traffic data (e.g. flight path, aircraft type and altitude).

10.8.4.2 Response

Airservices Australia presently has 2 online tools for the community to source information on aircraft operations in Australia, including noise reporting and traffic data. It is expected that WSI will be incorporated into these online tools. The 2 online tools are:

- Aircraft in your Neighbourhood (https://aircraftnoise.airservicesaustralia.com/). This provides information about aircraft operations, including flight paths, movements, runway usage, noise monitoring, investigations and complaints
- Webtrak (https://www.airservicesaustralia.com/community/environment/aircraft-noise/webtrak/). This tool uses information from air traffic control secondary surveillance radars to display aircraft movements. It displays aircraft noise data that is collected daily from noise monitors strategically located around communities close to the Airport Site.

These tools do not display 'future' aircraft noise, as provided by the online Aircraft Overflight Noise Tool for predicted noise levels in 2033, 2040 and 2055.

Chapter 11 Air quality and greenhouse gas

This chapter provides a response to the issues raised in submissions specific to Chapter 12 (Air quality and greenhouse gas) of the Draft EIS.

Submissions criticised or raised concern with the impact assessment approach or assessment of air quality, greenhouse gas and climate change. Submissions were also critical that there was a lack of mitigation measures for air quality or strong commitments to reduce greenhouse gas emissions.

Air quality

The techniques used in the air quality assessment methodologies are well established, commonly used and consider all the relevant pollutants to the project. The final assessment of the proposed flight paths concluded that given the nature of the project, the proposed flight paths are expected to result in minimal impacts to the region's air quality. Given these findings, the current management and mitigation measures outlined in the Draft EIS are considered appropriate.

Greenhouse gas emissions

The assessment of greenhouse gas emissions from the project is consistent with national and international standards. Against these standards, the project is unlikely to make a material difference to Australia's climate risk up until 2040. In the years past 2040, these impacts are expected to be marginal. The assessment also acknowledges that future development of technologies in the aviation industry are likely to mitigate these projected impacts past 2040. The current available mitigation options that reduce tailpipe CO2e emissions are out of the control of this project. The operational Sustainability Strategy and Operational Sustainability Plan for WSI which will outline the approach to carbon neutrality is a commitment of the 2016 EIS.

Climate change

The final assessment of the proposed flights paths is included in the greenhouse gas assessment and concluded that climate change has the potential to impact the functionality, performance, and operations of WSI. WSA Co (the Airport Lessee Company) may decide to assess and report the availability, reliability, and resilience of WSI's operations to climate change after the opening of WSI. The potential contribution to climate change impacts on biodiversity and ecosystems has been assessed and indicates that ecosystems will not be directly impacted.

11.1 Submission overview

11.1.1 Number and origin of submissions

A total of 536 submissions raised matters concerning air quality and greenhouse gas impacts. The majority of these submissions originated from the Sydney Basin and surrounds. The distribution of submitters by postcode is shown in Figure 11.1.

Of the 536 submissions that raised concern for air quality and greenhouse gas impacts, 45 per cent originated from the Western City District (Blue Mountains) followed by the Western Sydney District (excluding Blue Mountains) at 30 per cent.

Less than one per cent of the submissions originated from intrastate locations. Around 15 per cent of submissions did not supply any post code data. The remainder originated from locations within the Sydney Basin.

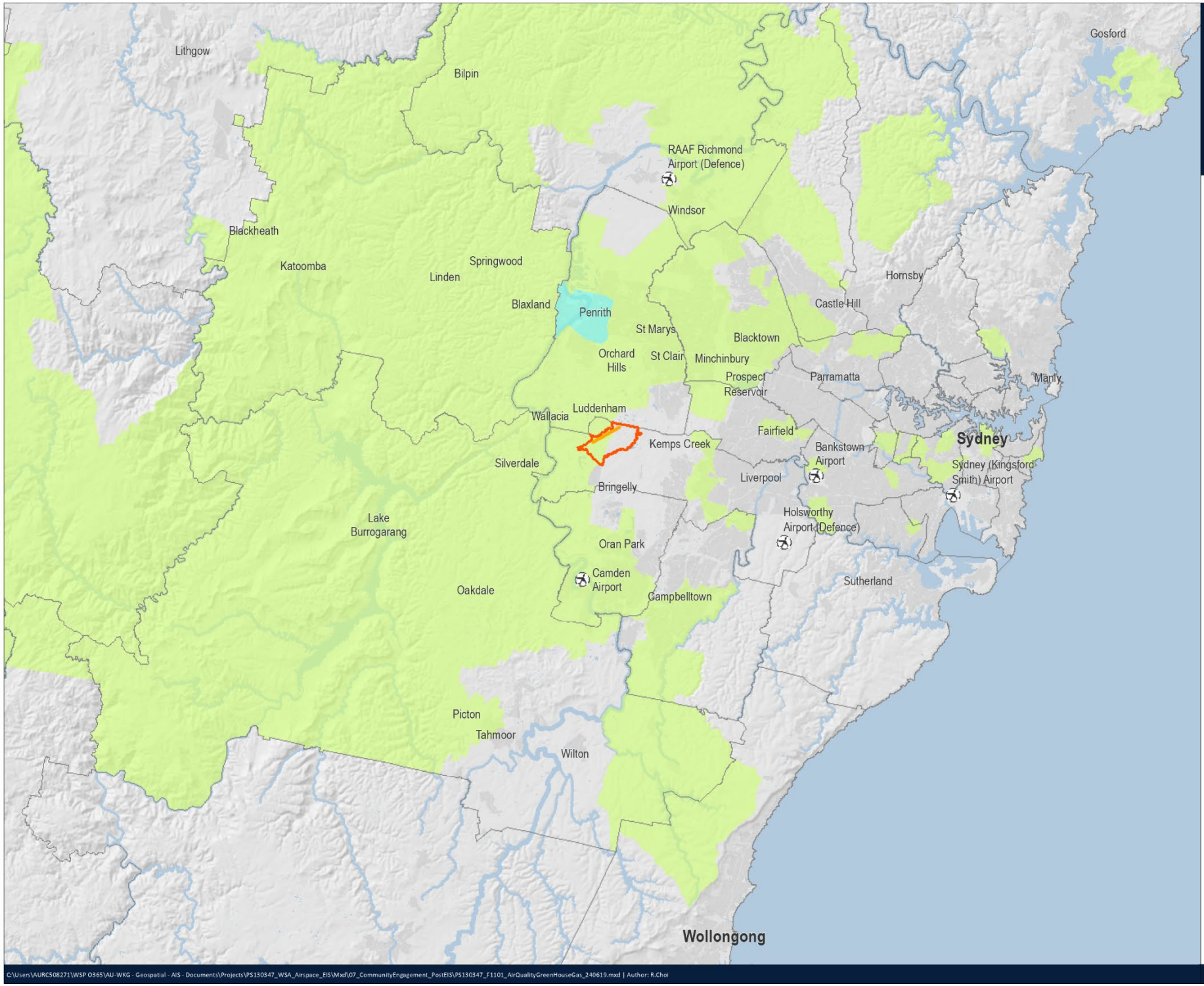


Figure 11.1

Origin of submission in relation to air quality and greenhouse gas impacts

Legend

- WSI Runway
- Western Sydney International (Nancy-Bird Walton) Airport land boundary
- Local Government Area

Number of submissions by postcode

- 1 - 50
- 51 - 100
- 101 - 150
- 151 - 200
- 201 - 250
- 251 - 300
- 301 - 350
- 351 - 400
- 401 - 450
- 451 - 500
- 501 - 550
- More than 550

0 5 10 km

Coordinate system: GDA 1994 NSW Lambert

Scale ratio correct when printed at A4

1:600,000 Date: 20/06/2024

11.1.2 Key issue breakdown

A breakdown of the sub-issues within this key issue and the percentage of total submissions that raised each of these sub-issues is outlined in Table 11.1.

Table 11.1 Breakdown of sub-issues in relation to air quality and greenhouse gas impacts

Sub-issue	Number of submissions that raised the sub-issue	Percentage of submissions that raised the sub-issue
Impact assessment approach	70	1%
Air quality impacts	399	5%
Greenhouse gas emissions and climate change	103	1%
Mitigation and management	40	<1%

Each sub-issue was raised more often by the Western Sydney District (Blue Mountains) community followed by the Western Sydney District (excluding Blue Mountains), except for issues concerning the management and mitigation of air quality and greenhouse gas impacts. For this sub-issue, the Western City District (excluding Blue Mountains) accounted for 35 per cent of submissions followed by the Western Sydney District (Blue Mountains) at 30 per cent. For other Sydney Basin districts, each district typically represented 5 per cent or less within each sub issue, except for management and mitigation. For this sub-issue, 10 per cent of submissions originated from the Central City District.

Only 2 submissions originated from intrastate locations. Up to 25 per cent of submissions in each sub-issue did not provide a location.

11.2 Impact assessment approach

11.2.1 Air quality impacts

11.2.1.1 Issue raised

Raised by

Community, Camden Council, Friends of Fernhill and Mulgoa Valley Incorporation

Issue

General

Submissions noted the presentation of the local and regional study areas are not clear and may impede on their interpretation by affected stakeholders. Other submissions stated that the air quality modelling had not considered:

- the variability and uncertainty of actual flight operations due to air traffic holding patterns and/or loss of efficiency due to increasing temperatures associated with climate change. Submissions requested detailed discussion of the assessment uncertainties to better understand the likely range of impacts
- the topography of the region, which impacts the dispersion of pollutants in the Sydney Basin. Submissions stated that the assessment has relied on prevailing winds to disperse emissions.

Pollutants and assessment scenarios

Submissions stated that the air quality modelling had not considered:

- an analysis of $PM_{2.5}$ and PM_{10} data for the RRO flight paths
- the assessment of all potential primary and secondary pollutants consistently in both the local and regional study area
- the combined effect of all air pollutants
- risk of air pollution across the entire assessment period and not just 2033 and 2055
- lead emissions from aircraft fuel combustion.

Submissions requested the finalised EIS establish clear parameters regarding 'acceptable air quality' resulting from the operation of WSI.

11.2.1.2 Response

General

The Draft EIS has been supported by a quantitative assessment of the existing environment and the potential effect of the project on the environment and sensitive receivers. The assessment has used well established, commonly used modelling methods and has been completed in accordance with NSW Environment Protection Authority guidelines including the *Approved Methods for the Modelling and Assessment of Air Pollutants in New South Wales* (the Approved Methods) (NSW EPA, 2022) and the *Tiered Procedure for Estimating Ground Level Ozone impacts from Stationary Sources* (NSW EPA 2011). The assessment has also considered recognised Australian air quality impact assessment criteria, guidelines and recommended practices and is discussed further in the following section.

Two (2) study areas are relevant for assessing the potential effects on air quality of the WSI. The local study area is a 20 km by 20 km area within an approximate 10 km radius from the boundary of the Airport Site. The small scale of this study area makes considering individual local receiver nearest the WSI in detail easier. The regional study area is a 190 by 225 km area which contains the Sydney Basin, surroundings and areas beyond. The regional study area allows assessment of the various flight paths at different stages to be considered in detail, it also allows scope for regional air pollutants, which can transform over time and distance to be adequately assessed for the WSI. This is described in Section 12.3.1 of the Draft and finalised EIS, and depicted in Figure 12.3. Figure 5.9 to 5.13 of Technical paper 2: Air quality (Technical paper 2) superimpose the local and regional and study areas along with the centreline of the flight paths.

The variability and uncertainty of aircraft movement within the flight path corridor is considered in the Draft EIS. The proposed flight paths are 3-dimensional routes that are a broad corridor in which the aircraft could be located. The modelling of flight paths assumes most aircraft would follow the centreline within this 3-dimensional route. The potential for variation from this centreline due to meteorological conditions, pilot technique or aircraft performance would be most likely to occur at greater distances and heights from the Airport Site where the relative change would make an overall negligible impact to residents. This has been discussed in greater detail in Section 3.3.2 of Chapter 3 (Introduction to airspace) of the Draft EIS.

The topography of the region and its role in influencing dispersion of pollutants is acknowledged in the air quality impact assessment. The local study area modelling used terrain data for the Sydney Basin at 30 m resolution to characterise the topography and was used alongside other inputs including a site-specific weather file using the CSIRO TAPM model. This has enabled the model to account for terrain characteristics that can influence the dispersion conditions throughout the local study area. This includes meteorological conditions such as temperature inversions, and calm potentially foggy conditions. For the regional study area, the Weather Research and Forecasting (WRF) meteorological model was applied which is also informed by terrain, land use and meteorological data. This is discussed further in Section 3.1, Appendix A and Appendix B of Technical paper 2.

Pollutants and assessment scenarios

The 3 operational scenarios considered in the air quality impact assessment reflects the possible combinations of the runway modes and represents the worst case operating scenarios for air quality impacts. These scenarios included no preference, Prefer Runway 05 with RRO and Prefer Runway 23 with RRO for the local study area. All other scenarios would have fewer flights near any receiver and would result in less air quality impacts compared to the scenarios considered for detailed assessment in the air quality study. Emissions of $PM_{2.5}$ and PM_{10} were predicted as a part of the assessment of these scenarios, noting that all PM_{10} was conservatively assumed to be in the smaller $PM_{2.5}$ size fraction. Further information on the assessment scenarios, including how RRO has been captured, is provided in Section 12.3.4.1 of the Draft and finalised EIS.

The different modelling domains for the local and regional air quality impact assessments were necessary to adequately assess emissions at a finer resolution near WSI of primary pollutants. Whereas the regional assessment needed to consider a more expansive area for secondary pollutants (such as ozone (O_3)) which may form in the atmosphere, sometimes well after the emission of primary pollutants. The local and regional air quality assessments predict the maximum contributions from the project for primary pollutants including nitrogen dioxide (NO_2), sulfur dioxide (SO_2), carbon monoxide (CO) and particulates ($PM_{2.5}$ and PM_{10}). The regional assessments adds predictions for O_3, which can only be made reasonably on a regional scale due to the chemical transformations that occur in the atmosphere, at times well away from the source, whereas the local assessment allows consideration of pollutant deposition and Volatile Organic Compounds (VOCs) at ground level receivers near WSI where the aircraft activity is most intense and has most scope for impacts. This assessment methodology is discussed in greater detail in Section 3.1 of Technical paper 2.

The averaging periods for each assessed pollutant are set in the NSW Approved Methods (NSW EPA, 2022), and include 15-minute, 1-hour, 24-hour or annual averaging periods. It is standard practice for transport infrastructure projects to consider more than one assessment year to reflect the change in use over time, typically a year that is representative of the project at opening and a nominated future year (typically 10 years). For this project, the assessment has considered 2033 and 2055 as this represents the early years of single runway operations at WSI and when the single runway operation is approaching capacity. The choice of these 2 representative years is discussed in greater detail in Section 5.1 of Technical paper 2.

Avgas is the only remaining aviation fuel that contains lead and is not available for use at WSI. Avgas is used by generally older general aviation piston engine aircraft. This type of aircraft would not use WSI. As such, lead emissions have not been considered in this assessment.

The parameters for ambient national or NSW air quality, or investigation levels for air toxics to protect human health and wellbeing is established in the National Environment Protection Measure (Ambient Air Quality) (NEPM Ambient Air Quality) (NEPC, 2021a), the National Environment Protection Measure (Air Toxics) (NEPM Air Toxins) (NEPC, 2021b) and the Approved Methods (NSW EPA 2022). These policies do not set criteria for emissions from an individual project, and it is the purpose of an air quality assessment to demonstrate that the project would not have an adverse impact on surrounding air quality by reporting the incremental contribution and/or the total (or cumulative) impact of the project against each criterion. The most current Australian air quality impact assessment criteria for pollutants of relevance to this assessment, including the recently revised, more stringent criteria for NO_2 and O_3 have been adopted for use in this study.

11.2.2 Ambient air quality monitoring

11.2.2.1 Issue raised

Raised by

Community, Blue Mountains City Council

Issue

Submissions raised concern with the air quality monitoring that has informed the assessment, specifically:

- the air quality monitoring data used in the assessment had not been updated since the 2016 EIS
- the monitoring locations are not appropriate and/or do not reflect the location of key sites such as the Greater Blue Mountains Area (GBMA) and sensitive receivers, such as schools.

Submissions stated additional monitoring locations are required to establish a network that is more reflective of impacted populations.

11.2.2.2 Response

The ambient air quality data was collected at the 3 nearest air quality monitoring stations to the Airport Site (Bringelly, St Marys and Camden). These stations are managed by the NSW Department of Climate Change, Energy, the Environment and Water (NSW DCCEEW) and are considered representative for air quality in the local air quality assessment. The available data from 2014 to 2021 was considered in the study. The modelling year (2020) was selected on the basis of how well the metrological data reflects the long term trends, as detailed in Appendix A of Technical paper 2. In 2020, the annual average $PM_{2.5}$ was significantly affected and so the average values across several other years was also considered in the assessment.

The local air quality assessment has reported on the maximum incremental contribution from the project at the most impacted receiver and has compared this to the maximum background air quality value for that pollutant per the Approved Methods (NSW EPA, 2022). This represents a worst case scenario and negates the need to consider ambient air quality or project contributions at sensitive receiver located at greater distances to the Airport Site.

Air quality impacts beyond the local air quality modelling domain have been considered in the regional air quality assessment. For this assessment, the background air quality has been modelled for all sources to account for emission sources within and beyond the model domain. This includes anthropogenic sources and natural biogenic emissions. This includes all emissions sources in the NSW EPA Air Emissions Inventory for the Sydney Basin, the global emission database EDGAR, biogenic emissions based on the MEGAN biogenic model, and marine aerosol (sea salt) and soil dust emissions as provided in the CMAQ model. The regional model covers all hours of a week with high ozone pollution days. This is discussed in detail in Appendix B of Technical paper 2.

A brief summary of ambient (or background) air quality data collected between 2014 to 2021 for particulates ($PM_{2.5}$ and PM_{10}), NO_2, SO_2, CO and O_3 is provided in Section 12.4.2 of the Draft EIS. This summarised the detailed analysis provided in Section 4.4 of Technical paper 2. The need for additional air quality monitoring was considered in the Draft EIS. WSA Co will be required to monitor air emissions within the Airport Site at ground level under the *Airports (Environment Protection) Regulations 1997*. As identified in the 2016 EIS, an air quality monitoring station would be installed at the Airport Site to monitor nitrogen oxides (NO_X), NO, NO_2, CO, O_3, PM_{10}, $PM_{2.5}$ and VOCs in addition to recording ambient air quality prior to the commencement of operations. This monitoring station would also capture emissions from arriving or departing aircraft. Additional air quality monitoring stations are not considered necessary based on the predicted emissions from the project.

11.2.3 Greenhouse gas assessment

11.2.3.1 Issue raised

Raised by

Community, Blue Mountains City Council, Camden Council, Trish Doyle MP – Member for the Blue Mountains (NSW)

Issue

Submissions expressed concern that exclusions from the greenhouse gas assessment have impacted the adequacy of the assessment or underestimated emissions, specifically the exclusion of emissions from:

- freight aircraft
- aircraft once aircraft is above 10,000 ft (3 km)
- international flights despite the fact they contribute to 89 per cent of total emissions by 2055
- aircraft idling and taxiing within the Airport Site.

Submissions stated that the assessment has not considered emissions in 2026, and has only considered emissions in 2033 and 2055. Submissions also criticised the presentation of aircraft emissions.

11.2.3.2 Response

The impacts of greenhouse gas emissions due to the project has been assessed and follows the Greenhouse Gas Protocol (World Resources Institute and World Business Council for Sustainable Development, 2004), ISO 14064-1:2018, Airports Council International's Airport (AIC) *Carbon Accreditation Application Manual* (Issue 14, December 2023) and the ICAO Carbon Emissions Calculator (Version 12, September 2023).

The methodology has considered greenhouse gas emissions in 3 groupings, specifically:

- up to 10 to 12 nautical miles (nm) (around 19 to 22 km) from WSI to account for emissions from aircraft engine use in the Landing take-off (LTO) cycle (below 3,000 ft (914 m) in altitude)
- up to 20 to 22 nm (around 36 to 43 km) from WSI to account for emissions from aircraft engine use in an extended Climb-Descent (C-D) cycle (below 10,000 ft (3 km) in altitude)
- full flight emissions from WSI departing aircraft travelling to regional, domestic and international destinations (inclusive of freight aircraft transporting air freight).

The assessment has applied the same assumptions concerning fleet mix and volumes for 2033 and 2055 as applied across the Draft EIS. This includes freight aircraft and has accounted for aircraft travelling to destination airports across the anticipated route network for WSI.

Under the United Nations Framework Convention on Climate Change (UNFCCC), domestic and international aviation is treated separately. Domestic aviation emissions are counted as part of the targets set at a national and state level in order to comply with the Paris Agreement and the transition to net zero economies by 2050. International aviation emissions are dealt with separately as part of Australia's participation in the ICAO's Carbon Offsetting Scheme for International Aviation (CORSIA). As such, only departing aircraft have been considered to avoid the risk of double counting emissions. However, greenhouse gas emissions from departing international aircraft have been presented alongside domestic aviation emissions to provide a total full flight emissions footprint for all flights departing WSI.

In accordance with the methodology prescribed under the ACI's *Airport Carbon Accreditation Application* Manual (Issue 14, December 2023), a 'one-way' flight calculation approach was adopted. For international flights, the flight departing WSI was calculated to the first arrival airport (destination) abroad. Emissions for full flight emissions (covering the entire journey of flights departing from WSI) were calculated using estimates of fuel consumed per nm travelled by aircraft type. Fuel flow data from ICAO's Carbon Emissions Calculator was multiplied by ICAO's Emissions Factor for jet fuel. All jet fuel for the aircraft fleet expected to operate at WSI (based on the projected schedules provided by WSA Co) was assumed to be kerosene fuel (i.e., Jet A-1) containing no tetraethyl lead.

The methodology used to calculate full flight emissions considered only the flights departing from WSI. This adheres more closely to the ACI's *Airport Carbon Accreditation* Programme expectations and provides a clearer accountability for emissions directly linked to WSI's operations.

The greenhouse gas emissions that occur during aircraft taxiing and ground idling, or from other WSI operational ground based sources within the Airport Site (including airside ground support to handle aircraft when parked between flights) have been addressed in the 2016 EIS and are not the subject of the Draft EIS.

It is standard practice for transport infrastructure projects to consider more than one assessment year to reflect the change in use over time, typically a year that is representative of the project at opening and a nominated future year (typically 10 years). For this project, the assessment has considered 2033 and 2055 as this represents the early years of single runway operations at WSI and when single runway operations are expected to reach capacity. Any emissions predicted prior to 2033 would be less than the forecasted emissions for 2033 given lower volumes of aircraft activity at WSI are expected during those years.

The greenhouse gas emissions (presented as million tonnes of carbon dioxide equivalent (Mt CO_2e)) are presented annually to enable comparison to forecast projections released by the Australian and NSW Governments in the selected assessment years, including the Australian National Greenhouse Gas Accounts (DCCEEW 2022) and the NSW EPA State of the Environment program. The Australian Government has established reduction targets that aim to lessen climate change. When assessing what risk a project could pose to achieving the reduction targets set by the Australian Government to lessen climate change, a comparison of the predicted project emissions against the forecasted projections is made. This is standard practice for such assessments.

Further details on the greenhouse gas assessment completed for the project is presented in Technical paper 3: Greenhouse gas emissions (Technical paper 3), and summarised in Chapter 12 of the Draft EIS.

11.2.4 Climate change risk assessment

11.2.4.1 Issue raised

Raised by

Community, Blue Mountains City Council, Residents against WSA Inc (RAWSA), Wallacia Progress Association

Issue

Submissions criticised the lack of a climate change assessment in the Draft EIS and have failed to consider the historic levels of carbon dioxide (CO_2) within the airspace. Submissions suggested that the finalised EIS quantify the impacts of greenhouse gas emissions and climate change on Sydney residents due to the operation of WSI. Submissions also requested the finalised EIS increases its scope to include an assessment of 2055 emissions that reflects days above 35 degrees Celsius. Submissions also stated that further assessment is required to include impacts of climate change on ecosystems, the GBMA and declared wilderness areas.

11.2.4.2 Response

The assessment of climate risk on the project or WSI indicates that climate change has the potential to impact the functionality, performance and operations of WSI. The assessment has been informed by climate change projections from the NSW Government, as well as the climate change scenarios published by the Intergovernmental Panel on Climate Change (IPCC) and the Network of Central Banks and Supervisors for Greening the Financial System (NGFS 2022). These projections were based on 4 selected climate-related scenarios that were defined by climate futures based on net zero 1.5°C warming, current trends with 2 to 3°C warming, delayed action with less than 2°C warming and global climate crisis with greater than 4°C warming.

The assessment of climate change risk is used as a key control to identify and manage climate change risk over time and to manage the resilience of WSI operating under these scenarios. It is not the purpose of a climate change assessment to forecast different emissions from aircraft under each climate change scenario. WSA Co may decide to assess and report the availability, reliability, and resilience of WSI's operations to climate change after the opening of WSI. Further discussion on climate change risk is provided in Section 8.5 of Technical Paper 3.

The potential contribution to climate change impacts on biodiversity and ecosystems, particularly the GBMA and declared wilderness areas, has been assessed and indicates that they would not be directly impacted by the projects production of greenhouse gases. These assessments are discussed in greater detail in Technical Paper 8: Biodiversity (Technical paper 8) and Technical paper 14: Greater Blue Mountains World Heritage Area (Technical paper 14).

11.3 Air quality impacts

11.3.1 General

11.3.1.1 Issue raised

Raised by

Community, Blue Mountains City Council, Camden Council, Campbelltown City Council, Trish Doyle MP - Member for the Blue Mountains (NSW), RAWSA, Western Sydney Amateur Astronomy Group Inc (WSAAG), Wallacia Progress Association

Issue

Submissions stated that the project would substantially increase already high levels of pollution in the Sydney Basin, particularly Western Sydney (including the Blue Mountains). Submissions requested the project should satisfy the World Health Organisation (*WHO) Global Air Quality Guidelines* (WHO, 2018b). Submissions also identified that the Draft EIS states the existing air quality in the region already exceeds NSW EPA goals and raised concern that emissions from this project would make it more difficult to reach goals.

Submissions raised concern that the project would expose residents to a range of gases such as NO_2, NO, CO, CO_2, sulfur dioxide (SO_2), sulfur trioxide (SO_3), sulfuric acid and soot particles from the incomplete combustion of hydrocarbons. Submissions also identified concerns with air quality impacts on the environment (including soil composition and water quality). These issues are often raised alongside concerns about human health and are summarised in Chapter 19 (Human health).

Submissions noted that air pollution and odour from aviation gas would result in residents keeping windows closed, impacting internal air quality within homes due to mould and mildew. Submissions raised concerns that air pollution would diminish the effectiveness of solar panels due to particulate deposition. Submissions stated that the Draft EIS has downplayed the significance of air emissions generated by the project and the impacts to residents, the natural environment and the GBMA.

Submissions expressed concern that the unique topography and meteorological conditions of the region (such as temperature inversions) would impact the dispersion of emissions from the project, which would further worsen air quality or would result in higher than predicted impacts. Other submissions noted that winds have the potential to disperse pollution and impact a greater area than previously thought.

11.3.1.2 Response

The ambient air quality at various locations surrounding WSI was monitored and indicates the air quality levels at these sites are generally good. It also indicates that pollutant concentrations in the ambient air are typically below the relevant NSW EPA goals set in the Approved Methods (NSW EPA, 2022) except for the annual average $PM_{2.5}$ levels and O_3. Historically, adverse air quality conditions arise from time to time due to extraordinary events such as dust storms and bushfires that elevate $PM_{2.5}$ concentrations and periods of summer time with elevated ozone concentrations. This was assessed in Section 4.4 of Technical paper 2.

The WHO *Global Air Quality Guidelines* (WHO, 2018b) sets out global guidance on the health effects on the population from specific air pollutants and recommends various goals for key pollutants that pose health risks for national and state policy makers and regulators to consider. In Australia, the NEPM Ambient Air Quality (NEPC 2021a) (establishes a common national standard for 6 key air pollutants (CO, O_3, NO_2, SO_2, lead and particles) to protect human health and wellbeing from the adverse effects of air pollution. The NEPM Ambient Air quality (NEPC 2021a) is implemented by state

and territory governments to report on the trends in air quality against the NEPM standard. This gives policy makers and regulators in Australia access to the same data metrics for evaluating the effects of air quality on the population, and provides scope to take the appropriate action to mitigate air pollution at a national or state level.

Actions such as setting motor vehicle standards, fuel quality standards, setting impact assessment criteria at appropriate levels, or banning burning in some local government areas are all informed by such data measured against the NEPM standards. State regulators generally specify ambient impact assessment criteria that apply to the concentration of pollutants in the ambient at a receiver or the boundary of a development.

In the case of NSW, the relevant impact assessment criteria to protect human health is set out in the Approved Methods (NSW EPA, 2022). The NSW EPA impact assessment criteria are consistent with the National NEPM standards, and have been applied in the air quality study to assess the potential impacts from the WSI.

Potential impacts to local air quality due to the operation of WSI's flight paths were considered in the air quality assessment. The local air quality assessment indicates the project would result in small contributions to air quality for particulates, NO_2, SO_2 and VOCs to the airshed and would be below criteria for all the assessed air pollutants except for $PM_{2.5}$ (annual average) and NO_2 (1-hour average) during 2055 at several receivers located to the immediate northwest of the runway. Other pollutants such as sulfur containing substances (SO_3, SO_2 etc) do not arise in any significant amount from the activities at WSI or from the fuels used by aircraft. Soot from incomplete combustion is part of the fine particulate matter ($PM_{2.5}$) considered in the assessment.

In 2055, elevated $PM_{2.5}$ levels arise due to existing elevated background levels which are based on existing air quality levels (7.6 $\mu g/m^3$) and are already over or near to the criterion (8 $\mu g/m^3$). Whereas the maximum contribution from the project (0.32 $\mu g/m^3$) is very small and would not result in any tangible effect on air quality.

In 2055, the project would contribute significantly to 1-hour average NO_2 levels at the nearest receivers to the northwest of the runway , the predicted levels of NO_2 are above the more stringent, recently updated EPA criteria but only for several one hour periods over a full year. The key contributor to the elevated NO_2 levels would be the higher NO_X emissions associated with the aircraft operating at WSI. These predicted levels are likely to be conservative however, (i.e. an overestimate of the likely potential impacts) due to the following factors:

- the modelling used the more conservative Ozone Limiting Method approach for chemical transformations to predict the NO_2 levels
- the modelling assumed the worst-case scenario for every hour of the year (which in reality may not occur in the predicted hour of maximum impact)
- the predicted impacts are infrequent, arising for only a few hours out of 8,760 hours in a year
- the modelling did not account for any improvement in fuel or engine emission control which may occur in the future. This includes likely reduction in emissions from motor vehicles by 2055.

With potential future reductions resulting from improvements in fuel or engine emissions, it is reasonably likely that no actual impacts would arise. This has been addressed in Section 6.1 of Technical paper 2.

The local air quality assessment has also considered deposition due to emissions from aircraft and subsequent impacts on the environment. Analysis of predicted particulate matter deposition indicates that deposition on surfaces would occur at such low levels that any contribution from the project within the close vicinity of the Airport Site would be negligible (0.0001 to 0.00001 g/m^2/month). The likely maximum deposition for other pollutants (CO, NO_X and SO_X) are also very small quantities (0.006 g/m^2/month, 0.02 g/m^2/month and 0.001 g/m^2/month respectively). The applicable criteria for deposited dust is 2 to 4 g/m^2/month. This assessment has been detailed in Section 6.1.3 of Technical paper 2. Concerns relating to impacts to human health as a result of deposition on water quality (such as tank water) and soil is discussed in Section 19.5.1 of this Submissions Report.

Odorous air pollutants and subsequent impacts to way of life were considered in the air quality impact assessment and found that the predicted concentrations in 2033 and 2055 are below the relevant criterion, which indicates that odour would not be detectable at any sensitive receiver. Individual odorous air pollutants generated by aircraft operations principally include toluene and xylene. The criteria set in the Approved Methods (NSW EPA, 2022) are based on the threshold for odour annoyance which is a concentration that is lower to a concentration that may relate to a health impact. This is detailed further in Section 6.1 of Technical paper 2.

The regional assessment showed similar results with respect to primary pollutants, including the exceedance of NO_2 criteria in the vicinity of WSI in 2055. The regional O_3 results indicate that in the locations with the maximum O_3 concentrations, the project makes no significant difference to the impact that would arise in any case without the project. The results also show that the maximum changes in O_3 (i.e. in locations away from where the maximum total ozone levels occur at the time) are up to 0.8, 0.6 and 0.6 pphm for 1-hour, 4-hour and 8-hour ozone respectively in 2055, however these maximum changes only occur where ozone concentrations are below criteria. On this basis the results show that the project does not generate any unacceptable level of impact. The regional assessment is explored further in Section 6.2 and Appendix D of Technical paper 2.

The models selected for the local and regional assessments explicitly account for the influence of the weather and topographical features and surface land use (e.g. vegetation, urban areas etc.) which may influence the meteorological conditions variously across the entire modelling domain. The models specifically consider the various effects these conditions have on the dispersion of air emissions from the project for each hour of the entire year, at each location in the modelling domain variously . This includes explicit consideration of the effects of conditions such as temperature inversion conditions, calm, and low wind conditions etc. This is one of the primary purposes of an air dispersion modelling study. As discussed above, the results of these studies indicated that in both 2033 and 2055, the operation of WSI's flight paths would have no significant impact on either local or regional air quality. The methodology of both the local and regional air quality impact assessment are detailed in Section 3.1 of Technical paper 2.

11.4 Greenhouse gas emissions and climate change

11.4.1 General

11.4.1.1 Issue raised

Raised by

Community, Blue Mountains City Council, Camden Council, Social Justice Committee – Holy Spirit Catholic Church St Clair, Susan Templeman MP – Member for Macquarie (Federal)

Issue

Submission raised concerns that the project would significantly contribute to Australia's greenhouse gas emissions primarily due to the operation of aircraft.

Submissions stated that the project would undermine Australia's climate goals due to the predicted production of greenhouse gas emissions outlined in the Draft EIS. Specifically, submissions expressed concern that Australia would not be able to meet emissions reduction targets under the Paris Agreement or achieve a transition to net zero emissions by 2050. These submissions criticised the comments made in the Draft EIS which state WSI will only marginally contribute to potential climate change, and that Technical paper 3 lacked detail on feasible pathways in the transport sector to limit global warming to 1.5 degrees Celsius within the required timescale.

In raising these concerns, submissions discussed the implications of climate change on the natural environment and residents due to worsening climate change and associated weather events such as heatwaves, bushfires, storms, and floods. Submissions noted that the Blue Mountains are already susceptible to and recovering from recent catastrophic weather events.

Submissions were primarily concerned with the production of carbon emissions but also expressed concern for the contribution of nitrogen oxide emissions and contrails to climate change.

Submissions also expressed concern that increasing use of air conditioning when windows are closed to avoid air and noise pollution would further contribute to greenhouse gas emissions.

11.4.1.2 Response

The greenhouse gas assessment provides a comparison of estimated CO_2e emissions from the project to NSW and Australian projected emissions for the transport sector and the total economy in 2033 and 2055. The assessment found that:

- in 2033, the emissions of CO_2e for domestic flights would represent 0.13 per cent of Australia's projected economy wide emissions and around 0.04 per cent of NSW's total economy wide emissions
- in 2055, the emissions of CO_2e for domestic flights would represent 0.5 per cent of Australia's projected economy wide emissions and around 0.2 per cent of NSW's total economy wide emissions.

The greenhouse gas produced from international aviation activities at WSI has been considered in the assessment. When including departing international commercial aviation activities from WSI (which are not subject to the Paris Agreement), the total emissions of CO_2e would represent 0.5 per cent and 4.9 per cent of Australia's projected economy wide CO_2e projections in 2033 and 2055 respectively. Further discussion is provided in Section 8.4.3 of Technical paper 3.

The increase in the project's contribution to the total economy wide emissions from 2033 to 2055 reflects growth in movements at WSI and the projected wider sectoral decarbonisation of the Australian and NSW economy. It does not account for any aviation fuel or technology improvements over time, which is expected to significantly contribute to reducing CO_2e emissions over time.

In the years between 2026 and 2040, greenhouse gas emissions from aircraft engine use along WSI's flight paths and route network are unlikely to make a material difference to the projected physical risk of future climate change. This is because historic greenhouse gas emissions have already been locked in global warning over this timeframe. Beyond 2040, these contributions are considered to marginally contribute to potential change but not a level that is expected to inhibit Australia's commitment to economy-wide emissions reduction targets or net zero emissions. These considerations are discussed in Section 8.4 of Technical paper 3.

Climate-related risk and the opportunities to manage this risk is the subject of ongoing assessment, research and science. This will be monitored and reviewed to help ensure that effective action plans are in place to account for advancements in climate science, climate scenario analysis and decarbonisation trends. Whilst outside the direct control of the Department of Infrastructure, Regional Development, Communications, and the Arts (DITRDCA), appropriate steps will be undertaken to engage and support initiatives to better understand, manage and respond to the potential contributions that WSI could make to climate change. This future development is considered in Section 8.4 of Technical paper 3.

Decarbonisation of aviation industry including aircraft emissions sources at WSI and from the use of its flight paths is outside the direct control of the DITRDCA. While playing a limited role in overall aviation decarbonisation, there are opportunities for the DITRDCA to contribute to wider aviation industry efforts. This includes participation in the advocacy of SAF to encourage uptake of supply and demand-side market opportunities. Multi-faceted engagement with aviation partners will be required to harmonise efforts on solutions to tackle climate change and address emissions to support the Australian Government's economy-wide goal of net zero emissions by 2050.

The abatement of greenhouse gas emissions due to activities at WSI was included in the greenhouse gas impact assessment. It indicates that aviation, particularly domestic aviation, is one of the hardest industries to abate greenhouse gas emissions, as the decarbonisation of aviation relies on solutions like sustainable aviation fuel (SAF) and advancements in aircraft airframe and engine design and propulsion system technologies to deliver significant reductions. The availability and commercialisation and diversity of alternative aviation fuels and technologies, on a domestic level, is not anticipated to be widely available at the necessary scale or cost until around 2035 and beyond. This availability of these technologies at commercial scales are considered in Section 8.5 of Technical paper 3.

However, there are a number of climate change commitments, agreements and schemes that will drive improvements in the global and domestic aviation industry. This is discussed further in Section 11.5.2.

Greenhouse gas emissions are reported in this assessment as CO_2e, which captures the range of different greenhouse gas emissions as a common unit. The Draft EIS acknowledges that the operation of aircraft can produce oxides of nitrogen and trigger the formation of contrails which forms non-CO_2 emissions. However, the precise impact of these emissions under specific conditions is complex and uncertain despite the global scientific community continuing to evaluate appropriate ways to calculate and measure them.

It is beyond the scope boundaries of the greenhouse gas assessment to account for CO_2e generated through air conditioning use at residences.

11.5 Mitigation and management

11.5.1 Air quality

11.5.1.1 Issue raised

Raised by

Community, Camden Council, Blue Mountains City Council, Blue Mountains Union and Community, Friends of Fernhill and Mulgoa Valley Inc

Issue

Submissions recommended the implementation of regular monitoring and reporting of air quality once WSI is operational to enable improvements in the environmental performance of the project overtime.

Submissions stated that a network of permanent air quality monitoring stations should be established now to provide an air quality baseline to monitor changes in air quality once the project is operational. These stations should be extended beyond the local study area, including the urban areas of the Blue Mountains and the GBMA. Submissions stated that this data should be publicly available and reported frequently.

Submissions suggested that compensation or provision of air quality devices such as purifiers are provided to all residents that would experience air quality impacts.

Submissions requested the finalised EIS identifies 'acceptable air quality parameters' or limits, and that WSI is managed so that it meets WHO's Global Air Quality Guidelines (WHO, 2018b) as well as the NSW EPA air quality goals. Submissions stated that a curfew should be provided in order to allow for air pollution to naturally clear overnight.

11.5.1.2 Response

The outcomes of the air quality assessment has not identified the need for additional air quality monitoring stations to be established in locations away from the Airport Site. WSA Co will be required to monitor air emissions within the Airport Site at ground level under the *Airports (Environment Protection) Regulations 1997*. As identified in the 2016 EIS, an air quality monitoring station would be installed at the Airport Site to monitor nitrogen oxides (NO_X), NO, NO_2, CO, O_3, PM_{10}, $PM_{2.5}$ and VOCs in addition to recording ambient air quality prior to the commencement of operations. This monitoring station would also capture emissions from arriving or departing aircraft. This has been addressed in Section 8.1 of Technical paper 2.

The impact assessment has used the air quality monitoring data collected in areas beyond the Airport Site. Given this assessment indicated low pollutant concentrations in suburbs around the Airport Site, any potential air quality impacts at the locations further away would be negligible (such as the GBMA) and as such would not require further monitoring. For the same reasons, mitigation measures such as changes to the hours of operation or compensation for air purification devices would not be necessary. This has been discussed in Section 8.2 of Technical paper 2.

All civil aircraft operating in Australia are required to comply with the *Air Navigation (Aircraft Engine Emissions) Regulation 1995* and the aircraft must comply with the existing international certifications (International Civil Aviation Organisation (ICAO), Annex 16). The regulations apply to any Australian domestic or international aircraft movements unless otherwise outlined in Part 2 Regulation 6 of *Air Navigation (Aircraft Engine Emissions) Regulation 1995*.

11.5.2 Greenhouse gas emissions and climate change

11.5.2.1 Issue raised

Raised by

Community, Camden Council, Blue Mountain World Heritage Institute, RAWSA

Issue

Submissions criticised the lack of mitigation and management measures to reduce greenhouse gas emissions from aircraft operations and queried why the mitigation of greenhouse gas emissions from aircraft is not considered relevant to the project. They stated there should be greater responsibility in reducing these contributions. This included:

- installation of pre-conditioned air systems to avoid aircraft from using auxiliary turbines and burning fuel for air conditioning while grounded
- movement caps to reduce aircraft activity
- the production and use of sustainable aviation fuel.

Other submissions stated the reliance on sustainable aviation fuel initiatives would not limit current greenhouse gas emissions produced by the aviation industry on address, nor would it provide certainty that long term emission reduction goals would be met.

Submissions queried how the increase in CO_2e emissions would be offset and suggested an offset fund be used to invest in the natural and cultural heritage protection of the GBMA. Submissions referred to the Draft EIS which stated that WSI would meet the IPCC targets by joining the Airport Council International airport carbon accreditation to achieve the lowest carbon emissions. These submissions expressed concern that reliance on this accreditation or any other offset scheme to help meet Australia net zero goals would not actually equate to the reduction of emissions and would not address local contributions or result in local mitigation.

Submissions requested comprehensive monitoring of greenhouse gas emissions against accurate assessments of the likely projected greenhouse gas emissions over time to ensure emissions are offset. Other submissions suggested the inclusion of statutory requirements in the management and mitigation of greenhouse gas emissions from WSI. It was also requested that an operational sustainability strategy/ plan is prepared for WSI that includes enforceable greenhouse gas emissions reduction targets.

11.5.2.2 Response

An efficient airspace system with supporting air traffic management procedures can deliver significant savings of fuel and CO_2e emissions. Approaches to minimise CO_2e emissions through airspace architecture and flight path design have been included in the project. This is premised primarily through ensuring the efficient separation of aircraft in the Sydney Basin and maximising opportunities for Continuous Climb Operations (CCO) and Continuous Descent Operations (CDO) in the take-off, initial and extended climb and descent phases of flight. These operating techniques allow aircraft to follow an optimum flight path using optimum engine power (thrust) and speed control to reach cruising flight levels or the final approach fix prior to touchdown. CCO and CDO can deliver significant economic and environmental benefits through reduced fuel burn, greenhouse gas emissions, noise and fuel costs without any compromise of safety.

Chapter 3 and Chapter 4 of Technical paper 3 of the Draft EIS details the range of climate change commitments, legislation, policies and sectoral initiatives and schemes that are driving reductions in greenhouse gas emissions from the aviation sector over time.

It is acknowledged that wide-ranging measures will be required to manage and reduce emissions of CO_2e from engine use by aircraft operating along WSI's flight paths and route network, many of which are dependent on other stakeholders and are not within the direct control of the DITRDCA. As stated in the Draft EIS, a collaborative approach is required amongst aviation stakeholders including WSA Co, Airservices Australia, airlines (all-cargo and passenger), aerospace manufactures and fuel companies to help WSI operate with the lowest carbon footprint possible.

These options include:

- fleet renewal with cleaner, more fuel-efficient next-generation aircraft (i.e., Airbus A32N and Boeing B73M)
- retrofit aircraft for improved efficiency
- operational optimisation to reduce fuel consumption (such as use of CDO, CCO and RNP procedures)
- fuel substitution with less carbon intensive alternatives (i.e., SAF and electric, electric-hybrid and green liquid hydrogen powered aircraft)
- support of ongoing research and development programs in alternative aviation fuels and technological advancements in airframe design and new generation aircraft propulsion systems.

The Operational Sustainability Strategy and Operational Sustainability Plan for WSI is a commitment of the 2016 EIS and will be released prior to the commencement of operations in late 2026. A core component of the strategy and plan will be a road map to progress WSI along a 'Carbon Neutral Pathway' that will be recognised by participation in ACI's *Airport Carbon Accreditation* Programme and a strategy to support aviation partners in reducing emissions that are outside the direct control and ownership of WSA Co. Depending on which level of accreditation WSA Co decides to pursue, high quality, independently verifiable carbon credits could be purchased to offset or remove unavoidable, hard to abate residual emissions. As stated in the 2016 EIS:

- the Operational Sustainability Plan will contain sustainability targets that align with the Sustainability Plan and will be submitted to the Minister (or her delegate) for approval
- WSA Co will report annually to the Secretary of the DITRDCA on how WSI is achieving sustainability accreditation, targets and ratings set out in the plan.

These points have been reiterated in Section 4.5 of Technical paper 2.

At a national level, the Australian Government is developing a comprehensive framework of measures to drive decarbonisation across the economy to achieve the net zero target by 2050 in a way that minimises costs and shares the effort across the economy. These measures include:

- annual emission reduction requirements for Australia's largest emitters (including Australia's largest airlines) through Safeguard Mechanism reforms
- public monitoring and reporting of emissions over time through the National Greenhouse and Energy Reporting Scheme
- financial support for clean energy projects through the Clean Energy Finance Corporation and the Australian Renewable Energy Agency, as well as a range of other initiatives such as the Research and Development tax incentive.

Approaches to support reductions specific to the transport sector will be outlined in the Transport and Infrastructure Net Zero Roadmap and Action Plan, and forms part of the Australia's Net Zero 2050 plan. Alongside the Net Zero Plan, the Australian Government will set an ambitious 2035 emissions reduction target. This is currently under development and by 1 August 2024, the Climate Change Authority will advise the Australian Government on the technologies to cut emissions in each sector, including aviation.

The Australian Government is also participating in the ICAO's CORSIA to address greenhouse gas emissions from the international aviation sector. This scheme is a global market-based measure reliant on a cooperative approach by the aviation industry to stabilise net CO_2 emissions from international aviation to 2019 levels. It also requires operators to purchase 'emission units' to offset growth in carbon emissions from international routes covered by the scheme. Offsetting under CORSIA will support the aviation sector achieve its short and medium term climate targets by complementing other emission reduction initiatives.

Offsetting under CORSIA started in 2021 for participating countries and covers 77 per cent of international aviation activity. By 2027, all international flights will be subject to offsetting requirements except for flights to/from Least Developed Countries, Small Island Developing States, Landlocked Developing Countries and small aviation markets with less than 0.5 per cent of air traffic (unless they volunteer to participate).

Advocacy and participation in global initiatives and the delivery of national policies, programs and schemes and initiatives will contribute towards addressing climate change and reducing emissions from the aviation sector.

Chapter 12 Aircraft hazards and risk

This chapter provides a response to the issues raised in submissions specific to Chapter 13 (Aircraft hazards and risk) of the Draft EIS.

Overall, submissions raised concerns regarding the hazard and risk impact assessment approach as well as the impact of aircraft crashes, fuel jettisoning and general hazards and risk. These concerns were often raised in the context of safety, wildlife strike, water quality and bushfire risk. Concerns about mitigation measures to address hazard and risks were also raised.

Aircraft crashes

The aircraft crash risk assessment found that for most residential properties in the vicinity of the Airport Site, the risks would be negligible (individual risk) which reflects the position of the runway and design of the preliminary flight paths. The assessment included an appropriate modelling approach and data to support the assessment, and assessed the risk to people as well as critical infrastructure.

Wildlife strike risk mitigation for WSI was found to be at an acceptable level of safety. The preliminary flight paths (including over the Blue Mountains) present a low risk of fire through aircraft accidents.

Consideration of safety will continue as the project advances to detailed design and implementation through the airspace change proposal.

Fuel jettisoning

Aircraft jettisoning of fuel and potential contamination events have been considered (including in the context of bushfire and water quality risk) and there would be no significant adverse impact from fuel jettisoning associated with WSI operations. Fuel jettisoning will only be carried out in accordance with appropriate procedures (specifically, the Aeronautical Information Publication Australia, Part 2 – En Route (AIP ENR)). Fuel jettisoning occurs only very rarely, and there are very limited occurrences of impacts at ground level associated with fuel jettisoning in the wider international incident record.

General hazards and risk

The general safety of residents from objects falling from aircraft has been assessed and found to be as low or lower than the risk from aircraft crashes (which was assessed as slight).

Risk mitigation is provided by a wide variety of general measures adopted across the aviation industry that will apply to operations at WSI. WSI-specific recommendations for mitigation have also been identified.

12.1 Submission overview

12.1.1 Number and origin of submissions

A total of 240 submissions raised matters concerning aircraft hazards and risk. The majority of these submissions originated from the Sydney Basin and surrounds as shown in Figure 12.1. Around 14 per cent of submissions did not supply a postcode.

Of the 240 submissions that raised issues concerning hazards and risk, 55 per cent originated from the Western City District (Blue Mountains) followed by 20 per cent from the Western City District (excluding Blue Mountains).

Submissions from elsewhere in NSW or interstate locations typically represented less than 5 per cent of less of submissions. The remainder originated from within the Sydney Basin.

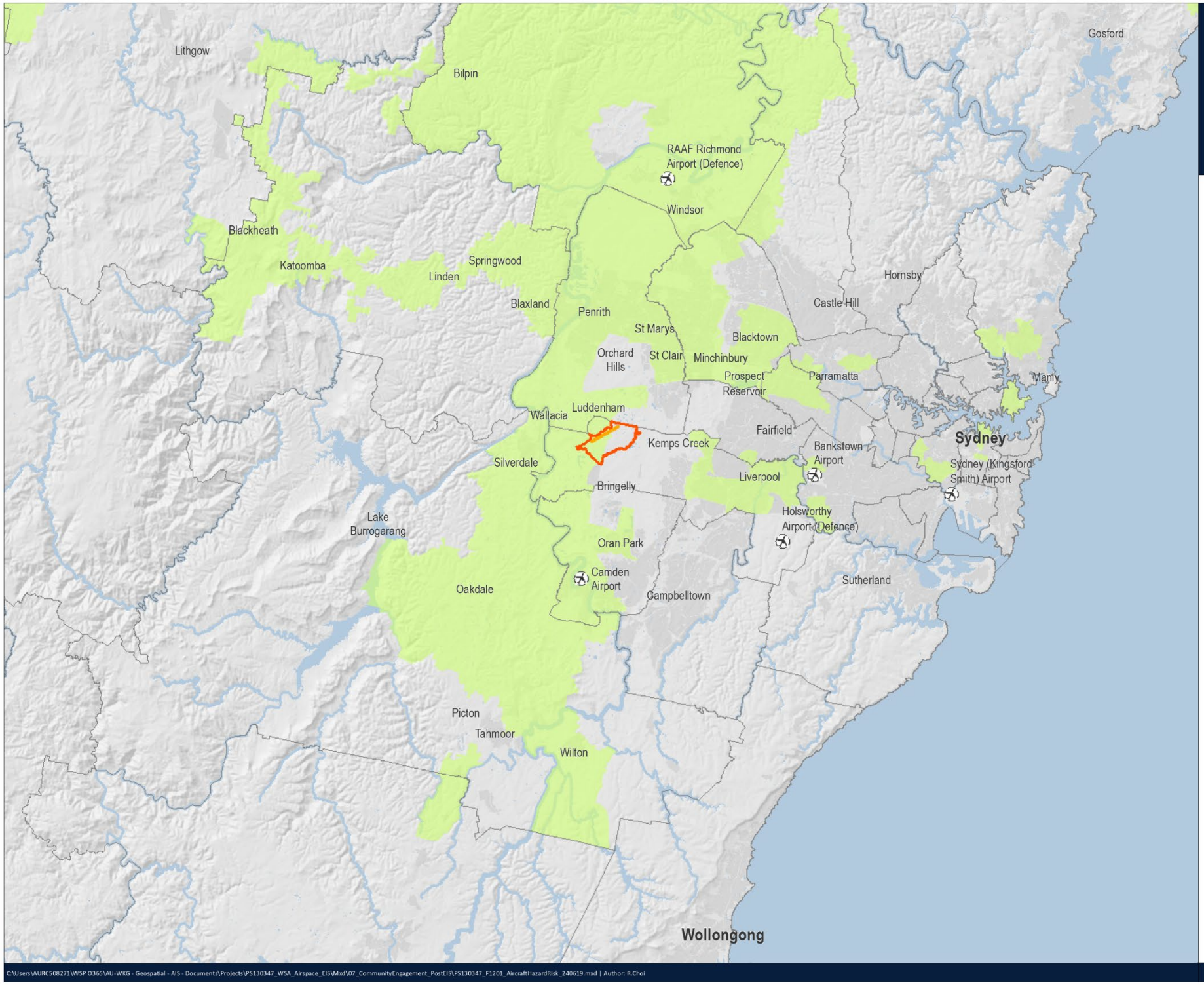


Figure 12.1

Origin of submission in relation to the aircraft hazards and risk impacts

Legend

- WSI Runway
- Western Sydney International (Nancy-Bird Walton) Airport land boundary
- Local Government Area

Number of submissions by postcode

- 1 - 50
- 51 - 100
- 101 - 150
- 151 - 200
- 201 - 250
- 251 - 300
- 301 - 350
- 351 - 400
- 401 - 450
- 451 - 500
- 501 - 550
- More than 550

0 5 10 km

Coordinate system: GDA 1994 NSW Lambert

Scale ratio correct when printed at A4

1:600,000 Date: 20/06/2024

12.1.2 Key issue breakdown

A breakdown of the sub-issues within this key issue and the percentage of total submissions that raised each of these sub-issues is outlined in Table 12.1.

Table 12.1 Breakdown of sub-issues in relation to aircraft hazards and risk impacts

Sub-issue	Number of submissions that raised the sub-issue	Percentage of submissions that raised the sub-issue
Impact assessment approach	35	<1%
Aircraft crash risks	84	1%
Fuel jettisoning	96	1%
General hazards and risks	52	1%
Mitigation and management	35	<1%

Each sub-issue was raised more often by the Western City District (Blue Mountains) community followed by the Western City District (excluding Blue Mountains) community. For other Sydney Basin districts, each district typically accounted for around 5 per cent or less within each sub-issue.

Submissions from intrastate or interstate locations also typically produced a low number of submissions (one submission for each sub-issue (except mitigation and management). Submissions that did not provide a location represented 7 per cent to 23 per cent within the sub-issues.

12.2 Impact assessment approach

12.2.1 Aircraft crash impacts

12.2.1.1 Issue raised

Raised by

Community, CFI Bathurst Soaring Club, Wollondilly Shire Council, Gliding NSW

Issue

Submissions stated that the Draft EIS aircraft crash risk assessment did not include appropriate modelling and data transparency to support the safety analysis of a crash risk. Submissions questioned why schools were not considered as a sensitive receiver in the individual risk contours or in the assessment of risks to critical infrastructure. Submissions raised concerns that the current assessment of crash risk does not recognise that there is no ocean over which aircraft could be routed to mitigate adverse impacts.

Submissions raised concerns that the Draft EIS included unsupported assertations about aircraft risk management and that the proposed airspace creates congestion, increasing the risk of crash for Visual Flight Rules (VFR) general aviation (GA) and sports aviation.

12.2.1.2 Response

Aircraft crash risk assessment

The aircraft crash risk assessment included an appropriate modelling approach and data to support the assessment, and found that for most residential properties in the vicinity of the Airport Site, the risks would be negligible (individual risk) which reflects the position of the runway and design of the preliminary flight paths (further detail on the conclusions can be found in Section 12.3.1). The assessment also took the location of WSI relative to the ocean into account with respect to routing of aircraft to mitigate adverse impacts.

Site specific risks to the public were estimated quantitatively in the Draft EIS using an empirical model, based on historical accident data. Reference was made to the Australian Transport Safety Bureau (ATSB) accident and incident database and other relevant operational data to support the modelling assumptions. The risks associated with civil aviation are well established on the basis of considerable operational experience worldwide over a substantial period of time. The data review process and the technical details are described in Appendix A of Technical paper 4: Hazard and risk (Technical paper 4). Full details of the selected model, methodology and operational assumptions can be found in Section 3.1.3 of Technical paper 4 and appendices.

Primary sensitive receptors in a number of categories were included in the Draft EIS, including areas of development along the preliminary flight paths where people live, work or otherwise congregate, as well as more sensitive infrastructure. It is not practical to consider every development individually, taking account of the movement of people between their homes and workplaces or schools. A simplified approach was therefore taken, and assumed that people are located at their homes all the time (this is explained in Technical paper 4, Appendix C, Section C1). Accordingly, impacts on individual schools were not explicitly modelled, but risks to those attending schools are inherently covered by the simplifying, conservative, practical assumption of their presence 24 hours seven days per week. This provides a picture of the scale of risks to third parties associated with the development of the preliminary flight paths.

Aircraft risk management

The Department of Infrastructure, Regional Development, Communications, and the Arts (DITRDCA) recognises that there will be large scale changes for aircraft operating in the Sydney Basin due to the introduction of Western Sydney International (Nancy-Bird Walton) Airport (WSI) airspace and flight paths. The EIS also recognises that there are various established airports, heliports, military aviation facilities, and associated flight paths in the Sydney Basin which will be affected. Potential threats to safe inter-operability associated with the introduction of additional flight operations into the existing Sydney Basin airspace have been addressed by airspace design principles and supporting safety assessment undertaken by Airservices Australia, following industry good practice for safety management.

This included the application of a collision and conflict risk model that estimates the probability of aircraft operating on instrument flight rules (IFR) on 2 procedures being either in conflict or at a risk of collision. The underlying collision risk for preliminary airspace and the preliminary flight path design is below internationally accepted levels as detailed in Section 6.5 of Technical paper 4. The available conflict risk assessment report indicates that there are no major areas of concern regarding collision risks associated with the preliminary airspace design.

For flights operating under visual flight rules (VFR), safe access to the Sydney Basin airspace has been maintained. Additional airspace changes are being undertaken by Airservices Australia and the Civil Aviation Safety Authority (CASA) referred to in their industry briefing paper. These changes do not form part of the WSI airspace and flight path design.

12.2.2 Bushfire impacts

12.2.2.1 Issue raised

Raised by

Community, Blue Mountains City Council, Wollondilly Shire Council

Issue

Submissions stated the assessment of bushfire impacts on operational safety, risk of bushfire in the event of a crash, or impacts to emergency service delivery, such as the New South Wales (NSW) Warrimoo Rural Fire Service and RAAF Base Richmond, was either inadequate or missing. Submissions stated that further analysis of crash induced fires is needed including detailed mitigation measures.

12.2.2.2 Response

The assessment of bushfire impacts acknowledged that the Sydney Basin airspace encompasses an extensive network of flight paths, including emergency aviation activities (for example, medical or bushfire). A list of infrastructure was identified for the 'risk to critical infrastructure' assessment, which included the fire initiation risk, in particular in relation to the Greater Blue Mountains Area (GBMA). The assessment also included consideration of interfaces with military and emergency services operations.

Commonly encountered fire impacts were taken into account in the consequence model used for the assessment of fatality risks. The assessment also considered the potential for wider knock-on bushfires in the event of a post-impact fire. Further detail on the Blue Mountains and other fire initiation risks can be found in Section 7.3.6 of Technical paper 4.

Existing standard aeronautical procedures allow air traffic control to prioritise aircraft participating in a search and rescue, medical or fire and flood relief flights. This procedure would apply to WSI, and the introduction of the preliminary flight paths and airspace would not alter the existing standard aeronautical procedures. This is discussed in Section 3.1.1 of Technical paper 4.

12.2.3 Wildlife strike

12.2.3.1 Issue raised

Raised by

Community, Camden Council

Issue

Submissions stated that the Draft EIS was unable to demonstrate that it has an acceptable level of understanding of the flying-fox population, biology and behaviour within Western Sydney and as such cannot adequately understand the risk of wildlife strike. Submissions questioned if an appropriate level of study regarding potential impact on birds and other flying species had been undertaken with respect to the preliminary flight paths, noting that the Draft EIS appeared to underestimate the risk of wildlife strike on aircraft safety.

12.2.3.2 Response

The Draft EIS demonstrated that potential wildlife strike risk has been assessed in accordance with relevant Australian and international airport assessment requirements including the NASF *Managing the Risk of Wildlife Strikes in the Vicinity of Airports* and ICAO Airport Services Manual. The surveys undertaken for the assessment are detailed and thorough and in accordance with these recognised international requirements. The general and WSI site-specific characteristics of wildlife hazards to aircraft operations have been comprehensively described in the assessment.

Details associated with wildlife strike risk and contributing factors can be found in:

- the assessment of potential wildlife strike in Technical paper 5: Wildlife strike risk (Technical paper 5). Technical paper 4 (Section 8.5 – Wildlife hazards) was informed by Technical paper 5
- survey methods and sites surveyed within Section 3.1.2 and Appendix B of Technical paper 5
- Section 15.2.2 (Bird strike assessment) of this Submissions Report, which discusses issues raised and responses on the wildlife strike impact assessment approach.

12.2.4 Fuel jettisoning and pollution impacts

12.2.4.1 Issue raised

Raised by

Community, Blue Mountains City Council, Blue Mountains Union and Community, Camden Council, Western Sydney Amateur Astronomy Group Inc, Wollondilly Shire Council

Issue

Submissions stated that the consideration of fuel jettisoning in the Draft EIS is inadequate and misleading as it was not informed by any evidence or baseline monitoring data. These concerns were often associated with water contamination and pollution of the environment.

Submissions requested that the finalised EIS expands on the likelihood, impact and mitigation of operational actions resulting in potential harm to a waterway or water supplies, such as fuel jettisoning.

Submissions also stated that there was no mention of where fuel jettisoning would occur along the preliminary flight paths, and it did not account for wind distribution of jettisoned fuel. Submissions requested that the finalised EIS should outline the proposed location and methods for fuel jettisoning and how this is mitigated or designed to protect the environment and water supplies.

12.2.4.2 Response

Aircraft jettisoning of fuel and potential contamination events have been assessed in the Draft EIS and it was concluded that there would be no significant adverse impact from fuel jettisoning associated with WSI operations. The risk of fuel jettisoning events was found to be remote and it was also found that fuel jettisoning can be carried out safely and without any impacts at ground level when appropriate procedures are followed. These findings were supported by the ATSB National Aviation Occurrence Database and a review of international data on fuel jettisoning events. This assessment has been detailed in Technical paper 4 (Section 8.1).

Primary sensitive receivers considered in the assessment fell within a number of categories, including water supplies that may be contaminated (such as by fuel jettisoning in an emergency). A list of infrastructure was also identified for assessment, including reservoir facilities and contamination risk to water supplies (such as by fuel jettisoning in an emergency).

Refer to Section 12.4.1 and Section 12.6.1 for further discussion on the assessment and management of this risk respectively.

12.3 Aircraft crash risks

12.3.1 Impacts to third parties

12.3.1.1 Issue raised

Raised by

Community, Camden Council, Cumberland City Council

Issue

Submissions stated that potential loss of human life and impacts to dwellings on the ground in the event of an aircraft crash puts the populations under the preliminary flight paths at significant risk. This was often discussed in reference to the location of the preliminary flight paths, particularly the Reciprocal Runway Operation (RRO) mode of operation, directly above populated residential areas. It was also raised in the context of critical infrastructure such as Warragamba Dam and the Moomba Sydney Pipeline.

Submissions stated that future use of hydrogen or a hydrogen analogue such as ammonia in the aviation industry would increase the effects of an aircraft crash, particularly directly following take-off.

Submissions questioned what the statistical occurrence of aircraft crashes within 75 km of an airport worldwide was, and how this translates to WSI (Stage 1) or WSI at its ultimate capacity for the population of Western Sydney.

12.3.1.2 Response

The assessment of risk to people living, working or otherwise congregating in areas that may be subject to potential risks from aircraft crashes (also called third party risk) has been assessed in the Draft EIS, and the assessment found:

- individual risk:
  - for most residential properties in the vicinity of the Airport Site, the risks would be negligible which reflects the position of the runway and the design of the preliminary flight paths
  - for 2033, no dwellings are located within the one in 100,000 per annum risk contour and there are 6 dwellings housing 22 people within the one in 1,000,000 per annum risk contour. These risks are classified as slight effects, when considering the risk level and the number of people exposed to this risk
  - for 2055, a small number of people (5) are within the one in 100,000 per annum contour and 108 people are located between the one in 100,000 per annum and one in 1,000,000 per annum risk contour. As the number of people exposed to risks would increase, these risks are classified as being of moderate effect but are not significant based on the criteria applied
- societal risk:
  - societal risks in 2033 and 2055 are within the middle to lower risk part of the 'as low as reasonably practicable' region
  - these risks are considered acceptable, provided no further practicable means for mitigating these residual risks is available. Based on the runway location, airspace design requirements and the relative location of developed areas within the Sydney Basin, the preliminary airspace design has minimised these risks, as far as is practicable.

Risk estimation using state of the art modelling approaches and evaluation of those risks against internationally recognised risk significance criteria demonstrates that the risks would not normally be considered "significant".
For further detail on the third party risk impact assessment, refer to Chapter 7 of Technical paper 4.

Critical infrastructure (such as hospitals, transport links, water storage and the Defence Establishment Orchard Hills) in the vicinity of the Airport Site was considered in the assessment. The typical event frequencies and scale of fatalities associated with aircraft crashes are consistent with risks that would be considered acceptable when assessed against the societal risk criteria that have been employed to evaluate the significance of third-party fatality risks.

Future use of hydrogen or a hydrogen analogue such as ammonia in the aviation industry was not contemplated as part of the Draft EIS and is outside the scope of the assessment. It is recognised that fuel load contributes to the scale of the consequences of an impact, whether that is current aviation fuel or some other speculative future fuel. On that basis, those consequences are expected not to be substantially different if there were to be a future change in fuel used.

The approach to estimating the expected statistical occurrence of aircraft crashes across the study area has been detailed in Technical paper 4 (refer to Appendix A, Section A2). The approach adopted estimates based on an international data set for which operational safety standards can be expected to be similar to WSI. Analysis indicates that the recent Australian historical accident record is consistent with wider international experience.

The preliminary flight paths presented in the Draft EIS have been designed for current aircraft operations and the anticipated operational requirements for single runway operations through to 2055. Matters concerning the introduction of the second runway to achieve the ultimate capacity identified in the Airport Plan is beyond the scope of the Draft EIS.

12.3.2 Aircraft collision risk

12.3.2.1 Issue raised

Raised by

Community, CFI Bathurst Soaring Club, Gliding NSW

Issue

Submissions raised concern for the risk of aircraft collision, particularly with military aircraft, general aviation aircraft and emergency service aircraft. Submissions stated that the preliminary flight path impinges on the airspace of both the Camden Airport and the RAAF Base Richmond and their simultaneous operation would inevitably lead to a mid-air collision. Submissions stated that these collision risks would increase substantially once WSI is at full operational capacity.

Submissions expressed concern that in the event of aircraft issues, an emergency landing could not occur at the RAAF Base Richmond due to current safety protocols and it would be difficult in the Blue Mountains given the terrain. Submissions also stated that the inaccessibility of the area would impact emergency response services and would also lead to a low survival rate.

12.3.2.2 Response

As discussed in Section 12.2.1, potential threats to safe inter-operability associated with the introduction of additional flight operations into the existing Sydney Basin airspace have been addressed by airspace design principles and supporting safety assessment undertaken by Airservices Australia.

Changes to the Sydney Basin airspace would also be implemented to safely integrate the WSI control area and the preliminary flight paths while providing for safe and efficient operations for all aircraft in the Sydney Basin. This requires some changes to some flight paths to and from Sydney (Kingsford Smith) Airport, Bankstown Airport, Camden Airport and the RAAF Base Richmond airport prior to the opening of WSI in 2026, as well as changes to flying training areas and provision of transit routes. Further information on these facilitated changes are provided in Chapter 8 (Facilitated changes) of the Draft EIS; facilitated impacts are covered in Chapter 22 of the Draft EIS.

The project achieves the 'as low as reasonably practicable' principle and an acceptable level of safety, as outlined in Chapter 6 (Project development and alternatives) of the Draft EIS:

- the project has been designed within a safety regulatory and management framework in which the safety of air navigation is regarded as the most important consideration and where management systems are in place to ensure that such a commitment is met
- the airspace and flight path design is underpinned by defined goals established at the outset that all risks will be managed to be as low as reasonably practicable and that any residual risk will be acceptable
- the airspace and flight path design is further underpinned by 2 design principles supporting inherent safety: systemic separation of aircraft and air traffic controller workload minimisation
- the identification and evaluation options for airspace and flight path design and the selection of the preferred concept option has followed a rigorous process which can be expected to deliver an optimum solution within the inherent constraints of the existing operational requirements that is safer by design
- the subsequent development of the preliminary airspace design from the selected concept option follows established industry practice and has delivered a more detailed operational specification that can be expected to deliver an eventual outcome meeting the identified objectives, minimising airspace conflicts and maximising system operability.

Consideration of safety will continue as the project advances to detailed design and implementation through the airspace change proposal. This includes safety and hazard assessments to ensure that risks have been identified and managed to the lowest practicable level.

Airspace conflicts and system operability is discussed in detail in Chapter 6 of Technical paper 4, and the assessment considered:

- the introduction of additional flight operations into the existing Sydney Basin airspace
- interfaces with military and emergency services operations
- current commercial and private civil aircraft operations
- concerns relating to mid-air collision with other aircraft.

The preliminary flight paths presented in the Draft EIS have been designed for current aircraft operations and the anticipated operational requirements for single runway operations through to 2055. The introduction of the second runway to achieve the ultimate capacity identified in the Airport Plan would be subject to a separate design and approvals process, and includes safety assessments.

Any aircraft in an emergency will be given priority by air traffic control as per standard aeronautical procedures. Sections 12.3.4 and 12.4.2 responds to matters concerning the passage for aircraft in an emergency.

12.3.3 Wildlife strike risk

12.3.3.1 Issue raised

Raised by

Community, Blue Mountains City Council, Blue Mountains Union and Community

Issue

Submissions expressed concern for the potential for wildlife strike due to the preliminary flight paths. These concerns were often associated with the Grey-headed Flying-fox as they are the animal most involved with aircraft at airports in Australia. In raising this concern, submissions noted that the bat species has the potential to do substantial damage to the aircraft, leading to grounding flights and putting aircrew and passengers at risk. Submissions raised concern regarding the safety risk to passengers and the general community resulting from potential crashes occurring following an aircraft colliding with a bat or bird.

Bird strikes were also raised in submissions, with particular concern for migratory bird species that could collide with aircraft at higher altitudes than expected in the Draft EIS and cause aircraft crashes.

In raising concerns about wildlife strike, submissions stated the majority of bird and bat strike events near airports occur on approach, landing and take-off, according to International Civil Aviation Organisation (ICAO). These submissions suggested that the aircraft movement across the Blue Mountains (particularly those under 3,500 ft (1 km)) or across the escarpment to the south-west would have increased risk of strike and subsequent crash risk given the topography, the high population of birds and bats in the area and/or the potential to encounter larger bird or bat species.

12.3.3.2 Response

The potential for wildlife strike due to the preliminary flight paths was assessed in the Draft EIS, and the assessment concluded that wildlife strike risk mitigation for WSI at an acceptable level of safety is achievable, provided a site-specific wildlife management program is implemented.

Wildlife strike is a well-recognised hazard to aircraft operations that receives considerable attention to minimise the associated risk. The Draft EIS acknowledged that wildlife strikes with aircraft can present a significant risk to aircraft safety and could also result in significant costs due to the repair of damaged aircraft or operating costs due to downtime.

Technical paper 5 focussed on bird and bat strike risk and placed particular emphasis on flying-foxes and Australian White Ibis due to potentially significant issues with these species. The impact of wildlife strikes on migratory species was assessed in the Draft EIS (Section 6.4 of Technical paper 5). Impacts to migratory bird species are assessed in Technical paper 8: Biodiversity (Technical paper 8), and it was found that the operation of the preliminary flight paths is unlikely to have a significant impact on threatened or migratory species. Aircraft strike risk would be minimised through measures such as continuing work with planning authorities to minimise wildlife attraction; a Wildlife Hazard Management Plan (WHMP); regional species management plans and the implementation of a bird and bat monitoring program.

The Draft EIS recognised that bird strike hazard potential and its implications for third party safety is very much concentrated at and in the immediate vicinity of an airport. The study area for the wildlife strike risk assessment is described in Section 1.4 of Technical paper 5 and this area included the low altitude aircraft movement which would occur across the escarpment to the south-west of the Airport Site.

Risk mitigation is provided by a wide variety of general measures and standard procedures adopted across the aviation industry that will apply to operations at WSI. Wildlife strike mitigation measures are identified in Technical paper 4 in Table 11.1 (HR5 to HR8) and supported by the proposed monitoring program in Table 11.2.

12.3.4 Bushfire risk

12.3.4.1 Issue raised

Raised by

Community

Issue

Submissions stated the risk of aircraft crash or aircraft debris has the potential to spark a bushfire on impact with adverse impacts on both human life and residential dwellings. Submissions often attributed the heightened risk of post-aircraft crash bushfires with the already susceptible GBMA.

Submissions also raised concerns that in the event of a bushfire, the terrain of the region would make it difficult for emergency services to access. Submissions questioned as to what the emergency response would be in the event of a crash to minimise the impacts of a crash-induced fire.

12.3.4.2 Response

The potential risk of an aircraft crash or aircraft debris to spark a bushfire on impact was assessed in the Draft EIS. The assessment found that the estimated crash rate during take-off and landing for 2055 operations is estimated to be around one in 50 years and the corresponding post-impact fire rate is estimated to be around one in 100 years. This rate applies in the immediate vicinity of the runway and covers the majority of the crash events. An additional but relatively small risk applies along airways, beyond the immediate runway.

Given its importance, specific attention has been given in the Draft EIS to the crash risk in the GBMA. The Draft EIS concluded that preliminary flight paths over the GBMA present a low risk of fire through aircraft accidents. This is based on an estimate for the crash rate from aircraft during flight over the GBMA ranging between approximately one in 1,700 to one in 2,400 years in 2055. The range in the crash rate risk reflects the likely distribution of traffic movements using the preliminary flight paths over the Blue Mountains. Compared with the current fire initiation rates from other causes, this risk is very small.

The Draft EIS acknowledged that given the fuel load on aircraft, particularly during and shortly after take-off, fuel fires are a potential concern in the event of a crash. Aviation fuel (or jet fuel) has a low volatility and requires a powerful ignition source to initiate fire. For further information on the Blue Mountains and other fire initiation risks refer to Section 7.3.6 in Technical paper 4.

Any aircraft in an emergency will be given priority by air traffic control as per standard aeronautical procedures. An aircraft in an emergency situation will always attempt to, and be afforded priority to land at the nearest suitable airfield due to the availability of Aviation Rescue and Firefighting equipment and personnel on site. Aircraft departing Sydney (Kingsford-Smith) Airport and Bankstown Airport to the west experiencing an emergency could also utilise WSI as an appropriate airfield, alleviating the possibility of a forced landing in the GBMA.

Bushfire response and management is legislated under the *Rural Fires Act 1997* and is outside the scope of the Draft EIS.

12.4 Fuel jettisoning

12.4.1 Fuel jettisoning risk

12.4.1.1 Issue raised

Raised by

Community, Camden Council, Cumberland Council, Botanic Gardens of Sydney, Hon Angus Taylor MP – Member for Hume (Federal), Social Justice Committee Holy Spirit Catholic Church St Clair, Western Sydney Amateur Astronomy Group Inc, Local members, Wollondilly Shire Council

Issue

Submission raised concerns of the occurrence, frequency, location, monitoring, and general impacts of fuel jettisoning. These concerns were often associated with impacts to residential areas, natural landscapes including sensitive environments when aircrafts were either taking off or landing at WSI but also included general safety concerns to people.

Submissions expressed concern the fuel would not disperse before impact with the ground in the event of fuel jettisoning at low altitudes.

Submissions expressed concern regarding the smell of fuel in the event of fuel jettisoning and questioned what the cumulative impacts of repetitive fuel jettisoning would be.

Submissions referred to the Draft EIS which stated the jettisoning of aircraft fuel is undertaken in a controlled manner and in accordance with the AIP ENR to eliminate any risk to sites on the ground (Airservices Australia, 2023b). These submissions criticised this conclusion and claimed that the environmental hazards of fuel jettisoning are well known and should be mitigated.

12.4.1.2 Response

The fuel jettisoning risk has been assessed in the Draft EIS and it was concluded that there will be no significant adverse impact from fuel jettisoning associated with WSI operations. A fuel jettisoning incident giving rise to impacts at ground level anywhere in the vicinity of WSI is estimated to be extremely remote. Events with tangible impacts on potentially sensitive receivers will be less likely and therefore be exceedingly remote. Impacts of fuel jettisoning to sensitive components of the environment, such as communities, the GBMA and Sydney's water catchments, were included in the assessment.

Fuel jettisoning will be carried out in accordance with appropriate procedures (specifically, the AIP ENR), as per mitigation measure HR3 (Airservices Australia, 2023b). If possible, fuel jettisoning will be conducted at an altitude of at least 6,000 ft (approximately 1.8 km) above ground level to ensure total dissipation into the atmosphere prior to contacting the ground (AIP ENR), except in the case of emergencies (which would be carried out in accordance with the AIP ENR. Fuel jettisoning occurs only very rarely and only after authorisation from air traffic control (Airservices Australia, 2023b). There are very limited occurrences of impacts at ground level associated with fuel jettisoning in the wider international incident record, confirming that the risk is very small. Given the findings of the assessment, the mitigation measure included for fuel jettisoning in the Draft EIS (HR3) is considered adequate.

Detail on the AIP ENR is provided in Section 12.6.1. For further information on the fuel jettisoning assessment, refer to Section 8.1 of Technical paper 4.

Odorous air pollutants were considered in the Draft EIS and the assessment found that the predicted concentrations in 2033 and 2055 are below the relevant criterion, which indicates that odour would not be detectable at any sensitive receiver. For further information refer to Section 11.3.1 of this Submissions report, and Section 6.1 of Technical paper 2: Air quality (Technical paper 2).

12.4.2 Bushfire risk

12.4.2.1 Issue raised

Raised by

Community

Issue

Submissions either stated that the practice of fuel jettisoning would increase the risk of bushfire in the area, or questioned if fuel jettisoning would accelerate the spread of bushfires started by other causes. Submissions stated that the GBMA is a high-risk bushfire area and raised concerns that the practice of fuel jettisoning would further increase this bushfire risk to public and private property. Submissions referred to past bushfires and the impact of previous fuel jettisoning that exacerbated bushfires in the Blue Mountains National Park as well as the Royal National Park.

Submissions questioned the emergency protocol in the event of a bushfire due to fuel jettisoning, particularly if the NSW Rural Fire Service and National Parks and Wildlife Service aircraft will be given priority within the airspace. Submissions also raised concerns that the use of fire service drones to detect ignition sources and hidden fires would be curtailed due to the operation of aircraft.

12.4.2.2 Response

The potential risk of fuel jettisoning increasing the risk of bushfires was considered in the Draft EIS. Given the low occurrence of fuel jettisoning, the procedures that apply and the high evaporation and dispersion rates known to occur at high altitude, the operation of the preliminary flight paths (including over the Blue Mountains) is not considered likely to increase the risk of bushfires.

Emergency protocol(s) in the event of a bushfire due to fuel jettisoning (regardless of the aircraft origin or destination (i.e., WSI) is governed in accordance with the Aeronautical Information Publication Australia, Part 2 – En Route (AIP ENR) which specifies passage of aircraft in an emergency, including aircraft participating in fire and flood relief, medical and search and rescue (Airservices Australia 2022b). Operation of WSI flightpaths will be subject to this (and other) standards as directed by air traffic control.

Drone and model aircraft operation were considered in the 2016 EIS. The use and efficacy of unmanned aerial vehicles (including drones) in coincidence with the preliminary flight paths for fire detection purposes is outside the scope of the Draft EIS.

12.4.3 Water quality

12.4.3.1 Issue raised

Raised by

Community, Hon Angus Taylor MP – Member for Hume (Federal), Western Sydney Amateur Astronomy Group Inc

Issue

Submission raised concerns about the potential impact to aquatic ecosystems and water supply in the event of fuel jettisoning. These concerns were often associated with the contamination of Lake Burragorang and Warragamba Dam given they hold 80 per cent of the Sydney Basin's water and serves as the main water source for 5 million residents, but also included risks to private residential water tanks.

Submissions stated that fuel jettisoning could not occur upon take-off given the preliminary flight paths position above the Sydney Basin's water catchment, particularly the Hawkesbury-Nepean River.

12.4.3.2 Response

The effects of pollution on water quality as a result of aircraft flying within the study area was assessed and, even with a worst-case estimate of deposited pollutants, the potential impacts are too low to measure or detect in practice (refer to Section 11.1 of Technical paper 12: Human health (Technical paper 12)).

The Draft EIS took into account the likelihood that some communities in the study area rely on rainwater tanks (and the above conclusions apply). The assessment covered both urban areas (where the NSW Health guidelines indicate rainwater tanks in urban areas should not be used as potable water supply) as well as rural areas across the local and regional study areas.

Sensitive receivers considered in the fuel jettisoning assessment (such as water supplies, reservoir facilities) were discussed in Section 12.2.4 of this chapter. Fuel jettisoning is covered in Section 12.6.1 of this chapter and in detail in Technical paper 4.

12.5 General hazards and risks

12.5.1 General operational concerns

12.5.1.1 Issue raised

Raised by

Community, Camden Council, Cumberland City Council, Hon Angus Taylor MP – Member for Hume (Federal)

Issue

Submissions queried how heavy fog, mist and other weather events frequently occurring in the region would impact the safety and operation of aircraft. Submissions also raised this concern in the context of smoke produced from hazard reduction, backburning and bushfire events and the impact that will have on aircraft operation and landing while navigating the terrain. Submissions raised safety concerns in the context of increasing temperatures associated with climate change and the local urban heat island effect which would lead to aircraft operational failure.

Submissions raised the concern of targeted attacks on significant infrastructure such as Warragamba Dam and associated water infrastructure and Orchard Hill Defence Establishment given the reclassification of the airspace and increased flight traffic. Submissions stated that attacks on water infrastructure would affect 100,000 people and the cost would be over $5 trillion and leave 80 per cent of Sydney without water for at least 5 years.

Submissions also raised concerns about risk of operational failure including doors detaching from planes and impacting people on the ground, engines catching on fire and emergency landings.

12.5.1.2 Response

The general safety of residents in their homes in the context of objects falling from aircraft has been assessed and found to be as low or lower than the risk from aircraft crashes (which was assessed as slight), and is considered in Chapter 13 (Aircraft hazard and risk) of the Draft EIS and Technical paper 4. Potential impacts on critical infrastructure as a result of adoption of the preliminary flight paths is covered in Section 12.3.1 of this chapter.

Meteorological hazards have also been assessed and there are no exceptional meteorological conditions at WSI that might lead to significant risks to operational safety. Compared with other airports which operate with an acceptable level of safety, any potential risks to safety and operational efficiency from meteorological hazards can be mitigated by provision of improved forecasting, which will be implemented at WSI in the form of an Automated Thunderstorm Alert Service. This mitigation measure is listed at HR4 in Table 11.1 of Technical paper 4.

Climate related risks to aviation associated with the preliminary flight paths are discussed in Chapter 3 of Technical paper 3: Greenhouse gas (Technical paper 3). Higher temperatures and more severe heat waves are climate related risks for WSI (refer to Table 3.1 of Technical paper 3) however, the Draft EIS did not find evidence to demonstrate that increased temperatures associated with climate change would have a material impact on the rate of operational failures as a result of adoption of the preliminary flight paths. Previous international operational experience covers a wide range of temperatures, including those expected to be at WSI under anticipated climate change scenarios, and operational practices are in place to ensure safe operations under those conditions.

Any aircraft in an emergency will be given priority by air traffic control as per standard aeronautical procedures (refer to Section 12.4.2).

12.6 Mitigation and management

12.6.1 Fuel jettisoning practices

12.6.1.1 Issue raised

Raised by

Community, Camden Council, Wollondilly Shire Council

Issue

Submissions stated that exposure to contamination due to fuel jettisoning requires an appropriate mitigation strategy, even if this is a rare occurrence. Submissions requested strict regulations on fuel jettisoning over the Sydney Basin's water catchment and the GBMA prior to landing to mitigate contamination events and ensure the safety of residents.

Submissions questioned the method to manage fuel jettisoning along key points of the preliminary flight paths. These concerns were often associated with the protection of sensitive terrestrial and aquatic ecosystems. However, concerns were also raised in the context of impacts to the Sydney Basin's water supply and the management of contaminated reservoir water, such as Prospect Reservoir. Submissions requested that fuel jettisoning events are controlled as to avoid school sites, particularly within school hours.

Submissions suggested that appropriate changes to preliminary flight paths should occur as to create the shortest route to sea allowing for fuel jettisoning to occur over the ocean rather than over the GBMA. Submissions state the Draft EIS notes that many fuel jettisoning events occur over the ocean but questioned this assumption considering the inland location of WSI compared to Sydney (Kingsford Smith) Airport.

12.6.1.2 Response

Fuel jettisoning is only required in extremely rare circumstances and is only possible in certain types of aircraft. In the event fuel jettisoning is required, CASA and Airservices Australia enforce strict procedures on when and where it can occur.

In addition to these existing procedures, the Draft EIS included a mitigation measure that requires Airservices Australia to apply the AIP ENR.

For further detail on the potential fuel jettisoning risk and associated mitigations is provided in Section 12.4, and Section 8.1 of Technical paper 4.

12.6.2 Wildlife strike

12.6.2.1 Issue raised

Raised by

Camden Council

Issue

Submissions requested that the WSI Wildlife Hazard Management Committee (WHMC) is convened as a matter of urgency to ensure appropriate planning and mitigation of wildlife strike risk prior to the opening of WSI, and that its membership includes a representative from Camden Council, as well as the National Parks and Wildlife Service.

12.6.2.2 Response

The Draft EIS considered mitigation measures for wildlife strike, and one of the wildlife strike mitigation measures required WSA Co to establish a WSI WHMC in the operation phase (within 6 months of implementation, 2026–ongoing) (mitigation measure HR7). The timing of this committee is considered appropriate given the measures already in place at WSI to plan for and mitigate the wildlife strike risk. One of the mitigation measures in the 2016 EIS was the development and implementation of a wildlife hazard management plan. The aim of this plan was to manage the risk of fauna hazard and bird and bat strike, and the timing was the pre-operation and operation phases. This plan ensures appropriate planning and mitigation of wildlife strike risk prior to the opening of WSI and during operation.

Membership will be confirmed closer to the establishment of the committee. It will likely comprise Western Sydney local government representatives, NSW Department of Planning, Housing and Infrastructure and other relevant aviation stakeholders.

12.6.3 Other mitigation and management concerns

12.6.3.1 Issue raised

Raised by

Community, Cumberland City Council

Issue

Submissions requested that all efforts be made to safeguard residents from major aviation crashes and items falling from aircraft. Submissions queried what insurances would be provided if an accident were to occur that would affect residential dwellings or how flight paths will be monitored in relation to aircraft safety.

Submissions stated that the proposed airspace management with emergency aircraft services in the event of a bushfire in the Draft EIS is inadequate, particularly given the serious nature of the issue and the preliminary flight paths fly over bushfire prone areas. Submissions also question how aircraft movements would be managed when bushfire smoke affects visibility while others state that aircraft would need to be re-routed. Submissions query who would have right of way during these events and stated a clear plan on how this situation would be managed is needed. These concerns were raised in the context of the region's vulnerability to bushfires, particularly due to climate change.

12.6.3.2 Response

The risks associated with aircraft crashes and objects falling from aircraft have been considered in the Draft EIS, and risk mitigation is provided by a wide variety of general measures adopted across the aviation industry that will apply to operations at WSI. WSI specific recommendations for mitigation have been identified and are summarised in Technical paper 4 (Table 11.1 and supported by the proposed monitoring program in Table 11.2), including:

- Airservices Australia will continue to address hazard identification and risk mitigation during the remainder of the design process and prioritise on-going safety performance monitoring (mitigation measure HR1)
- WSA Co will implement contingency planning to respond to the impacts of crash events as per Part 139 Aerodromes Manual of Standards 2019 (mitigation measure HR2).

The potential risk of objects falling from aircraft has been assessed and found to be as low or lower than the risk from aircraft crashes (which was assessed as slight). No specific mitigation measures address this hazard are considered to be required.

Emergency services aircraft and commercial air traffic routinely operate safely and efficiently all over Australia, allowing aerial firefighting to occur alongside the operation of major civil airports. Airservices Australia is responsible for the safe and efficient operation of airspace in Australia, and closely manages aircraft operating around airports and during flights. Airspace is managed to ensure the safe movement of all aircraft, including emergency services, and the AIP administered by Airservices Australia gives priority passage for aircraft during an emergency (such as emergency fire fighting aircraft, air ambulance, etc.).

Airservices Australia also works with the Bureau of Meteorology to advise pilots of hazards as appropriate, such as haze or smoke caused by bushfires or controlled burning. Where smoke does reduce visibility at an airport, usual procedures for flying in low-visibility conditions would apply.

Chapter 13 Land use

This chapter provides a response to the issues raised in submissions specific to Chapter 14 (Land use) of the Draft EIS.

Overall, submissions raised concerns regarding the land use and planning assessment approach to assess a single runway, the impact of the current planning policies around WSI including Luddenham Village, building height restrictions, the use of the Australian Noise Exposure Concept (ANEC), impact and restrictions on the agricultural and residential properties. The submissions were also concerned about the restrictions on secondary dwelling and the eligibility criteria for the draft Noise Insulation and Property Acquisition Policy (NIPA).

The assessment of land use undertaken for the project focused on the potential land use implications associated with airspace movements. This assessment was framed within the context of the existing airport safeguards that have been established within the *State Environmental Planning Policy (Precincts – Western Parkland City) 2021* (NSW) (Western Parkland City SEPP) and guided by the National Airports Safeguarding Framework (NASF).

The New South Wales (NSW) planning framework takes a precautionary approach to residential land use in regard to WSI operations and has adopted an approach which relies on ANEC/ANEF contours and Australian Standard AS 2021:2015 Acoustics – Aircraft Noise Intrusion Building Siting and Construction (AS 2021:2015) (Standards Australia, 2015) to inform planning decisions for residential land uses in areas affected by aircraft noise. The Draft EIS did identify that a small additional area of land in the vicinity of WSI is predicted to be within the 20 ANEC contour for the assessed noise scenarios, when reviewed in comparison to the published ANEC mapping within the Western Parkland City SEPP.

The NIPA would address impacts for eligible properties that are significantly impacted by aircraft noise who, subject to final Australian Government approval, will be eligible for either voluntary acquisition or noise insultation treatment. This includes the treatment for residential and non-residential buildings within the ANEC 20 contour (or greater).

State and local governments are responsible for land use planning in the areas surrounding WSI, including the finalisation of the Luddenham Village Plan. Project specific mitigation measures outlined in the EIS have been developed to ensure coordination between the Department of Infrastructure, Regional Development, Communications, and the Arts (DITRDCA), WSA Co, the NSW Government and local councils concerning the implementation of relevant planning controls.

13.1 Submission overview

13.1.1 Number and origin of submissions

A total of 84 submissions raised matters concerning land use impacts. The majority of these submissions originated from the Sydney Basin and surrounds as shown in Figure 13.1. Around 17 per cent of the 84 submissions did not supply a location.

Of the 84 submissions, around 69 per cent originated from the Western Sydney District (excluding Blue Mountains) followed by the Western City District (Blue Mountains) at 6 per cent, Central City District at 5 per cent and the Eastern City District at one per cent.

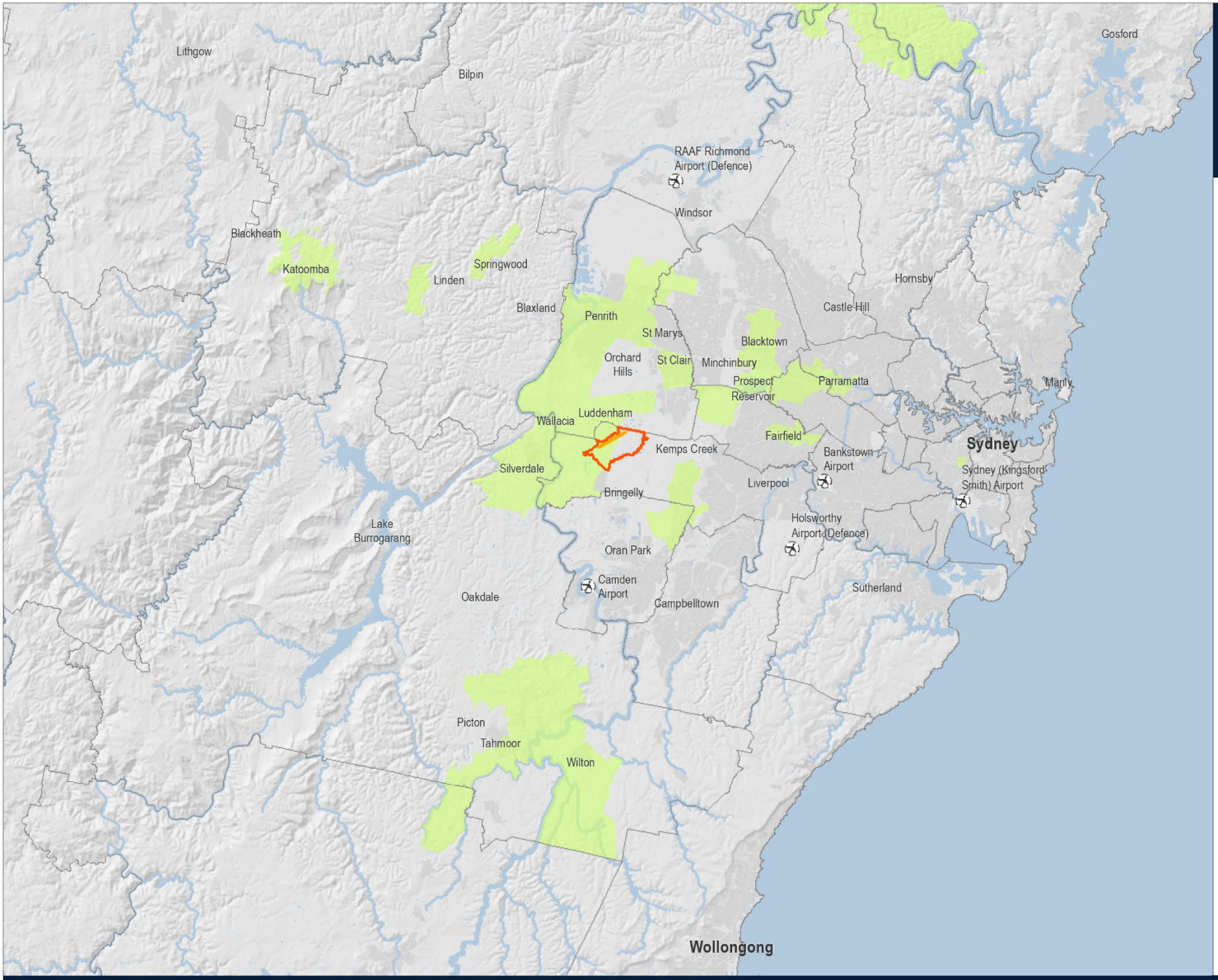


Figure 13.1

Origin of submission in relation to land use impacts

Legend

- WSI Runway
- Western Sydney International (Nancy-Bird Walton) Airport land boundary
- Local Government Area

Number of submissions by postcode

- 1 - 50
- 51 - 100
- 101 - 150
- 151 - 200
- 201 - 250
- 251 - 300
- 301 - 350
- 351 - 400
- 401 - 450
- 451 - 500
- 501 - 550
- More than 550

0 5 10 km

Coordinate system: GDA 1994 NSW Lambert

Scale ratio correct when printed at A4

1:600,000 Date: 20/06/2024

13.1.2 Key issue breakdown

A breakdown of the sub-issues within this key issue and the percentage of total submissions that raised each of these sub-issues is outlined in Table 13.1.

Table 13.1 Breakdown of sub-issues in relation to land use impacts

Sub-issue	Number of submissions that raised the sub-issue	Percentage of submissions that raised the sub-issue
Impact assessment approach	11	<1%
Land use impacts	77	1%
Mitigation and management	3	<1%

Each sub-issue was raised more often by the Western City District (excluding Blue Mountains).

Land use restrictions was the key theme of the submissions raising land use impacts and the majority were raised by submissions originating from the Western City District (excluding Blue Mountains). The Western City District (Blue Mountains) and Central City District contributed to the next 13 per cent of submissions that raised this sub-issue.

The impact assessment approach of land use impacts and the mitigation and management of impacts was also raised by the Central City District, Eastern City District and the Western City District (Blue Mountains) at a lower frequency to the Western City District (excluding Blue Mountains).

Up to 18 per cent of submissions in each sub-issue did not provide a location, except for the management and mitigation of land use impacts. For this sub-issue, all submissions supplied a postcode.

13.2 Impact assessment approach

13.2.1 General

13.2.1.1 Issue raised

Raised by

Community, Blue Mountains City Council, The Parks – Sydney's Parkland Councils, Western Sydney Regional Organisation of Councils (WSROC), Wollondilly Shire Council

Issue

Submissions suggested that the land use assessment in the Draft EIS should have considered the ultimate capacity of the WSI rather than the single runway operations.

Submissions expressed concern that the Draft EIS did not account for existing residential properties within non-residential land use zones and didn't consider the potential impacts of noise on older residential properties located just outside the ANEC 20 contours. Submissions were also critical that Technical paper 6: Land use and planning (Technical paper 6) did not adequately consider impacts to Luddenham Village.

A submission requested that the finalised EIS is updated to:

- reflect that much of the land within the proposed flight paths is located within the Metropolitan Rural Area (MRA), under the Greater Sydney Regional Plan and Western City District Plan, and that those plans seek to retain the unique values of those areas (which includes agricultural production)
- revised to provide an assessment of the impact, opportunities and constraints of the project on future agricultural uses on rural lands outside the agri-business precinct, acknowledging that a significant area of land within the flight path location and wildlife buffer area is high quality agricultural land (particularly those areas within the Nepean River floodplain).

It was also requested that the finalised EIS should provide a detailed assessment of the potential impacts on future residential development in the Western Sydney Aerotropolis, and mitigation measures required to minimise the adverse impacts on future development.

Submissions questioned why the Draft EIS did not discuss in detail any potential impacts of the project on land uses or future development in areas further afield in Western Sydney, particularly any potential impacts due to the 24-hour operations at WSI.

A submission expressed concern that a zoning map contained in the Draft EIS is incorrect.

13.2.1.2 Response

The NSW Government and local councils are responsible for setting strategic land use direction and land use controls beyond the Airport Site.

The assessment of the potential impact to existing and potential land uses in the study area was carried out for the development and implementation of proposed flight paths and a new controlled airspace for single runway operations at WSI. Current land use planning controls are intended to protect the surrounding areas for a future second runway. The development of a second runway at WSI is subject to separate regulatory approvals in accordance with *Airports Act 1996* (Cth) (the Airports Act), including any required environmental assessment.

The assessment considered the NSW planning framework's approach to residential land use in in areas affected by aircraft noise. This approach adopts ANEC/ANEF contours and AS 2021:2015 (Standards Australia, 2015) to inform planning decisions for residential land uses across all land use zones including residential dwellings on agricultural land. The assessment, as presented in Technical paper 6 and the Draft EIS, considered the potential impact of aircraft noise contours on a range of land uses within the study area in addition to that zoned for residential uses.

The NIPA would address impacts for eligible properties that that would be significantly impacted by aircraft noise. These properties, subject to final Australian Government approval, will be eligible for either voluntary acquisition or noise insultation treatment. This includes the treatment for residential and non-residential buildings within the ANEC 20 contour (or greater). As detailed in the NIPA, eligibility for the final program will encompass consideration of 'natural boundaries' beyond the ANEC 20 contour, for example to include both sides of a particular street, or an area up to a park or green space. This is based on the lessons learnt from previous Australian programs.

The potential impact to residential areas within the study area included Luddenham Village. Parts of the village are subject to land use controls under the Western Parkland City SEPP. Planning for the Luddenham Village precinct is ongoing and the NSW Government released the Luddenham Village Interim Strategy in 2022 (NSW Department of Planning and Environment (DPE), 2022b). This informs the Luddenham Village Plan which will outline land use planning provisions and controls (including development within the ANEC 20 contour) relating to Luddenham Village and will be incorporated into the Aerotropolis Precinct Plan.

The Western City District Plan includes planning priorities to manage rural areas and to protect and enhance scenic and cultural landscapes. It identifies strategies to limit urban development to outside the MRA and to promote place-based planning to maintain or enhance the values of the MRA. Technical paper 7: Landscape and visual amenity (Technical paper 7) discusses the relevance and potential impact to the MRA. The assessment of potential landscape character impacts identifies that the project would have a low potential to impact on the landscape character of the Penrith rural south-west landscape character zone (LCZ1) which is within the MRA.

There are significant areas of existing agricultural land uses within the land use and planning study area, which incorporates the wildlife buffer zones. An assessment of potential impacts to agricultural land uses within the study area is provided for 3 key aspects:

- aircraft noise contours (ANEC), and the impact they could have on existing land use and future planning or approvals
- the potential for restricted development due to protected airspace (OLS and PANS-OPS)
- wildlife buffers and framework for how to manage the risk of wildlife strike on aircrafts in the vicinity of WSI.

The assessment identified that aircraft noise from WSI would not have any specific planning or land use impacts on existing agricultural areas. Any development, including permanent and temporary structures which intrude on the airport's protected airspace is called a controlled activity. Building height restrictions apply to any development on land located within the OLS irrespective of the land use (including agricultural land uses). Building height controls within the study area (and generally) are outlined in the relevant local environmental plans (LEPs) unless otherwise specified within an overriding State Environmental Planning Policy (SEPP). Generally, it is not considered that the implementation of the OLS would impact on agricultural land uses.

Technical paper 6 provided an assessment of the potential for wildlife buffers to impact on existing and future agricultural land uses, noting that agricultural land uses have the potential attract wildlife which can then migrate onto the WSI or into flights paths. The NASF *Guideline C: Managing Risks of Wildlife Strike in the Vicinity of Airports* has been incorporated into the Western Parkland City SEPP and Aerotropolis Precinct Plans. This includes for the provision of wildlife buffer zones to mitigate risks of wildlife hazards.

Any new development classed as 'relevant development' under the Western Parkland City SEPP and within the 13 km wildlife buffer of WSI will be subject to the wildlife management controls contained within the Western Parkland City SEPP. There are range of existing agricultural land uses within the study area which have the potential to attract wildlife including livestock production and commercial livestock feed businesses. These existing land uses can continue in the future due to existing use rights however mitigation of potential wildlife risks may be required in consultation with WSI and the NSW Department of Planning, Housing and Infrastructure. A number of project specific mitigation measure related to the incorporation of wildlife buffer zones are provided within the Draft EIS (mitigation measure HR6, HR7 and HR8).

A discussion on future land uses within the *Western Sydney Aerotropolis Precinct Plan* (NSW Department of Planning and Environment (DPE) 2020) is in force under the provisions of the Western Parkland City SEPP and outlines place-based objectives to guide future development within the Aerotropolis, including provision for future residential development, is provided in Technical paper 6 and the Draft EIS. The. The Precinct Plan outlines specific planning objectives for ensuring that development is responsive to the WSI's operational constraints including aircraft noise and OLS. As such, planning controls for the Aerotropolis are the same as those in force for other residential areas within the study area and particularly within the ANEC 20 contour.

Beyond the implementation of the NIPA, the mitigation of impacts to all future land uses within the study area has been considered within strategic planning by others in the vicinity of WSI. This has been ongoing for over a decade in conjunction with planning for WSI and is well established in existing planning instruments.

The study area for the land use was chosen as representative of the land surrounding WSI where aircraft movements would have an impact on land uses. The study area is based on the OLS for WSI as this represents an area which incorporates the relevant ANEC contours and wildlife buffers. While existing land uses are considered for a larger area than that represented by the study area, potential impacts related to implementation of the OLS, ANEC and wildlife buffers have been restricted to the study area.

Land zoning within the study area was presented in Technical paper 6 and Chapter 14 (Land use) of the Draft EIS, with the mapping based on data sourced at the time of production (May 2023). Mapping representing land zoning in the study area has been updated with the latest available information in the finalised EIS. Additional mapping provided in the Draft EIS related to the Western Sydney Aerotropolis was sourced from the Western Sydney Aerotropolis Precinct Plan (DPE 2023) and has not been amended.

13.3 Impact assessment

13.3.1 General

13.3.1.1 Issue raised

Raised by

Community, Fairfield City Council, Hon Angus Taylor MP – Member for Hume (Federal), Penrith City Council, Sporting Shooting Association of Australia Sydney Branch, The Parks – Sydney's Parkland Council, WSA Co

Issue

Submissions commented on or criticised statements within the Draft EIS concerning the history of land use controls for an airport in Western Sydney, specifically that:

- land use restrictions should have been in place since WSI was first proposed
- statements that controls have been in place since 1980s was considered misleading
- land use controls and zonings in areas surrounding the Airport Site have advantaged some but have disadvantaged those who owned property prior to announcement of a second airport at Badgerys Creek in 1987. For these property owners, it was suggested that compensation should be provided (through rezoning or voluntary acquisition)
- land use controls have not applied to areas that are impacted by aircraft noise (particularly at night). An example is houses built in the last 2 to 5 years in Mulgoa and Silverdale which have not been required to satisfy the requirements of the Western Parkland City SEPP.

One submission expressed concern that operations at an outdoor shooting range in Silverdale may be impacted as the facility is located directly below the proposed flight paths. A submission queried if any mitigations are required to safely operate a shooting range under the flight paths at Silverdale, and requested NSW Government assistance if the site needs to be relocated.

Submissions raised concerns that project would result in restrictions on agricultural uses and result in the reduction of agricultural land in Western Sydney.

One submission stated that they were not aware of the proposed changes to the flight paths from the 2016 EIS when completing due diligence on a recent property purchase.

13.3.1.2 Response

The NSW Government is responsible for strategic land use planning for land surrounding WSI and for the Western Sydney Aerotropolis. The assessment of impact to existing and future land uses from the project has been carried out in consideration of relevant NSW legislation including environmental planning instruments were considered appropriate, including the broader area beyond WSI and the Western Sydney Aerotropolis.

Strategic planning in the vicinity of WSI has considered and incorporated the operational needs of WSI into land use planning in accordance with guidance provided in the NASF. This has been ongoing for over a decade in conjunction with planning for WSI and is well established in existing planning instruments.

WSI's protected airspace was prescribed by declaration on 19 October 2017 under the provisions of the Airports Act and Airports (Protection of Airspace) Regulation 1996 (APAR).

DITRDCA will continue to liaise with State and local government agencies to ensure applicable environmental planning instruments have regard to key airport operational requirements such as ANEC forecasts, OLS and PANS-OPS requirements and wildlife buffers.

Comments regarding the Silverdale Rifle Range have been noted. If an activity is occurring on the ground which the user feels may be a danger to aviation activities, the Civil Aviation Safety Authority (CASA) should be consulted by the operator. CASA is the government body that ensures the safety of aviation in Australia. They also make sure that the aviation community and the public use and administer Australian airspace and aerodromes safely.

As discussed in Section 13.2.1.2 of this Submissions Report, an assessment of potential impacts to agricultural land uses within the study area is provided for 3 key aspects of aircraft noise contours (ANEC), protected airspace (OLS and PANS-OPS) and wildlife buffers.

Aircraft noise from WSI would not have any specific planning or land use impacts on existing agricultural areas. This is further discussed in Section 13.2.1 of this Submissions Report.

Section 4.65 of the NSW EP&A Act includes 'existing use rights' protections in which landowners are allowed to continue the use of their land if that use was lawfully commenced at the time of the rezoning under the SEPP or the use has not been abandoned. It is possible to enlarge, expand or intensify, alter, or extend an existing use but only with the approval of the relevant consent authority.

13.3.2 State Environmental Planning Policy (Precincts – Western Parkland City) 2021

13.3.2.1 Issue raised

Raised by

Community, Blacktown City Council, Judy Hannan MP – Member for Wollondilly (NSW), Luddenham Progress Association, Penrith City Council, The Parks – Sydney's Parkland Councils, Wollondilly Shire Council

Issue

Many submissions criticised, questioned or commented on the land use zones and airport safeguards set out for the Western Sydney Aerotropolis in the Western Parkland SEPP.

Submissions expressed concern or criticised the justification for the building and land use restrictions in the Western Parkland SEPP, such as subdivision and granny flats restrictions. This also included:

- criticisms on the restrictions within the ANEC/ANEF 20 and above contours. Submissions noted that development within ANEC/ANEF 20-25 contour should be allowed with appropriate controls as allowed for in the local environmental plans (LEP) or where the landowner accepts the noise impact. It was also suggested that restrictions set by the ANEC contours should be removed where the limitation occurs when the long-term dual runway at WSI is realised providing all development is in accordance with AS2021:2015
- questioned if areas of Luddenham had been rezoned from residential to agri-businesses to avoid the need for noise insulation or acquisition under the draft NIPA
- why industrial or commercial zones were created in areas not impacted by aircraft noise
- how the rezoning in areas to the north east, north west and south of the Airport Site was determined in the absence of the Draft EIS assessments. It was also criticised that areas to the south west of the Airport Site have not been considered, and that these areas are impacted by the project
- questioned if houses built since 2018 had included appropriate noise insulation and foundations to mitigate the impacts of the project.

A submission stated that the land use restrictions in the Western Parkland SEPP are not consistent with AS 2021:2015 (Australian Standards, 2015) which would allow for development in current restricted areas.

There was also concern that the use of ANEC contour for a single runway operation in the Draft EIS (2033/2040/2055) and draft NIPA (2040) would set unrealistic expectations about future development opportunities or sensitive land uses occurring in areas that may be more heavily impacted than originally modelled and may not be recognised as being eligible for noise mitigation.

It was suggested that the broader land use planning framework for the Aerotropolis should provide greater consideration for noise impacts within N60 and N70 contours. Furthermore, it was requested that guidance should be provided for local councils seeking to adopt noise management controls for properties within the N60 and N70 contours that fall outside of the Aerotropolis precinct.

Submissions questioned if detail should be added to Section 10.7 planning certificates issued by local councils under the NSW *Environment Planning and Assessment Act 2021* to identify that a property is impacted by aircraft noise. An example provided was residential areas that are currently within an N60 contour but outside the ANEC contour in 2055, and are therefore not required to comply with AS2021:2015 internal noise criteria.

Concern was also expressed that the project would impact the ability for the strategic aims and objectives of the Western Sydney Aerotropolis given the impact of aircraft noise on the amenity for future residents, commercial and other non-residential sensitive receivers.

Other comments, criticism or questions related to the Western Parkland SEPP included:

- legislative relationships between local and State controls, specifically:
  - if the SEPP takes precedence in the event of an inconsistency with a LEP, and why controls in the Western Parkland SEPP were inconsistent with the LEP
  - a claim that there is an inconsistency in the SEPP which grants an exemption to the policy and suggests that this should be applied over the whole of Wollondilly
- development of the Western Parkland SEPP. Many submissions claim that they were not consulted on the development and implementation of the Western Parkland SEPP
- the timing of the Western Parkland SEPP. It was questioned why the SEPP was introduced prior to operation and suggested it should be progressively enacted to reflect the development of the airport
- amendment to the Western Parkland SEPP to reflect updated noise modelling. Submissions stated that:
  - the ANEC contours are only indicative, may change and are based on 2063 modelling but a timeframe for this update was not provided, or
  - the Western Parkland SEPP should be amended to reflect the Draft EIS noise contour maps as this would allow residential accommodation in areas currently not permitted to construct new accommodation.

13.3.2.2 Response

The NSW Government is responsible for strategic land use planning within NSW. The assessment of impact to existing and future land uses from the project has been carried out in consideration of relevant NSW legislation including environmental planning instruments were considered appropriate, including the broader area beyond WSI and the Western Sydney Aerotropolis.

Strategic planning in the vicinity of WSI has considered and incorporated the operational needs of WSI into land use planning in accordance with guidance provided in the NASF. This has been ongoing for over a decade in conjunction with planning for WSI and is well established in existing planning instruments.

DITRDCA (formerly Department of Infrastructure and Regional Development (DIRD)) undertook liaison with relevant state and local agencies to seek adoption of the necessary guidelines in applicable SEPPs to ensure development in the vicinity of WSI does not impede protected airspace. WSI's protected airspace was prescribed by declaration on 19 October 2017 under the provisions of the Airports Act and APAR. Since then, land use and development restrictions related to WSI's protected airspace has been factored into, relevant state and local planning instruments.

Land-use planning has also been an effective means to ensure that land use near WSI is compatible with noisy aviation activities, with a primary goal of minimising the population affected by aircraft noise, through implementation of land-use planning measures, such as land use zoning around WSI. Appropriate noise management controls referencing the NASF and AS 2021:2015 (Standards Australia, 2015) have also been included in applicable planning instruments in advance of WSI's airport operations.

Until the ANEF contour is approved for WSI, the ANEC contour presented as the Noise Exposure Contour Map, representing the long-term, dual runway for WSI in the Western Parkland City SEPP will continue to inform land use planning. The ANEF contour would ultimately be prepared for WSI (based on the long-term runway operations) and endorsed by Airservices Australia. In the future, WSA Co under the Airports Act will have the responsibility of publishing endorsed Aircraft Noise Exposure Forecast (ANEF) information as part of the 5-yearly Master Plans. These ANEFs may be standard (up to 20 years), long range (20 year +) or ultimate capacity.

The NSW Government's Aviation Safeguarding Guidelines – Western Sydney Aerotropolis and surrounding areas were developed with input from DITRDCA and seek to ensure planning authorities consider the aircraft noise guidelines and noise exposure contour maps when undertaking land use planning for the Aerotropolis and surrounding areas of influence. Current planning provisions for land associated with Aerotropolis has been developed in conjunction with the Safeguarding Guidelines specifically to support the operation of WSI and limit potential restrictions on surrounding land uses.

To date, the range of existing planning controls in place in the vicinity of WSI have been an effective means of providing appropriate controls over land use planning and development.

Matters relating to the NSW EP&A Act, Section 10.7 planning certificates, the engagement completed by the NSW Government on the SEPP or issues with the SEPP are matters for the NSW Government to respond to.

13.3.3 Building height restrictions

13.3.3.1 Issue raised

Raised by

Community, Parramatta City Council, Penrith City Council, The Parks – Sydney's Parkland Councils

Issue

Submissions raised concerns that WSI and/or the project would restrict building heights in the Penrith and Parramatta central business districts.

It was requested that the finalised EIS should provide indication on any possible building height limitations resulting from future airspace protections (such as OLS and PANS-OPS) and other protection surfaces for airport and aircraft safety such as radar and lighting for the single runway operations. It was suggested that any new impacts to building heights should be avoided through amendments to WSI.

Submissions were also critical that there is no precedence to support the use of an OLS for aircraft noise land use planning. The OLS buffer was considered to be too conservative and imposed a significant constraint on development in areas to the north and south of the Airport Site.

Submission also was concerned that any future augmentation to the flightpaths or airport operations must not adversely impact on current Obstacle Limitation Surface (OLS) level.

13.3.3.2 Response

Protecting the airspace immediately around WSI is essential to ensuring and maintaining a safe operating environment for aircraft and the long-term future growth of the airport. Structures and other activities that intrude into protected airspace have the potential to impact safe aviation operations at WSI.

WSI's protected airspace was prescribed by declaration on 19 October 2017 under the provisions of the Airports Act and APAR. Declaration of the OLS enabled local councils and land use planning authorities to incorporate the protected airspace as appropriate in their land use planning instruments. A revised OLS was subsequently declared on 16 June 2023 to reflect the 'as built' runway parameters. Current land use planning controls are intended to protect the surrounding areas for a future second runway.

Building height restrictions on all land use types apply within the OLS are outlined in the relevant LEPs unless otherwise specified within an overriding SEPP. The Western Parkland City SEPP also contains provisions related to building height for specific growth precincts within the SEPP including the Aerotropolis Precinct and Oran Park and Turner Road Precinct. Maximum building heights are required to be contained within OLS limits established under the Western Parkland City SEPP.

The Penrith Central Business District (CBD) and Parramatta CBD are both beyond the OLS for WSI.

The PANS-OPS surface is generally above the OLS and is designed to safeguard an aircraft from collision with obstacles when the aircraft's flight may be guided solely by instruments, in conditions of poor visibility. Under the Airports Act and the APAR airport operators must refer short-term PANS-OPS infringements less than 3 months' to DITRDCA for approval. Long term intrusions of the PANS-OPS surface are prohibited.

The PANS-OPS for WSI will be declared once the flight paths have been approved.

DITRDCA will continue to coordinate with relevant State and local government agencies to implement appropriate PANS-OPS requirements in applicable planning instruments to ensure future development does not impeded safe aircraft operations in accordance with the National Safeguarding Framework.

13.3.4 Other state or local planning matters

13.3.4.1 Issue raised

Raised by

Community, Penrith City Council

Issue

Submissions made comment on the NSW planning system with respect to State Government jurisdiction over local government in determining zones and land use controls. It was requested that these authorities need to work together in establishing appropriate mechanisms to deter undesirable amenity outcomes for the community and management of land uses that could attract wildlife.

Submissions expressed concern that the project would result in potential future rezonings in the Blue Mountains.

Submissions commented that the Draft EIS did not contain any rationale for land use restrictions in Luddenham Village and that the Luddenham Village Plan should be finalised, including the 'Scenario 4 – Grow' option. These concerns encompass the anticipated noise and pollution levels, as well as the uncertainty surrounding future zoning and planning decisions, which could adversely affect the way of life of the community, property values, and overall development prospects.

A submission raised concern that that individuals who are not eligible under the draft NIPA would complete work to insulate properties from aircraft noise as exempt and complying provisions under NSW legislation and that this would increase compliance burden on local councils.

13.3.4.2 Response

State and local governments are responsible for land use planning in the areas surrounding WSI. The finalisation of the Luddenham Village Plan is a matter for the NSW Government. As outlined in earlier responses in this chapter, project specific mitigation measures outlined in the Draft EIS have been developed to ensure coordination between DITRDCA, WSA Co, the NSW Government and local councils concerning the implementation of relevant planning instruments.

13.4 Mitigation and management

13.4.1 General

13.4.1.1 Issue raised

Raised by

Community, Sporting Shooting Association of Australia Sydney Branch, Wollondilly Shire Council

Issue

Submissions requested a review of the Western Parkland City SEPP to resolve inconsistencies between state and national planning frameworks, specifically:

- prohibition of secondary dwellings in the ANEC/ANEF contour of 20 or greater when larger developments are permissible
- inclusion of additional types of development within the wildlife buffer zone as the current controls inhibit horticultural production.

A submission requested that final mitigation measures detailed in the finalised EIS should be cognisant of the future developments in the Western Sydney Aerotropolis. In this regard, it was requested that key stakeholders are engaged during the finalisation of the Noise Abatement Procedures and flight path design for the project, as well as the post-implementation review. It was suggested that:

- DITRDCA should prepare a separate engagement strategy in consultation with landowners to educate future or prospective residents and businesses in the Western Sydney Aerotropolis on the flight paths, and to obtain feedback to consider on when determining the final flight paths
- key stakeholders or landowners involved in developments in the Western Sydney Aerotropolis are engaged during the long-term design of the dual runway at WSI.

Submissions requested that DITRDCA consider the restrictions to land uses when determining the eligibility criteria for the draft NIPA relative to land use restrictions.

13.4.1.2 Response

Any review and amendment to the Western Parkland City SEPP and any other planning instruments is a matter for the NSW Government and would be carried out separately to, but in consideration of the planning approval for WSI.

The development of the project specific mitigation measures presented in the Draft EIS has considered the existing and future land uses outlined in Technical paper 6, including the Western Sydney Aerotropolis and Luddenham Village. Noise abatement mitigation measures are outlined in the Draft EIS.

Airservices Australia will develop and review noise abatement procedures in consultation with stakeholders, including aircraft operators, airlines, WSA and FOWSA/WSI Community Aviation Consultation Group (CACG).

The effectiveness of the mitigation measures will be reviewed during operation of the project and through ongoing stakeholder consultation and oversight through relevant community forums and community engagement as required by the Australian Government at major airports in Australia.

Responses to submissions related to the introduction of the NIPA are provided in Section 10.7 of this Submissions Report.

Chapter 14 Landscape and visual amenity

This chapter provides a response to the issues raised in submissions specific to Chapter 15 (Landscape and visual amenity) of the Draft EIS.

Overall, submissions raised concerns regarding the impact assessment approach to landscape and visual impacts as well as the project's impact on landscape character within the Blue Mountains (including the Greater Blue Mountains Area (GBMA)) and visual amenity concerns in general, at night-time and within Western Sydney and the Blue Mountains. Concerns were also raised on the lack of mitigation measures.

The 3 landscape character zones assessed within the Blue Mountains landscape is considered suitable for the purposes of assessing the landscape character impacts of this project, and no change is proposed to the landscape character impact ratings of these zones. The assessment acknowledged the potential for a high-moderate landscape character impact in 2033 and 2055 on the Blue Mountains iconic features landscape character, and a moderate landscape character impact in 2033 on the Blue Mountains forested hills and valleys landscape character zone increasing to high-moderate in 2055 due to the increase in flight frequency. The project would not directly alter any natural landscape features on the ground.

While there would be some visual impacts to Western Sydney, these would generally be of a moderate or lower impact level. Alteration to views would be intermittent and are reversible.

A visual impact assessment of 8 representative viewpoints across the Blue Mountains was used to indicate the visual impacts of the project, as well as views from campgrounds, day-use areas and scenic routes within the Blue Mountains. It would not be possible to assess all lookouts across an area as vast as the Blue Mountains region. The visual impact assessment used a representative viewpoint approach and included several important lookouts, such as Echo Point and Walls Lookout. The assessment acknowledged that there will be high-moderate and moderate visual impacts from within the Blue Mountains.

Mitigation measures have been incorporated into the project. The design of the preliminary flight paths aimed to minimise noise and other environmental impacts, including visual impacts, to the extent practical while still achieving safe and efficient operations. These considerations were had at various stages of the design process and included sensitive tourist, recreational and wilderness areas.

14.1 Submission overview

14.1.1 Number and origin of submissions

A total of 962 submissions raised matters concerning landscape and visual amenity impacts. The majority of these submissions originated from the Sydney Basin and surrounds as shown in Figure 14.1. Around 8 per cent of submissions did not supply a postcode.

Around 86 per cent of the 962 submissions originated from the Western City District (Blue Mountains). Submissions from the Western City District (excluding Blue Mountains) represented one per cent of total submissions. The remainder originated from elsewhere within the Sydney Basin, intrastate or interstate locations.

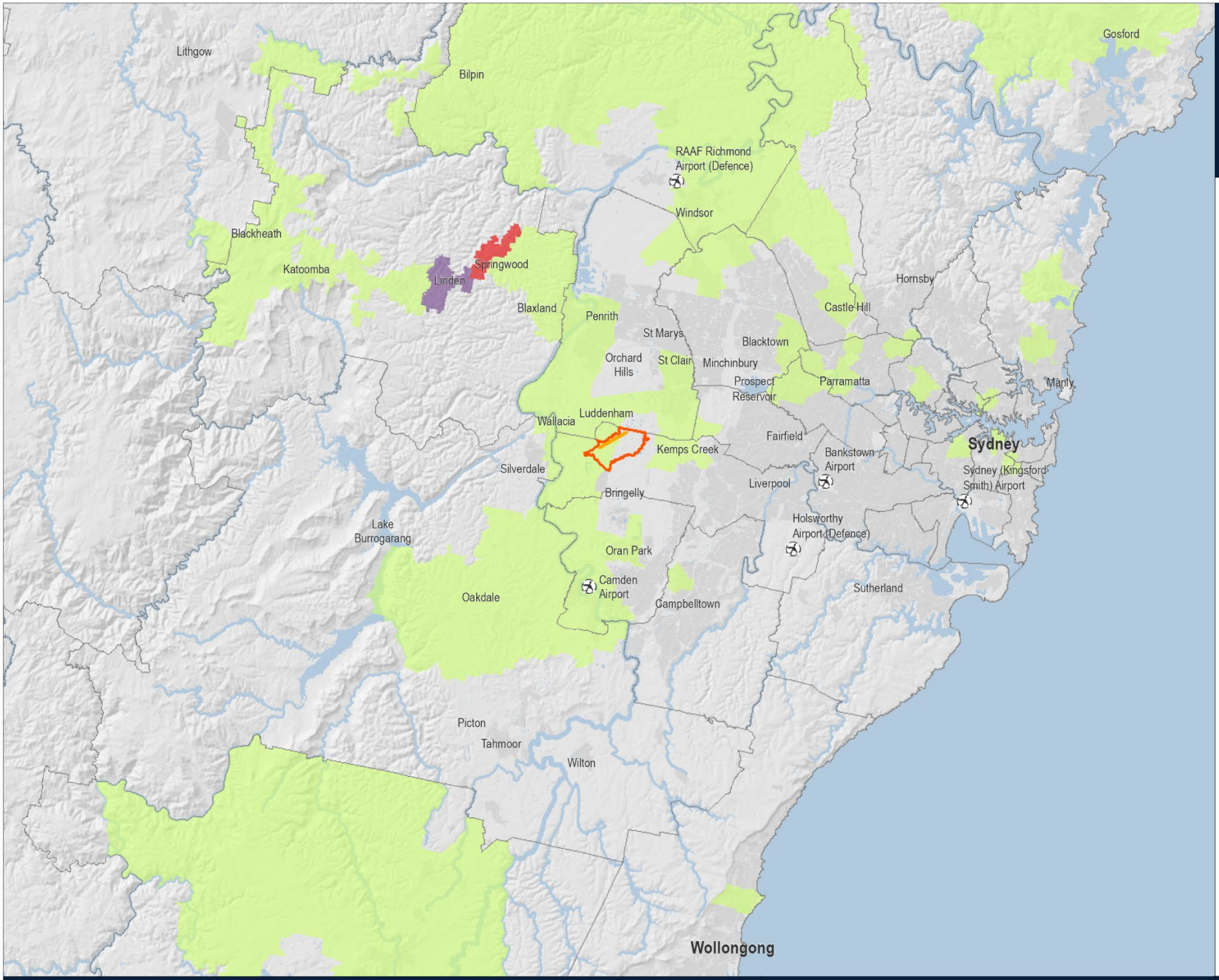


Figure 14.1

Origin of submission in relation to landscape and visual amenity impacts

Legend

- WSI Runway
- Western Sydney International (Nancy-Bird Walton) Airport land boundary
- Local Government Area

Number of submissions by postcode

- 1 - 50
- 51 - 100
- 101 - 150
- 151 - 200
- 201 - 250
- 251 - 300
- 301 - 350
- 351 - 400
- 401 - 450
- 451 - 500
- 501 - 550
- More than 550

0 5 10 km

Coordinate system: GDA 1994 NSW Lambert

Scale ratio correct when printed at A4

1:600,000 Date: 20/06/2024

14.1.2 Key issue breakdown

A breakdown of the sub-issues within this key issue and the percentage of total submissions that raised each of these sub-issues is outlined in Table 14.1.

Table 14.1 Breakdown of sub-issues raised in relation to landscape and visual amenity impacts

Sub-issue	Number of submissions that raised the sub-issue	Percentage of submissions that raised the sub-issue
Impact assessment approach	33	<1%
Landscape character impacts	467	5%
Visual impacts	506	6%
Mitigation and management	17	<1%

Each sub-issue was raised more often by the Western City District (Blue Mountains). The Western City District (excluding Blue Mountains) featured less often, typically representing less than 5 per cent of submissions within each key issue.

Submissions from intrastate or interstate locations typically represented 2 per cent or less of submissions for each sub-issue, and up to 15 per cent of submissions in each sub-issue did not provide a location.

14.2 Impact assessment approach

14.2.1 General

14.2.1.1 Issue raised

Raised by

Community, Camden Council

Issue

Submissions expressed the view that the landscape and visual assessment was inadequate and misleading, specifically:

- it did not consider impacts on the year of opening (2026), when the more noticeable change would occur given the commencement of aircraft movements on the preliminary flight paths
- it did not account for variations in aircraft position within a flight path, noting that aircraft position would vary according to operational or safety reasons and therefore aircraft could be closer than what has been assumed in the assessment.

Submissions requested that the Draft EIS includes definitions for the impact assessment ratings (i.e. high, moderate, low and negligible).

Submissions criticised the figures showing arriving and departing aircraft, stating that the blue arrival aircraft and the aircraft silhouettes located along each flight path cannot be discerned.

14.2.1.2 Response

Impact assessment

The landscape and visual assessment is considered to be an adequate assessment, specifically:

- the years were chosen to represent the early years of airport operation (2033) and impacts as the single runway approaches capacity (2055) and are considered adequate to assess the potential impacts from the project. WSI is scheduled to open in late 2026, therefore any impacts associated with the preliminary flight paths could be underrepresented by an assessment for the year 2026. The flight schedules provided by WSA Co. for 2033 were considered adequately representative of airport operations at or near the time of opening
- the limitations associated with assessing the landscape and visual impacts were clearly recognised and discussed in the Draft EIS as required by the EIS Guidelines (refer to Section 6.3 of Technical paper 7: Landscape and visual amenity (Technical paper 7)). One of these limitations is that aircraft do not always adhere to a rigidly defined path and there could be some variation as to where they will be on the flight path. The preliminary flight path corridors are depicted in the Draft EIS and the online Aircraft Overflight Noise Tool. Due to dispersion, the preliminary flight paths progressively widen to notionally one nm (2 kilometres (km)) on either side of the nominal centreline, transitioning to 2.7 nm (5 km) as the aircraft join the enroute flight network. This may affect views further from the airport, such as the across the Blue Mountains.

Ratings

The Draft EIS included definitions for the impact assessment ratings used in the landscape character and visual amenity assessment (within Section 6.2 of Technical paper 7):

- landscape character assessment – Table 6.1 (sensitivity levels) and Table 6.2 (magnitude of change levels)
- visual amenity assessment – Table 6.4 (sensitivity levels) and Table 6.5 (magnitude of change levels)
- night-time visual impact assessment – Table 6.7 (environmental zone sensitivity) and Table 6.8 (magnitude of change levels).

The impact level (Tables 6.3, 6.6 and 6.9) is a combination of the sensitivity level and magnitude of change level. For example, a low visual impact level (Table 6.6 visual impact levels) could be a combination of either:

- very low sensitivity and moderate magnitude of change
- low sensitivity and low magnitude of change.

The definitions of the levels that make up this visual impact level (i.e. very low, low, moderate etc) are found within Table 6.4 (visual sensitivity levels) and Table 6.5 (visual magnitude of change levels).

The definitions were also presented in Section 15.3.2 of the Draft EIS.

Visual representation

The comments on the photomontages are noted. Larger, A3-sized versions of the photomontages are provided in Appendix A of Technical paper 7. These may provide a clearer representation for some readers.

Photomontages were prepared to illustrate the expected changes to views as a result of the project at representative locations, and were created using a combination of 3D modelling and photo editing techniques. For each photomontage, an image has been prepared that includes a line showing the flight path and multiple aircraft (wide body jet planes international and domestic size) in silhouette located along each flight path.

A written summary of the visual impact assessment is also included within the related table in Technical paper 7 (for example, photomontages were included for the Prospect Reservoir viewpoint and Table 8.2 is the written visual impact assessment for this viewpoint).

14.2.2 Western Sydney landscape assessment

14.2.2.1 Issue raised

Raised by

Camden Council

Issue

Submissions stated that the assessment for landscape character zone 10 (LCZ10 – Leppington rural residential) did not consider the RRO mode of operation and that this has been considered under other impact assessments in the Draft EIS. Submissions recommended that the assessment be reviewed to include impacts resulting from the RRO mode of operation for LCZ10, with a quantifiable measurement of any change to the character of this zone.

Submissions also expressed the view that the naming of LCZ10 was incorrect, stating that this zone covers a greater geographical footprint than just Leppington.

14.2.2.2 Response

The RRO mode of operation relates to night-time operations and was addressed in the night-time visual impact assessment, at Section 8.2 of Technical paper 7. The Leppington Rural Landscape character zone LCZ10 relates to the day-time character assessment provided in Section 7.1 of Technical paper 7.

The assessment of night-time visual impacts included the assessment of 2 night-time settings for the Western Sydney area generally, that is areas of high district brightness (A4) and areas of medium district brightness (A3). Within the Camden local government area (LGA) there would be areas that are currently of medium district brightness (such as the rural residential areas of Leppington), and areas of high district brightness (such as the urban areas of Oran Park). Due to the vast extent of the study area and the rapidly transforming landscape these areas have not been mapped.

There is no ‘quantifiable measurement’ for impacts on landscape character or visual impacts at night. The assessment undertaken in the Draft EIS is based on best practice approaches and aims to categorise sensitivity and magnitude of change according to a range of factors that are interpreted by the assessor.

The name of LCZ10 is considered appropriate. The name of each landscape character zone was selected to locate it and describe the predominant land use. The Leppington Rural Landscape character zone (LCZ10) covers an area occupying Leppington, Catherine Field and Oran Park, with areas of rural residential and emerging urban. The assessment considered the whole area and acknowledged these existing and emerging land uses. Figure 7.11 in Technical paper 7 also clearly shows the location of LCZ10.

14.2.3 Blue Mountains landscape and visual assessment

14.2.3.1 Issue raised

Raised by

Community, Blue Mountains City Council, Blue Mountains Conservation Society

Issue

Submissions commented that the assessment applied sound methodology and is largely an effective, well-presented and fair assessment of WSI on the landscape and visual amenity of the Blue Mountains, but made some comments where improvements could be made. The application of a sensitivity parameter was particularly commended.

Other submissions expressed the view that the Blue Mountains landscape assessment was inadequate as it only assessed 3 landscape character zones. Submissions suggested that the finalised EIS should provide delineation and justification of the landscape character zones in the Blue Mountains, including a map of these zones.

Submissions queried the selection and justification for the selected viewpoints for the Blue Mountains considered in the visual assessment (and by default the GBMA assessment), specifically:

- it was unclear on how the viewpoints were selected and the relationship the views have to the preliminary flight paths
- important and scenic lookouts were omitted in the assessment while minor ones were included, for example, Govetts Leap, Kanangra Walls, Perrys Lookdown, Evans Lookout and the Mt Hay were not included
- less than 10 per cent of the lookouts in the Blue Mountains were assessed
- the assessment focused on human-dominated viewpoints and did not include wilderness areas declared under the *Wilderness Act 1987* (NSW)
- that the viewpoints selected for the Blue Mountains assessment should be reconsidered.

It was also queried why the Burragorang Lookout viewpoint, located in the Burragorang State Conservation Area, was assessed under the Blue Mountains area despite not being located in the world heritage area.

Submissions queried if the visual assessment had taken into account the elevation of the Blue Mountains.

14.2.3.2 Response

Blue Mountains landscape character assessment

Three (3) landscape character zones have been identified across the Blue Mountains (as described in Section 7.2 in Technical paper 7) which is considered suitable for the purposes of assessing the landscape character impacts of this project. The landscape character zones were chosen based on similar topography, vegetation type, land use and build form (existing and emerging). For each of these 3 zones, existing conditions have been described and the landscape impact assessed. While there would be dozens of smaller character areas within these 3 broad character zones, identifying these and having more precise character areas would not assist in the assessment of impacts for this project. This is partly because of the vast distances involved, but also because of the variability of the flight paths, where planes can operate within corridors (as described in Section 14.2.1), which change during different operational scenarios.

Landscape character is difficult to map precisely over such a large area. The approach taken for this assessment has been to describe the 3 broad landscape character zones of the Blue Mountains in words and illustrated with representative photographs. The impacts assigned to each type of landscape can be assumed to apply to all areas where the features, unique to each character area are located.

Blue Mountains viewpoints

It would not be possible to assess all lookouts across an area as vast as the Blue Mountains region. For this reason, the visual impact assessment has undertaken a representative viewpoint approach. This is a common method of visual assessment and supported by the Guideline for Landscape Character and Visual Impact Assessment EIA-N04 (Transport for NSW, 2020). Eight (8) viewpoints from across the Blue Mountains were selected to include a range of locations, including those closest to the preliminary flight paths, either viewing towards or overflown. The assessment has also informed the discussion of impacts on the GBMA.

A variety of lookout types were included as viewpoints to represent the range of impacts across what is a vast area with a dense concentration of recreational trails and lookouts. This included several important lookouts, such as Echo Point and Walls Lookout.

The additional important scenic lookouts identified by the community, including Govetts Leap, Kanangra Walls, Perrys Lookdown, Evans Lookout and the Mt Hay summit track, also have views of high visual sensitivity, as they include iconic features and scenic values of state importance. From these locations there would be views to the overflights at varying distances, with the frequency of flights generally increasing over time. There is the potential for a low magnitude of change from these locations and a high-moderate visual impact.

The representative viewpoints used for the visual impact assessment focused on views where people congregate, and locations identified for viewing. These typically have greater sensitivity as they affect a greater number of people.

Burragorang Lookout viewpoint

The Burragorang Lookout viewpoint, located in the Burragorang State Conservation Area, was assessed under the Blue Mountains landscape character area as this character area comprises a larger area than the designated World Heritage Area. As explained in Section 7.2 of Technical paper 7:

… '*The Blue Mountains is located to the west of WSI and includes both natural and urban areas. The landscape of the Blue Mountains that has been considered in this assessment includes parts of the GBMA and adjacent reserves, as well as the towns, villages and bushland areas alongside the Great Western Highway*.'

Blue Mountains elevation

The elevation of the Blue Mountains was taken into consideration when describing the relative height of the flights over each viewpoint and landscape character area.

The description of flight altitude is usually an above sea level measurement. In Western Sydney, the landform varies up to 100 metres (m) above sea level, which is a small viewing height difference when considering the altitude of visible flights. At the Blue Mountains, however, where there is substantial increase in the height of the landform, relative to sea level, assumptions were made in relation to the preliminary flight path altitudes. For the flight altitudes and height above landform (m and feet (ft)) used in the Blue Mountains component of the assessment (refer to Section 6.3 and Table 6.11 in Technical paper 7).

14.2.4 Night-time visual assessment

14.2.4.1 Issue raised

Raised by

Community, Blue Mountains City Council, Camden Council

Issue

Submissions raised the following points regarding night-time visual impact assessment approach for the project:

- noted the night-time assessment utilised the AS/NZS4282:2019 Control of the obtrusive effects of outdoor lighting (AS/NZS4282:2019) (Standards Australia, 2019), and raised concerns that this standard aims to manage lighting on the ground and not aerial light sources
- queried the night-time hours of 11 pm to 5.30 am, stating that these hours do not correspond to actual periods of darkness and therefore the night-time impacts are likely to be greater than captured in the assessment
- raised concern that the assessment has not considered the night-time visual impacts arising from the use of the RRO mode of operation
- expressed concern that while there are pictorial representations of the day-time visual impacts, there are no similar images provided for night-time visual impacts. It was recommended that equivalent silhouette representations of the night-time visual impacts from aircraft movements be included, particularly for the RRO mode of operation.

14.2.4.2 Response

AS/NZS4282:2019

There is no specific guidance for the assessment of night-time visual impacts. AS4282 Control of the obtrusive effects of outdoor lighting (2019), provides parameters for controlling the obtrusive effects of all outdoor lighting. This standard identifies 4 main potential effects of lighting, which include viewers on the ground (i.e. the effects on residents, transport system users, and transport signalling systems) as well as impacts on astronomical observations. For further information refer to Section 6.2.3 of Technical paper 7).

Night-time hours

Day-time operations at WSI occur between 5.30 am and 11 pm, extending beyond daylight hours. Night operations are between 11 pm and 5.30 am. The assessment of visual impacts at night has been undertaken based on the 'night-time' preliminary flight paths (between 11 pm and 5.30 am), as well as the 'day-time' preliminary flight paths which would be used during periods of darkness (between sunset and 11 pm). For further information refer to Section 6.2.3 of Technical paper 7.

RRO mode of operation

The RRO mode of operation can only be used at night (11 pm to 5:30 am) when weather conditions permit and air traffic are low enough to permit safe operations. The RRO mode of operation was addressed in the night-time visual impact assessment alongside night-time preliminary flight paths for Runway 05 and Runway 23. This assessment considered the following night-time settings for the Western Sydney area:

- areas of high district brightness (A4)
- areas of medium district brightness (A3).

Due to the vast extent of the study area and the rapidly transforming landscape these areas have not been mapped. Within the Camden LGA there would be areas that are currently of medium district brightness (such as the rural residential areas of Leppington), and areas of high district brightness (such as the urban areas of Oran Park).

The impact assessment focused on areas where overflights would be below 5,000 ft (approximately 1.5 km) and due to the lower altitude would have a greater potential to be visible and cause a visual impact at night, and found:

- there are no areas of high district brightness in the Camden LGA that would be overflown at these lower altitudes
- the areas of Greendale and Theresa Park are of medium district brightness and would be overflown at lower altitudes by RRO operations. These areas would be overflown by RRO south and south-east night preliminary flight paths. The night-time visual impacts on Greendale were found to be moderate-low in 2033 and 2055 (described further in Technical paper 7, Section 8.2.2, Table 8.22). Impacts on Theresa Park would be similar or lower, noting that Theresa Park is located further away from the Airport Site and would be subject to less overflight with aircraft at higher altitudes
- the RRO departure north, north-east and west would overfly Wallacia, an area of medium district brightness.

Visual representation

Specific views and night-time photomontages have not been prepared for this assessment. Photographing the night scene and preparing visualisations of a night sky would not be practical, as illustrating small lights on distant planes in single frame images would not be discernible, and matching what the eye sees as it adjusts to different night-time settings is complex.

14.3 Landscape character impacts

14.3.1 Blue Mountains

14.3.1.1 Issue raised

Raised by

Community, Blue Mountains City Council, Blue Mountains Conservation Society, Trish Doyle MP – Member for the Blue Mountains (NSW)

Issue

Submissions expressed the view that the Draft EIS had not provided a detailed assessment of the landscape character impacts on the Blue Mountains, specifically that:

- statements around the landscape character impacts are vague and has not been informed by sufficient research
- the Draft EIS must consider impacts in 2026 when WSI commences operation and/or that the conclusions for 2033 have been influenced by 7 years of the project in operation
- conclusions that the landscape character impact rating would not change from 2033 to 2055 despite the increase in aircraft movements is not supported and has not been justified in the Draft EIS. Submissions also stated that the assessment has applied landscape area zones inconsistently and assessed impacts as a whole.

Submissions raised the following regarding the landscape character zones:

- sought clarification on which landscape character zone contained the important lookouts in the Blue Mountains. Submissions expressed the view that the important lookouts should be included in the Blue Mountains iconic features landscape character zone (LCZ13) and classified as very high sensitivity
- that LCZ14 (Blue Mountains forested hills and valleys landscape character zone) was characterised incorrectly as being less sensitive than LCZ13 and with no justification. Submissions recommended that the LCZ14 sensitivity be classed as very high in acknowledgment of the iconic features of this zone (such as major cliff lines associated with dramatic streams), and the remote and natural areas that make up much of this landscape (including protected wild rivers and declared wilderness)
- queried the landscape character impact for LCZ15 (Blue Mountains township spine landscape character zone). Submissions expressed the view that the change in the overflight of this zone (compared to the current flights from Sydney (Kingsford Smith) Airport at higher altitudes) should not be classed as a low magnitude of change.

Submissions stated that the Blue Mountains forested hills and valleys landscape character zone (LCZ14) contains iconic features and that the project would impact the value of these features due to the presence of aircraft.

Submissions expressed concern specifically about the landscape character of Linden and Woodford. Submissions stated that the sky is currently visually unobstructed and identified areas including Chakita Lookout, Woodford Oaks Trail and Gypsy Pool which have high landscape character sensitivity.

14.3.1.2 Response

Blue Mountains landscape character impact assessment

The scope and detail provided for Blue Mountains landscape character impact assessment is considered suitable for the vast area and nature of aircraft operations. Refer to response in Section 14.2.3 of this chapter for further detail.

The years 2033 and 2055 were selected as points in time for assessing any future significant environmental impacts in the short and long term. Refer to response in Section 14.2.1 of this chapter for further explanation on this matter.

In some cases, the assessment determined that while the frequency of flights increased, it did not meet a threshold that would increase the magnitude of change and therefore the overall impact was unchanged. There is no quantitative method for the assessment of landscape character and therefore a qualitative approach must be taken. This approach relies on expert opinion to determine the magnitude of change caused by the project during different timeframe scenarios and based assumptions about how the project will affect character at varying distances and frequencies. Every attempt has been made to articulate how changes across different time scenarios correspond to resulting impact ratings.

Landscape character zones

The landscapes seen from those lookouts that include views to distinctive, unique and landscape features for which the Blue Mountains obtained World Heritage Area status, including dramatic landform (vertical cliffs, sandstone canyons, pedestals and pagoda rock formations) and native vegetation (Technical paper 7, Table 7.13) would fall within the Blue Mountains iconic features landscape character zone (LCZ13). These comprise of areas with a high sense of tranquillity and wilderness with minimal evidence of human presence and may be viewed from highly visited lookouts. The lookouts themselves may not be in the Blue Mountains iconic features landscape character zone (LCZ13). For example, Echo Point lookout is located within the Blue Mountains township spine landscape character zone (LCZ15), as it is highly developed and set within a residential setting. However, the landscape viewed from this location would be a part of the very high sensitivity LCZ13.

The Blue Mountains forested hills and valleys landscape character zone (LCZ14) has correctly been identified as of high sensitivity. This assessment recognises that there are a range of landscapes within the Blue Mountains, and they have varying levels of sensitivity to character change. The elements that are iconic to the landscape character of the Blue Mountains (LCZ13), including vertical cliffs, sandstone canyons, pedestals and pagoda rock formations, are more sensitive to change than the areas of forested hills and valleys.

The Blue Mountains township spine landscape character zone (LCZ15) has limited overflights. Considering the landscape character area as a whole, the effect on landscape character is principally derived from the preliminary flight path crossing to the east of Lawson. The limited preliminary flight paths crossing this landscape character zone, together with the height of planes in this location, would result in a low magnitude of change as described in the Draft EIS.

The cliff lines are not included in the Forested Hills and valleys landscape character zone (LCZ14). Those areas with iconic features, including vertical cliffs, sandstone canyons, pedestals and pagoda rock formations, are included in the Blue Mountains iconic features landscape character zone (LCZ13).

Linden and Woodford landscape character

Linden and Woodford are located within the Blue Mountains township spine landscape character zone (LCZ15). They are urban landscapes and have a moderate landscape character sensitivity.

Locations such as the Chakita Lookout, Woodford Oaks Trail and Gypsy Pool, would be a part of the Blue Mountains forested hills and valleys landscape character zone (LCZ14) which is of high landscape character sensitivity. The landscape impacts on these areas are:

- low magnitude of change and a moderate landscape character impact for the 2033 scenario
- moderate magnitude of change and a high-moderate landscape character impact for the 2055 scenario.

For further detail on LCZ14 refer to Section 7.2.2 of Technical paper 7.

14.3.2 Greater Blue Mountains World Heritage Area

14.3.2.1 Issue raised

Raised by

Community, Blue Mountains City Council, Blue Mountains Conservation Society

Issue

Submissions requested further justification to support the conclusion in the Draft EIS that the project would not have a direct or indirect visual impact on the wilderness values of the GBMA. Submissions recommended that the impact of flight paths on the GBMA wilderness values be acknowledged and the assessment revised.

Submissions expressed the view that according to the guidelines used in the assessment (in particular the Guideline for Landscape Character and Visual Impact Assessment EIA-N04) the GBMA is considered an area of 'very high' (Blue Mountains iconic features landscape) and 'high' (Blue Mountains forested hills and valleys landscape) sensitivity. Submissions raised concerns that the project would change the landscape, transform the character and result in extensive or severe damage to the GBMA. Submissions noted that any flight paths transiting the GBMA would impact on natural and visually sensitive areas, as well as the sense of wilderness. Submissions noted that indirect impacts are as important as direct impacts, such as the removal of trees.

Concern was also raised in the submissions about the negative impacts to the outstanding universal values of the GBMA and risk to the World Heritage status. Submissions expressed the view that the world heritage values of the GBMA was not adequately considered in the assessment of visual impact.

Submissions commented that the assessment included statements such as aircraft are currently visible intermittently across the Blue Mountains. Submissions expressed the view that this shows that the GBMA is not currently a highly utilised airspace.

Some raised concerns that the high visual amenity of views to narrow sandstone canyons and pagoda rock formations would be destroyed. Submissions queried if this was a balanced approach to airport operation in Western Sydney.

Submissions expressed the view that the visual impact of continuous aircraft flights in the context of a World Heritage Area was not acknowledged and assessed. Submissions noted that residents and visitors in many parts of the GBMA could visually experience 2 or 3 aircraft simultaneously.

Submissions expressed the view that cumulative visual impacts on the GBMA are important and should be recognised, while others stated that the preliminary flight paths should not be proposed above the GBMA due to the visual impacts.

14.3.2.2 Response

The GBMA wilderness values were acknowledged and assessed in the Draft EIS ('Extensive natural areas', 'Opportunities for solitude and self-reliant recreation', and 'Unroaded except for management trails and largely free of exotic species'), and it was determined that there were no direct or indirect impact on these values. This is because:

- the project during operation would not alter directly or otherwise the extensive natural areas of the Blue Mountains. There is no vegetation removal proposed, and the operation of aircraft above these areas would not indirectly result in any changes to the extensive natural areas that currently exist
- the project would not reduce the opportunity for solitude and self-reliant recreation as the preliminary flight paths operate at high levels above the wilderness areas
- the project does not involve any further road development nor have any potential to introduce exotic species to the area, as the flights would operate well above these wilderness areas.

The impact on visually sensitive areas is addressed in Section 8.1.2 of Technical paper 7 where a representative viewpoint assessment has been undertaken. The sense of wilderness has been addressed in the landscape character assessment in Section 7.2 of Technical paper 7. In this assessment, the landscape character sensitivity level includes consideration of the sense of wilderness (refer to Table 6.1 Landscape character sensitivity levels). Chapter 9 of Technical paper 7 provides an assessment of the potential impact of the project against the GBMA landscape character related values.

The movement of aircraft and details of the frequency of flights was acknowledged and assessed in the Draft EIS. The descriptions of magnitude of change in both the viewpoint assessment and landscape character was described and informed the assessment of impact.

The Draft EIS acknowledged that some viewpoints within the GBMA may experience a noticeable reduction in the visual amenity of specific views due to the increased frequency of planes, however in most cases this is not expected to occur until 2055 when WSI is operating at peak capacity (for single runway operation). The visual impacts on views to narrow sandstone canyons and pagoda rock formations has been considered through the assessment of Viewpoint 14 (View from Walls Lookout) and Viewpoint 15 (View from Echo Point Lookout), which represents views to the iconic features of the Blue Mountains. This assessment identified some high-moderate visual impacts where there were nearby flight paths or overflights. This accounts for the intermittent activity of flights seen in the sky, the project would alter views as flights pass and not physically damage or 'destroy' any part of the landscape.

The Draft EIS also acknowledged potential impacts to the landscape of Blue Mountains which included parts of the GBMA (further detail can be found in Section 7.2 of Technical paper 7):

- high-moderate landscape character impact in 2033 and 2055 on the Blue Mountains iconic features landscape character zone (LCZ13), which includes the striking landscape formations that are unique to the GBMA, are of Outstanding Universal Value and contribute to its World Heritage status (landscape character sensitivity level of 'very high' was used to determine the impact level)
- moderate landscape character impact in 2033 on the Blue Mountains forested hills and valleys landscape character zone (LCZ14), increasing to high-moderate in 2055 due to the increase in flight frequency (landscape character sensitivity level of 'high' was used to determine the impact level).

The assessment of the preliminary flight paths with respect to the potential impacts on the existing World Heritage status concluded that given the nature of the project, the preliminary flight paths are expected to result in minimal direct impacts on the World Heritage or National Heritage values of the area, including the criterion which relate to the Outstanding Universal Values of the site and contribute to its World Heritage status. Visual impacts were considered as part of the impact on World Heritage values for the project. Further assessment of the potential impacts on the World Heritage status and values is provided in Chapter 23 of the Draft EIS and Section 22.3.1 of this Submissions Report.

Potential cumulative impacts to landscape character and visual impact have been assessed and would include changes to landscape character and views in the vicinity of WSI, as a result of the project in conjunction with future large-scale infrastructure projects. There would also be the potential for cumulative effects on the landscape character zones across the Blue Mountains which are becoming increasingly influenced by aircraft, both from WSI and other airports within the Sydney Basin. The cumulative effects of the project are considered further in Chapter 10 of Technical paper 7.

For further detail on the issues raised and responses in relation to visual and landscape character impacts of the GBMA refer to Section 22.4.3 of this Submissions Report.

14.4 Visual impacts

14.4.1 General

14.4.1.1 Issue raised

Raised by

Community

Issue

Submissions objected or expressed concern with the visual impacts that would arise as a result of the project. Submissions stated that they did not want to see aircraft over their home and surrounding area, or at a distance. Submissions stated that the decision to move into an area was on the basis that they would not be impacted by flight paths. Privacy concerns was also raised in submissions.

Submissions raised concern that visual impacts would occur 24-hours, 7 days a week, and that landscape and visual amenity of Western Sydney should be valued and provided similar levels of protection compared to other areas in the Sydney Basin.

It was stated in submissions that contrails produced by aircraft would impact views and the visitor experience.

14.4.1.2 Response

It is inevitable that visual impacts would arise from a project of this nature, and it is acknowledged that visual impacts cannot be entirely mitigated. Whilst there would be some visual impacts, these would generally be of a moderate or lower impact level. Alteration to views would be intermittent. Flights would not be close enough to dwellings for there to be privacy issues i.e. views into the private rooms of houses. Views to the landscape from above is already possible from flights above the Sydney Basin.

The assessment of views in Western Sydney were given the same weight as they would be if they were located in other areas of the Sydney Basin. The approach to determining landscape character sensitivity and visual sensitivity is described in Section 6.2.1.2 and Section 6.2.2.2 of Technical paper 7, respectively. Hours of operation, including concerns raised about similar protections provided for communities impacted by Sydney (Kingsford Smith) Airport should be afforded to communities impacted by the project, are also addressed in Section 6.2.1 of this Submissions Report.

Contrails were considered in the assessment and it was acknowledged that contrails can be especially noticeable in sensitive natural areas, such as the GBMA, because they are linear features (unlike most natural clouds). The potential for contrails to impact views have been included in the assessment, such as the Blue Mountains landscape character impact assessment. It would not be straightforward to discern whether or not the contrails are from WSI aircraft or other aircraft transiting the Sydney Basin. For further discussion on contrails refer to Section 6.3.2 of Technical paper 7.

14.4.2 Western Sydney

Raised by

Community

Issue

Submissions objected to the visual presence of aircraft at low altitudes 24-hours a day. Concerns were also raised about the visual impacts on the natural beauty of the Nepean River and surroundings (and that any impacts would be irreversible).

Submissions disagreed with assessment completed for the following Western Sydney viewpoints, specifically:

- that the project would have a high impact on Viewpoint 5 (view from Luddenham Village), not a moderate impact as stated in the Draft EIS. Submissions noting that Luddenham village is small and has a peaceful rural setting, and the introduction of a 24-hour, 7 days a week airport would completely change the community
- that Viewpoint 8 (view from Warragamba Dam lookout) should be considered as an area of national scenic value.

14.4.2.1 Response

The visual impact of aircraft at low altitudes 24-hours a day was assessed in the Draft EIS, and the assessment found that whilst there would be some visual impacts to Western Sydney, these would generally be of a moderate or lower impact level (including viewpoints and landscape character zones that include the Nepean River). Alteration to views would be intermittent and are reversible. Generally, the landscape character of Western Sydney would be transformed by intended changes facilitated and planned for through a number of strategic planning projects.

Viewpoint 5

Viewpoint 5 was assigned a moderate visual impact in 2033 and a high-moderate in 2055. Viewpoint 5 has a moderate visual sensitivity (in 2033 and 2055), which is slightly elevated from other residential areas to account for the heritage values and somewhat peaceful rural setting of this view. The increased magnitude of change from the 2033 (moderate) to 2055 (high) scenarios reflect the increased flight movements over time.

Viewpoint 8

There is no proposed change to the visual sensitivity of Viewpoint 8 (View from Warragamba Dam lookout). The view from Warragamba Dam is categorised as moderate as it is a view to a … *'feature or landscape that is iconic to a major portion of a city or a non-metropolitan region'* (as per the visual sensitivity levels described in Table 6.4 of Technical paper 7). This view from a constructed dam is not particularly unique or recognised more broadly within the state as an important viewing destination, as would be the case if it were to be of high visual sensitivity.

14.4.3 Blue Mountains

14.4.3.1 Issue raised

Raised by

Community, Blue Mountains City Council, Blue Mountains Conservation Society

Issue

Submissions made comment on the visual assessment of the Blue Mountains as well as the impact on the GBMA landscape values as documented in Chapter 9 of Technical paper 7. The GBMA landscape values is discussed in Section 14.3.2.

Submissions commented that the Guiding Principle of "Airspace design will consider the impacts of air operations on natural and visually sensitive areas" has not been achieved for the mid-Blue Mountains.

Scenic and aesthetic

Concerns were expressed in the submissions about the hours of operation, height and frequency of aircraft over the Blue Mountains. Submissions commented that visual impacts are expected to occur at many locations within the Blue Mountains.

Submissions raised concerns about the high-moderate visual impact at the Three Sisters. Submissions expressed the view that this will be similar or worse at the Grose Valley, and that the situation will become progressively worse as flights increase. The visual impact of aircraft over other Blue Mountains landmarks, including Wentworth Falls and the Jamison Valley, was also raised in submissions.

Submissions queried how the high visual impact on iconic views and landscapes (such as the Three Sisters and Jamison Valley) was going to be addressed and recommended no flight paths transit these areas.

Recreation and tourism

Submissions commented generally on the numerous sight-seeing tracks and lookouts within the Blue Mountains, and concerns were raised that the enjoyment of users (including tourists) would be impacted as it would detract from the natural beauty and tranquillity of the area. Concern was expressed about the visual impact on activities such as camping, bush walking, meditation and photography.

Key tourist sites raised in submissions as being impacted by the preliminary flight paths included (but not limited to) Echo Point, the Three Sisters, Govetts Leap, Mount Wilson and the Botanic Garden Mount Tomah.

Lookouts

Submissions raised concern that the appreciation of the sky from many viewpoints would be impacted, especially the area south of Katoomba (represented in the assessment by the view from Echo Point Lookout) and from lookouts along the Grose Valley (represented in the assessment by the view from Walls Lookout). Submissions stated that it remained unclear what visual impacts would be given other lookouts or areas have not been assessed.

Submissions stated that Viewpoint 16 (View from Cleary Memorial Lookout, Kedumba Pass) is a highly sensitive view that would be significantly and permanently impacted by the project.

Submissions also raised concerns that views from Faulconbridge Point Lookout and Govetts Leap Lookout would be impacted by the preliminary flight paths. Submissions noted that access to these lookouts were recently upgraded.

Scenic routes, campgrounds and day-use areas

Submissions raised concerns that many scenic drives and routes within the Blue Mountains would be visually impacted by the preliminary flight paths.

Submissions commented that there are other day-use facilities and campgrounds than those considered in the assessment (including sites in the more remote and wilderness areas of the GBMA) which are generally located in areas of high scenic quality and have high sensitivity. Submissions noted that camping and use of these remote areas would be impacted by the presence of aircraft.

Submissions expressed concern that a moderate visual impact for campground and day-use areas would impact the use of these facilities and growth in visitor numbers.

Residential areas

Submissions raised concerns about the visual impact on the residential areas of the Blue Mountains and that the presence of aircraft would have an impact on the values of the area.

Submissions noted that the current overflight of aircraft from Sydney (Kingsford Smith) Airport is at an altitude that generally does not have a visual impact, whereas the preliminary flight paths will bring aircraft into view across the Blue Mountains.

In raising these concerns, submissions also identified subsequent impacts to wellbeing, community and property values.

14.4.3.2 Response

The design of the preliminary flight paths aimed to minimise noise and other environmental impacts, including visual impacts, to the extent practicable while still achieving safe and efficient operations. Sensitive tourist, wilderness and recreation areas associated with the GBMA were considered in the design of the preliminary flight paths. Based on the nature of the potential impacts, no other reasonable or feasible project specific mitigations are considered to be available that would further reduce these potential impacts.

Other guiding design principle was to more equitably distribute potential impacts 'where flight paths are unable to avoid residential areas, where possible, these areas should not be overflown by both arriving and departing aircraft', and to minimise the overall number of dwellings and noise sensitive facilities overflown as far as possible. It is acknowledged that in achieving a more equal distribution of flight paths (and their associated impacts) across a broader area of the Sydney Basin that additional areas would therefore be subject to some level of flight path impact.

The preliminary flight path design process is described in Chapter 6 (Project development and alternatives) of the Draft EIS.

Scenic and aesthetic

The assessment has taken into account the hours of operation, height and frequency of aircraft over the Blue Mountains, and the airspace design has aimed to minimise visual impacts to the extent practical (as noted above).

The assessment identified that there would be high-moderate visual impacts in views from Echo Point in both the 2033 and 2055 scenarios (Viewpoint 15 – View from Echo Point). The preliminary flight paths would be at a distance of around to 2.5 nm to 6 nm (4.5 km to 11 km) from this viewpoint at altitudes of 13,300 ft or more (4 km or more), or about 10,200 ft (about 3 km) above Mt Solitary when taking into account terrain. As shown in the photomontages presented in the Draft EIS, planes would be small in size when viewed at this distance from this viewpoint, with only the flights following the Runway 23 departure path being perceptible. This assessment acknowledged that these planes would be viewed in an open and expansive sky, from an elevated vantage point, increasing their prominence in the view and would intrude upon the wilderness character of the view. While the magnitude of change is low, the high-moderate impact was identified given the acknowledged very high sensitivity of the view.

Flights over the Grose Valley (Viewpoint 14 – View from Walls Lookout) in the 2033 scenario would be at a height of about 17,500 ft (about 5.3 km), which is about 15,100 ft (4.6 km) above the escarpments, with 3 flights on average up to a maximum of 8 flights per day. Due to the high altitude and low frequency of flights a negligible magnitude of change was identified. It is considered that these flights would not noticeably intrude upon the wilderness character of this view. Therefore, there would be a negligible magnitude of change and negligible visual impact in 2033. By 2055, the visual impact would increase to high-moderate due to the increased frequency of flights over the Grose Valley (18 flights on average, up to a maximum of 42 flights per day).

Views south across the Jamison Valley from Wentworth Falls lookout would experience less visual impact than the nearby view from Echo Point to the Three Sisters (Viewpoint 15), as the preliminary flight paths would be slightly further away (over 3.8 km).

Recreation and tourism

The views experienced by tourists have been represented by a range of viewpoints identified from lookouts within the Blue Mountains. This includes views from The Rock Lookout (Viewpoint 10), Wynnes Rocks Lookout (Viewpoint 13), Walls Lookout (Viewpoint 14), Echo Point (Viewpoint 15), and Cleary Memorial Lookout, Kedumba Pass (Viewpoint 16).

The assessment has considered views from campgrounds and day-use areas in Section 8.1.2.2 of Technical paper 7. These views were assessed from lookouts along walking trails such as Walls Lookout (Viewpoint 14) and Cleary Memorial Lookout, Kedumba Pass (Viewpoint 16), and from important tourist sites such as Echo Point Lookout (Viewpoint 15). These representative viewpoints included the highly visited lookouts (such as Echo Point) which have large, formalised visitor facilities, as well as less visited more remote lookouts (such Cleary Memorial Lookout) which are accessed by a fire trail and narrow access track.

There are many more key tourist sites across the Blue Mountains. Some of those mentioned in the submissions also have the potential for views to overflights. This includes views from:

- Mt Tomah Botanic gardens and Mt Wilson, which are both near the preliminary RWY23 and RWY05 departure flight paths. These locations would experience 18 flights on average, up to a maximum of 36 departures, with flights rising from about 13,300 ft (4 km) to 17,500 ft (5.3 km) above runway level at these locations respectively. Views from these locations would have a lower visual sensitivity than those views to the iconic features of the Blue Mountains
- Govetts Leap lookout, which includes iconic features such as sandstone cliffs, and would have a lower magnitude of change with the nearest preliminary flight paths being about 2.7 nm (5 km) to the north and south of the valley, and over 4 nm (8 km) where flights may cross the background of the view. These flights would be at a height of between around 13,300 ft (4 km) to 17,500 ft (around 5.3 km) above runway level.

Lookouts

It would not be possible to assess all lookouts across an area as vast as the Blue Mountains region with a dense concentration of recreational trails and lookouts. For this reason, the visual impact assessment has undertaken a representative viewpoint approach. This is a common method of visual assessment and supported by technical guidelines in NSW. Eight (8) viewpoints from across the Blue Mountains were selected to include a range of locations, including those closest to the preliminary flight paths, either viewing towards or overflown.

A variety of lookout types were included as viewpoints to represent the range of impacts. This included several important lookouts, such as Echo Point and Walls Lookout. The representative viewpoints used for the visual impact assessment focused on views where people congregate, and locations identified for viewing. These typically have greater sensitivity as they affect a greater number of people. It is acknowledged in the Draft EIS that there would be high-moderate and moderate visual impacts from lookouts within the Blue Mountains.

The additional important scenic lookouts identified by the community, including Faulconbridge Point Lookout and Govetts Leap lookout, also have views of high visual sensitivity as they include iconic features and scenic values of state importance. From these locations there would be views to the overflights at varying heights and distances, with the frequency of flights generally increasing over time. There is the potential for a low magnitude of change from these locations and a high-moderate visual impact.

Scenic routes, campgrounds and day-use areas

The assessment identified the scenic routes within the Blue Mountains and included the Great Western Highway and Bells Line of Road. The assessment determined that there would be a moderate-low visual impact in the views from these scenic routes during both the 2033 and 2055 scenarios. These impacts would be intermittent and experienced particularly in locations where the flights pass over and across these views.

There are many other day-use facilities and campgrounds across the Blue Mountains area, including remote sites. There is the potential for a view to aircraft from any location within the Blue Mountains where camping or day use is occurring.

The potential for additional visitors over time has not been predicted in the visual impact assessment. However, where there is an increase in visitor numbers the potential visual sensitivity of the view may increase.

Residential areas

The assessment included the potential visual impact on residential areas (and their values) in the Blue Mountains, and the residential built-up areas within the Bue Mountains region was considered as a constraint as far as practicably and reasonably possible in the airspace design.

Overflights of aircraft from Sydney (Kingsford Smith) Airport and other smaller airports across the Sydney Basin were acknowledged in the assessment, and it was noted that they were generally at higher elevations and did not strongly influence the existing character or views.

Subsequent impacts to wellbeing, community and property values are addressed in Sections 17.3.1, 17.4.1 and 18.3.1 of this Submissions Report.

14.4.4 Night-time

14.4.4.1 Issue raised

Raised by

Community, Blue Mountains City Council, Blue Mountains Conservation Society

Issue

Submissions objected generally to the visual intrusion of aircraft at night and the impact to the night sky. Submissions commented that many jurisdictions are reducing the amount of artificial light in order to keep the skies clear at night.

Submissions disagreed with the conclusion that the project would have a negligible visual impact on the intrinsically dark landscapes of the Blue Mountains, specifically that:

- the statement that there would not be much activity beyond designated campgrounds is not supported, noting people hike into wilderness and remote natural areas which are sensitive to night-time visual intrusion and that these areas have not been assessed
- the presence of aircraft at night would be intrusive, particularly in areas valued for their remoteness (such as the Euroka campground, or the Erskine Creek catchment, or people completing overnight or multi-day hikes into wilderness and remote natural areas). Submissions stated that the change would be significant.

Submissions also expressed concern that light pollution from aircraft would impact astronomy and star gazing, which is an attraction for the GBMA. Submissions stated that astronomy of all kinds is affected by the darkness of the night sky (whether that be visual observation or astrophotography) and that light pollution has a significant impact on what can be seen. Submissions made comment about the impact on the Linden Observatory and the ‘Dark Sky’ accreditation.

14.4.4.2 Response

The assessment included the visual intrusion of aircraft at night and the impact to the night sky, and found:

- Western Sydney:
  - negligible visual impact on views from areas of high district brightness (A4) as the lighting from aircraft would not contrast substantially with these brightly lit landscapes at night
  - moderate-low visual impact on the medium district brightness landscapes (A3) of Western Sydney, as the lighting from flights would contrast with the existing night sky over these areas
- Blue Mountains:
  - low visual impact in the areas of medium district brightness (A3) at night and a moderate-low visual impact from the Linden Observatory, due to the low frequency of flights and high altitude of planes over these areas
  - negligible visual impact on the intrinsically dark landscapes of the Blue Mountains (A0) as the project lighting would be experienced across a small portion of these landscape due to limited public access in these areas at night.

Relatively, there are far fewer people on wilderness and remote hikes in the Bue Mountains at any one time, than would be in designated campgrounds. By the nature of these activities, people could be located anywhere within the expansive trails network of the Blue Mountains. To assess the potential to view preliminary flight paths from an activity such as this is not possible.

There are currently flights passing over the Blue Mountains, including many remote areas. At night, there would be small lights on planes viewed at high altitudes over remote areas that would in part include tree cover.

Impact on the Linden Observatory and the 'Dark Sky' accreditation have been addressed in Sections 17.5.1 and 17.5.2 of this Submissions Report.

14.5 Mitigation and management

14.5.1 General

14.5.1.1 Issue raised

Raised by

Community, Blue Mountains City Council,, Blue Mountains Conservation Society, Trish Doyle MP – Member for the Blue Mountains (NSW)

Issue

Submissions criticised the lack of mitigation and management measures to address landscape and visual amenity impacts, stating that the Draft EIS concluded that impacts are inevitable as WSI is under construction.

Particular concerns included that mitigation has not been included to respond to impacts on the Three Sisters and declared wilderness areas of the GBMA.

Submissions stated that aircraft should not be permitted at night or permitted to fly over the Three Sisters, or that the project is redesigned to remove flight paths or to increase the altitude of flight paths over the Blue Mountains.

14.5.1.2 Response

Mitigation measures have been incorporated into the project. The design of the preliminary flight paths aimed to minimise noise and other environmental impacts, including visual impacts, to the extent practical while still achieving safe and efficient operations. These considerations were had at various stages of the design process and included sensitive tourist, recreational and wilderness areas. The preliminary flight path design process is described in Chapter 6 (Project development and alternatives) of the Draft EIS.

In addition to airspace design constraints (such as technical and flight constraints (which includes safety) and other aircraft activity in the Sydney Basin), the airspace design considered the following areas as constraints as far as practicably and reasonably possible:

- the GBMA
- residential built-up areas within the Sydney Basin and Blue Mountains region
- sensitive tourist and recreation areas with the potential to receive impacts from aircraft overflights, including:
  - Jamison Valley south of Echo Point lookout and the Scenic Cableway at Katoomba and Wentworth Falls lookout
  - Grose Valley east of Evans lookout and Govetts Leap lookout
  - the wilderness area between Deanes lookout and Crawfords lookout within Wollemi National Park
  - the wilderness area between Mt Yengo lookout and Finchley lookout within Yengo National Park
  - Nattai wilderness area
  - Kanangra Walls and wilderness area east of Kanangra-Boyd lookout
  - Baal Bone Gap within Gardens of Stone National Park.

Many of these locations are areas of higher landscape character and visual sensitivity.

It is acknowledged that visual impacts cannot be entirely mitigated. The detailed design phase will include further evaluation and refinement of the proposed airspace and flight path design in response to feedback received from the community and other technical stakeholders (such as airlines and industry bodies) during public exhibition of the Draft EIS. Detailed design of the flight paths is led by Airservices Australia, with support from the Department of Infrastructure, Regional Development, Communications, and the Arts (DITRDCA).

Chapter 15 Biodiversity

This chapter provides a response to the issues raised in submissions specific to Chapter 16 (Biodiversity) of the Draft EIS.

Overall, submissions raised concerns regarding both the impact assessment approach to biodiversity impacts (through issues such as noise and wild life strike) as well as general concern about the project's impact on biodiversity values within the Sydney Basin as well as the Greater Blue Mountains Area (GBMA).

The final assessment of biodiversity impacts confirmed that the key direct impacts associated with the project would be limited to wildlife strike leading to potential injury or mortality of fauna species. Species with the highest overall risk of being impacted by wildlife strike are mammal and bird species that commonly occur within the locality such as Eastern Grey Kangaroos, waterfowl, Grey-headed Flying-fox and Glossy Ibis. Whilst some species are likely to be struck on occasion by aircraft, these impacts will be minimised by implementing the recommended mitigation measures proposed.

Most noise related impacts on biodiversity would be concentrated in proximity to the Airport Site (where the highest noise impacts are) and to a lesser degree areas where aircraft are at higher altitudes at distances from the airport. Overall, impacts from noise were assessed as low and unlikely to significantly modify species behaviours or use of habitats that are locally or regionally available.

The project's operational light would be limited to lights on aircraft as they travel along the flight paths during nocturnal hours. This slight increase in light is unlikely to significantly affect biodiversity.

All other indirect impacts (such as changes to air and water quality impacting biodiversity) were confirmed as being likely to be negligible or are considered to be unlikely to significantly modify species behaviours or use of habitats that are locally or regionally available. Habitats for wildlife in proximity to the Airport Site are already highly disturbed and likely to be subject to similar emission types associated with urban development and other aircraft. Any alterations to air quality would be temporary, localised and unlikely to impact biodiversity values.

15.1 Submission overview

15.1.1 Number and origin of submissions

A total of 889 submissions raised matters concerning biodiversity impacts. The majority of these submissions originated from the Sydney Basin and surrounds. The distribution of submitters by postcode is shown in Figure 15.1.

Of the 889 submissions that raised concern for biodiversity impacts, around 60 per cent originated from the Western City District (Blue Mountains) followed by the Western City District (excluding Blue Mountains) at almost 14 per cent.

Around 5 per cent of the 889 submissions originated elsewhere in NSW or other interstate locations. Around 13 per cent did not supply any post code data.

In addition to the submissions received during the Draft EIS exhibition period, the International Union for Conservation of Nature (IUCN) submitted a technical review of the Draft EIS to the Australian Department of Climate Change, Energy, the Environment and Water. The matters raised in this technical review have been captured within this chapter.

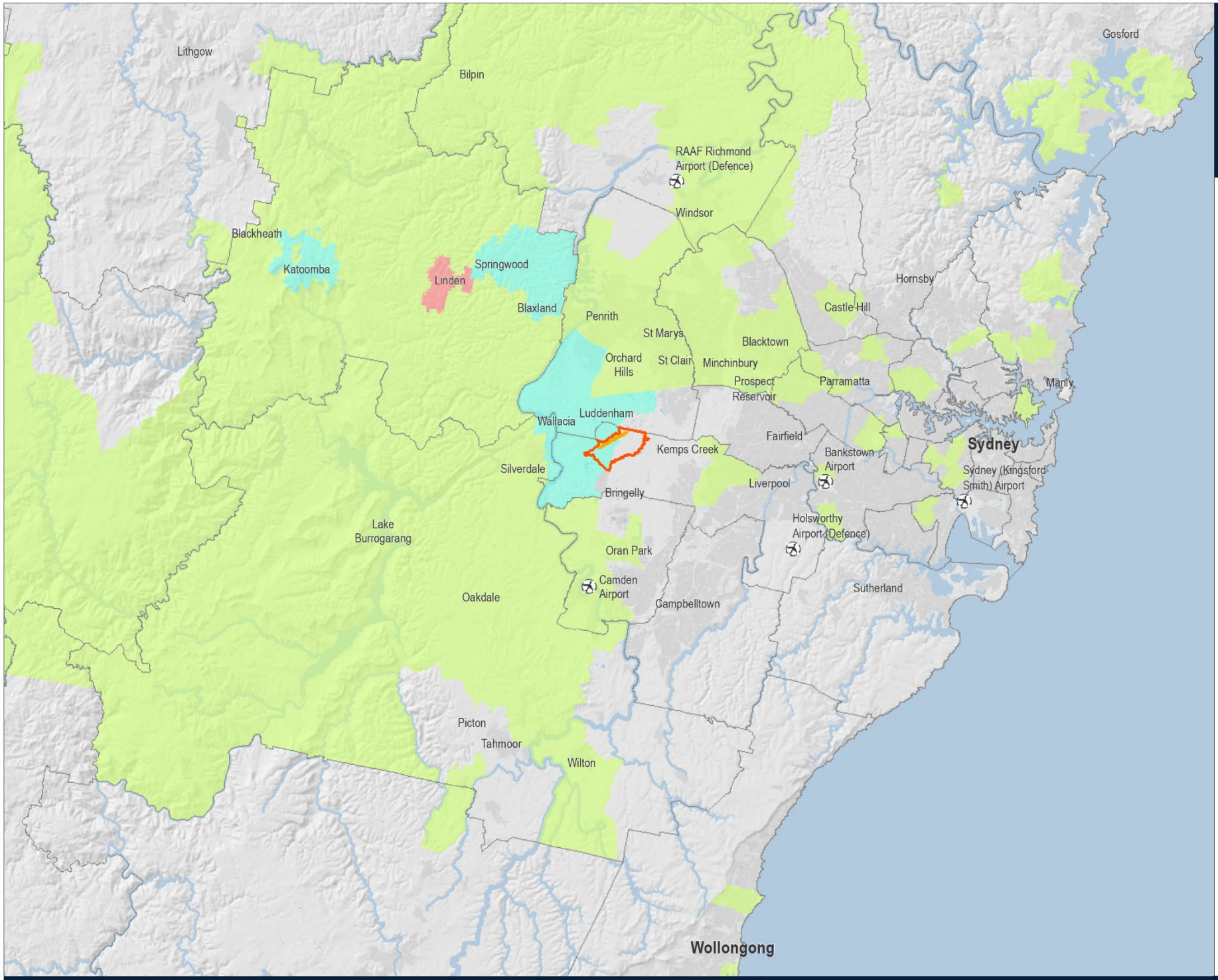


Figure 15.1

Origin of submission in relation to biodiversity impacts

Legend

- WSI Runway
- Western Sydney International (Nancy-Bird Walton) Airport land boundary
- Local Government Area

Number of submissions by postcode

- 1 - 50
- 51 - 100
- 101 - 150
- 151 - 200
- 201 - 250
- 251 - 300
- 301 - 350
- 351 - 400
- 401 - 450
- 451 - 500
- 501 - 550
- More than 550

0 5 10 km

Coordinate system: GDA 1994 NSW Lambert

Scale ratio correct when printed at A4

1:600,000 Date: 20/06/2024

15.1.2 Key issue breakdown

A breakdown of the sub-issues within this key issue and the percentage of total submissions that raised each of these sub-issues is outlined in Table 15.1.

Table 15.1 Breakdown of sub-issues in relation to biodiversity impacts

Sub-issue	Number of submissions that raised the sub-issue	Percentage of submissions that raised the sub-issue
Impact assessment approach	160	2%
Biodiversity impacts – general	552	7%
Aircraft noise impacts on biodiversity	207	2%
Wildlife strike	45	1%
Impact to threatened species	219	3%
Management and mitigation	191	2%

Each sub-issue was raised more often by the Western City District (Blue Mountains) followed by the Western City District (excluding Blue Mountains) except for impacts to threatened species and the management and mitigation of biodiversity impacts. For impacts to threatened species, Illawarra Shoalhaven contributed the second most to these submissions. For the management and mitigation of biodiversity impacts, the Central City District contributed the second most.

Submissions from elsewhere in NSW or other interstate locations (such as Queensland and the ACT) typically represented less than 5 per cent of submissions in each sub-issue. Up to 15 per cent of submissions in each sub-issue did not provide any post code data.

15.2 Impact assessment approach

15.2.1 Inadequate impact assessment

15.2.1.1 Issue raised

Raised by

Community, Blue Mountains City Council, Blue Mountains Conservation Society, Blue Mountains World Heritage Institute, Camden Council, Greater Blue Mountains World Heritage advisory committee, IUCN, Susan Templeman MP – Member for Macquarie (Federal), Trish Doyle MP - Member for the Blue Mountains (NSW)

Issue

Submissions stated that the assessment of biodiversity impacts as presented in the Draft EIS did not fully assess the risk of significant impact to endangered species including bats, frogs and birds. It was argued that the biodiversity impact assessment that was undertaken was inadequate and inconsistent in its findings.

Submissions noted that the survey effort required to produce representative sampling of fauna species did not appear to have been met and were inconsistent with guidelines provided in the Biodiversity Assessment Method (NSW Department of Planning, Industry and Environment, 2020).

Submissions stated that no data regarding biodiversity was collected in protected areas of the GBMA, Burragorang State Conservation Area or Warragamba Protected Area. It was noted that these gaps in data collection would result in insufficient information about the existing biodiversity characteristics in these areas. It was therefore argued that it was not possible to properly assess impacts of the proposed flight paths on biodiversity and ensure there would be no risk to these protected areas as a result of the proposal.

Specific areas of inadequate biodiversity assessment that were noted in submissions included:

- that there was a lack of rigorous wildlife surveys or data collection undertaken as part of the assessment in order to determine the impact of overflights. This included a lack of physical surveys in protected areas of the GBMA. It was noted that there has been no survey over a length of time that would provide an understanding of how wildlife use the landscape, and that the Draft EIS failed to acknowledge this limitation. Submissions expressed the view that the use of desktop data was not sufficient and survey data should have been collected to inform the impact assessment for impacts to migratory species
- while it was acknowledged that the Draft EIS included discussion on the potential impacts to Grey-headed Flying-fox camps, many other endangered and threatened species were not given the same treatment in the assessment
- not applying the precautionary principle in the absence of scientific evidence with respect to potential significant impacts to species listed under the EPBC Act, or species that are endangered and/or vulnerable to noise pollution
- shortage of research presented in the Draft EIS to ascertain the impact to nocturnal wildlife, native birds, endangered mammals etc. It was noted that the Draft EIS could not adequately assess the impacts on these species without valid and current scientific knowledge
- inadequate survey methodology for Grey-headed Flying-fox, which did not use up to date technology to collect data on the number and behaviour of the species
- general absence of a 'Wilderness Area' assessment.

It was argued that only select information on native flora and fauna was used in the impact assessment approach in order to support assessment outcomes that the project would result in 'low or no risk' to flora and fauna. Additionally, it was argued that the area of potential impact was undervalued or not considered in terms of their ecological value (such as the Cumberland Plains Woodlands, wetlands, blue gum high forests within the Blue Mountains, hanging swamps etc.). Submissions also maintained that due to the uncertainty and inadequate environmental information presented, that it could not just be assumed that negative impacts would not occur.

Submissions stated that the impact assessment presented in the Draft EIS was focused on ensuring operational safety of aircraft and WSI rather than assessing the impact of airport operations on the natural and residential environment.

Additionally, submissions noted that the Draft EIS did not adequately establish the definition of what a 'significant' impact on biodiversity consisted of, arguing that the Draft EIS employed a restrictive definition of 'significant impact', despite established best practices and clear guidelines. As an example, it was argued that given that the introduction of aircraft noise to habitats would be permanent and irreversible (unless the airport closes) and, given that the intensity of the noise is expected to increase over time, the potential impact of the flight paths should be assessed as significant.

15.2.1.2 Response

A comprehensive assessment was undertaken to fully assess the risk of impacts to biodiversity as a result of the project as part of the Draft EIS. This assessment was presented across 2 technical papers being: Technical paper 5: Wildlife strike risk (Technical paper 5) and Technical paper 8: Biodiversity (Technical paper 8) and summarised within the Draft EIS.

The key issues identified in submissions are addressed in the following sections.

Lack of rigorous wildlife surveys

It is acknowledged in Section 4.6 of Technical paper 8 that no field surveys were undertaken for the project as the biodiversity of the study area was considered to be well understood due to the occurrence within and adjoining the urban area of the Sydney Basin. It was noted that the area of assessment for biodiversity impacts has been intensively surveyed over decades and, in combination with the wildlife strike surveys (as part of Technical paper 5), that this was considered to be a sufficient and appropriate level of baseline knowledge to inform the assessment.

It is considered that relying on the existing excellent baseline biodiversity knowledge of the biodiversity study area, given the aerial nature of potential impacts resulting from the project, is a reasonable, measured and reliable approach (noting ground level impacts were assessed as part of the 2016 EIS). Undertaking additional wildlife surveys would be highly unlikely to identify any substantial additional species or environments that would likely to be subject to influence by the project.

Focus on Grey-headed Flying-fox and not on other threatened species

The Grey-headed Flying-fox warranted particular focus as it was considered to be the key threatened species that could be subject to direct impacts as a result of the project as outlined and assessed in both Technical paper 8 and Technical paper 5. Flying-foxes are particularly susceptible to wildlife strike due to their large body mass and their tendency to fly out from camps in large groups, which increases the risk of multi-strike events as outlined in Section 7.3.2 of Technical paper 8.

Other threatened species were subject to a potential impact screening process. This screening process was used to determine the habitats present and to assess likelihood of occurrence of Threatened Ecological Communities, threatened fauna, flora and migratory species within the various assessment zones, as identified in Table 4.1 of Technical paper 8. It is considered that other threatened species and communities were subject to the appropriate level of assessment given the indirect nature of likely impacts. The screening process is outlined greater detail in Chapter 5 of Technical paper 8.

Precautionary principle

The precautionary principle was a key consideration in preparation of the Draft EIS and its supporting technical papers. Technical paper 8 stepped through an assessment process that identified the likely biodiversity values present and assessed likely direct and indirect impacts that were possible as a result of the airspace-only nature of the project. Overall, Technical paper 8 is considered to have presented a reasoned, measured approach to the assessment of biodiversity values and potential impacts in relation to the novel types of impacts requiring assessment.

Based on the assessment undertaken, it was considered that there were no obvious significant uncertainties around the values present, or the likely direct and indirect impacts of the existing airspace, particularly to the extent that adoption of the precautionary principle would mean that uncertainties should delay the project or that the project should not receive approval from a biodiversity impact uncertainty perspective.

Research

A detailed literature review of available research was undertaken to inform the development of the biodiversity assessment. The literature review focussed on available research on the impacts of airports and air traffic to biodiversity. , The literature review was presented in Section 4.4 of Technical paper 8. Similarly, Section 6.6 of Technical paper 5 also considered existing literature, in particular with respect to potential wildlife strike risks.

Survey methodology for Grey-headed Flying-fox

Assessments undertaken for the project included targeted Grey-headed Flying-fox camp surveys and bird surveys within the wildlife buffer of the assessment zone. The approach to surveys for Grey-headed Flying-fox was considered to be appropriate and reasonable given the existing knowledge of the location and populations and behaviour of the camps. Surveys of the camps have occurred over a 4 year period in all seasons, which is considered to deliver a comprehensive understanding of the camps located within Western Sydney.

Both Technical paper 8 and Technical paper 5 provide greater detail of the survey method and assessment of the likely impacts of the project on Grey-headed Flying-foxes as a specific consideration.

General absence of a 'Wilderness Area' assessment

Impacts on wilderness areas were considered as part of the overall impact of the project. The assessment included consideration of the project's impact on the Greater Blue Mountains park system's 5 declared wilderness areas under the *Wilderness Act 1987* (Wollemi, Kanangra-Boyd, Nattai, Yengo and Grose) as well as the declared 'Wild Rivers' in NSW under the NP&W Act: the Colo, Grose and Kowmung. The wilderness qualities of the GBMA also have many cultural values, providing not only opportunities for solitude and self-reliant recreation, but also aesthetic, spiritual and intrinsic value which were considered throughout the assessment.

Technical paper 14: Greater Blue Mountains World Heritage Area (Technical paper 14) provides a comprehensive assessment of the potential impacts to the GMBA, including the identified areas of wilderness within the project study area. Further discussion regarding assessment of wilderness areas is also provided in Chapter 22 (Matters of National Environmental Significance) of this report.

Definition of 'significant' impact on biodiversity

The terminology of 'significant' was defined as part of the assessment of biodiversity impacts applicable to the project. The significance criteria used in relation to the assessment of biodiversity impacts resulting from the project, was determined specifically with reference to the EPBC Act *Significant Impact Guidelines 1.1 (MNES) and Significant Impact Guidelines 1.2 (Actions on Commonwealth land)* that were relied upon when assessing impacts.

A set of impact severity assessment criteria were also developed taking into consideration the EPBC Act Significant Impact Assessment documents. These standard considerations and impact severity assessment criteria were used to identify and evaluate the scale, intensity, timing, duration and frequency of the project's impacts on biodiversity. The severity criteria were aligned to an impact order of magnitude which acted as a threshold to assist in determining whether the project was likely to have a significant impact on a biodiversity value (whether on matters of national environmental significance (MNES) or the environment as a whole). For the purpose of the assessment, impacts with a major impact magnitude were considered to have a significant impact.

Further detail of the considerations of significance of impact and the definition of these impacts is outlined in Chapter 3 of Technical paper 8.

15.2.2 Bird strike assessment

15.2.2.1 Issue raised

Raised by

Community, Blue Mountains City Council, Blue Mountains Conservation Society, Blue Mountains World Heritage Institute

Issue

Insufficient survey

Submissions stated that the Draft EIS was inadequate and provided insufficient detail in the consideration of bird and bat strike from aircraft. Primarily it was argued that there was insufficient survey completed regarding the potential for bird strikes, including the absence of any surveys being undertaken within the GBMA. Specific note was made in submissions that there had been a lack of survey coverage of the Warragamba Special Area and Burragorang State Conservation Area, where it was noted flight paths would be less than 3000 ft (914 m) and that this was an altitude identified in the Draft EIS at which wildlife strike could occur.

Timing of wildlife surveys

Submissions argued that Technical paper 5 of the Draft EIS noted that wildlife surveys were only conducted across 4 months between July and October 2022. It was argued that this resulted in relying on incomplete data with respect to animal behaviour and movements which are acknowledged as 'potentially significant' in the technical paper. It was stated that additional population and behaviour studies need to be conducted with respect to the proposed WSI flight path corridors including over the Hawkesbury and Blue Mountains areas where birds such as Wedge-tailed Eagles are known to occur at higher altitudes, presenting risk to these birds and aircraft as well as long term cumulative impacts on bird populations.

Assessment findings

Submissions stated that the findings in the Draft EIS were contradictory. Submissions used the example that the Draft EIS acknowledged that Grey-headed Flying-foxes are particularly susceptible to wildlife strike by aircraft and are known to be impacted from aircraft operating from other airports in the Sydney Basin. However, the Draft EIS also stated that there are no studies examining the effect of aircraft collision on endangered species populations of Grey-headed Flying-fox and that there was no evidence to support whether it is or is not a likely threatening process. Submissions argued that this statement contradicted the key finding in the Draft EIS that the impacts of wildlife strike would not significantly affect the viability of local populations of any species. Submissions noted it was hard to understand how the Draft EIS could suggest the operation of WSI could have no significant effect on the local populations of Flying-foxes, given the lack of evidence of whether wildlife strike is a likely threatening process.

15.2.2.2 Response

As part of the assessment of the project Draft EIS, a comprehensive assessment of potential bird strike is presented in Technical paper 5 and summarised within the Draft EIS. The key issues identified in submissions are addressed in the following sections.

Insufficient survey

A total of 73 sites were investigated during off-airport surveys in July, August, September and October 2022 (58 sites within the 13 km wildlife buffer and 15 sites beyond this). The surveys undertaken included diurnal and nocturnal surveys across both on-airport and off-airport environments. Around 46 sites were identified within the 13 km wildlife buffer of the Airport site at which bird surveys were undertaken.

These sites were determined based on:

- being previously listed as part of the *WSI Wildlife Hazard Assessment* completed in 2018, which was an extension of the sites initially noted as part of the WSI EIS in 2016
- sites included in WSI's current off-airport monitoring regime
- opportunistic observations of land uses noted while completing surveys on and around WSI
- consistency with ICAO guidelines relating to radial distances from an airport, CASA and the NASF which recognises land uses within 13 km of an airport are potential risk contributors to bird strike impacts.

These surveys are considered to be detailed and thorough and in accordance with the recognised international bird survey requirements including the National Airports Safeguarding Framework (NASF) *Managing the Risk of Wildlife Strikes in the Vicinity of Airports* and International Civil Aviation Organisation (ICAO) Airport Services Manual. These international standards have been applied throughout Australia and are considered to be highly reliable, particularly when given the implications to passenger and flight safety.

Section 3.1.2 and Appendix B of Technical paper 5 provided further detail of the survey methods and sites surveyed, including during the July to October 2022 period noted above.

Timing of wildlife surveys

The completed surveys were considered to be thorough and appropriate, focussing on the most likely species that could interact with the flight paths, being Grey-headed Flying-foxes and various bird species. This information was supplemented with surveys that have been completed since 2018 by Avisure and which was incorporated into the overall assessment. Combined with the existing understanding of species present within Western Sydney and the GBMA, the level of wildlife survey undertaken for the project is considered to be appropriate.

With regards to populations such as Wedge-tailed Eagle, it is noted that a majority of strikes occur at or below 3,500 ft (1 km) along the approach and departure paths for aircraft. While strikes above this altitude can occur with thermalling species (such as Australian Pelican and Wedge-tailed Eagle), the frequency of high-altitude strikes for these species is comparatively low. Therefore, the focus of the surveys undertaken was on species more likely to be affected within this zone such and which are more likely to occur below 3,500 ft (1 km).

Assessment findings

Grey-headed Flying-fox camps are known to successfully exist in close proximity to existing operational airports (such as Sydney (Kingsford Smith) Airport) and this is expected to continue. It is acknowledged that the Grey-headed Flying-fox is one of the species most susceptible to wildlife strike. However, based on historic evidence, aircraft wildlife strike events are usually limited to a single individual being hit, and for species that disperse in flocks, such as the Grey-headed Flying-fox, there are rare occasions when more than one individual may be hit (refer to Section 7.3.2 of Technical paper 8). Based on past strike data however it has been observed that these events are still limited to only a couple of individuals being hit.

The Sydney (Kingsford Smith) and Bankstown airports occur within the Sydney Basin and are surrounded by similar foraging and roosting habitats. Past strike data and trends from these airports were used to provide an indication of future potential wildlife strikes at WSI. Over the past 5 years Sydney (Kingsford Smith) Airport has reported around 75 Flying-foxes (both threatened and non-threatened species) were struck by aircraft arriving and departing the airport (averaging around 15 Flying-fox individuals annually). Of these, 13 individuals were recorded as Grey-headed Flying-foxes. Based on the limited use of WSI airspace by Flying-foxes observed to date (refer to survey data presented in Technical paper 5) and the low mortality rate of the species at other airports in the Sydney Basin, it is considered that wildlife strike impacts are likely to be possible, but would not be to the level that it would be considered to be a threatening process.

15.2.3 Inaccurate species mapping

15.2.3.1 Issue raised

Raised by

Community

Issue

A submission noted that in the mapping of Grey-headed Flying-fox camps, one site at Turrella Reserve, Turrella was missing from the mapping. Concern was raised that in not identifying this camp that the potential impacts on the Grey-headed Flying-fox camp at this location had not been considered.

15.2.3.2 Response

The primary concern with respect to impacts on Flying-foxes is conflict with aircraft when they infringe aircraft airspace en-route to and from foraging and roosting sites. Flying-fox locations within 20 km of WSI were considered as part of the wildlife strike risk assessment (Technical paper 5) as having the potential to result in impacts from the project. The camp at Turrella Reserve, Turrella was not included in the mapping as that site is located well away from the wildlife buffer and is very close to Sydney (Kingsford Smith) Airport which would be that camps main airport of influence.

15.3 Biodiversity impacts – General

15.3.1 Impacts to biodiversity

15.3.1.1 Issue raised

Raised by

Community, Blue Mountains City Council, Cumberland Land Conservancy, Fitzgeralds Creek Catchment Group, Friends of Fernhill and Mulgoa Valley Inc, Mulgoa Valley Landcare Group Inc, Wallacia Progress Association, WSA Co Ltd, Wollondilly Shire Council

Issue

General biodiversity impacts

Submissions objected to the proposal on the basis that the proposed flight paths would be likely to have significant adverse effects on various ecological communities and ecosystems within the Sydney Basin through impacts such as increased noise and light spill, decreases in air quality and water quality, and disruption to habitats. Submissions argued that these impacts would result in the loss or potential extinction of a range of species. Particular concern was raised with respect to potential impacts on the ecologically sensitive and unique biodiversity of the GBMA.

A wide range of specific flora and fauna species were identified as being at potential risk within individual submissions, however, most impacts identified related to various bird, bats and Flying-fox species as being particularly at risk.

Submissions noted that the detrimental effects of the proposal would be long term and that all potential adverse outcomes have not been considered.

Submissions also noted that any decrease in the quality of the existing ecological communities or ecosystems as a result of the proposal may jeopardise existing National Park and/or World Heritage-listed statuses for some of the areas within the Sydney Basin.

Alternative flight paths to avoid biodiversity

A number of submissions requested that given the uniqueness and vulnerability of the various species potentially impacted by the proposal that the Government adopt alternative flight paths routed away from natural areas to minimise potential harm.

Bushfire recovery within the GBMA

It was noted in submissions that a number of the areas over which the proposal would be located were subject to the 2019-2020 bushfires, with the environments in these areas still recovering. It was argued that the implementation of flight paths over these areas would reduce their ability to recover (both from previous and future bushfire events).

15.3.1.2 Response

The biodiversity assessment prepared as part of the Draft EIS concluded that impacts relating to the project on biodiversity would be minor or negligible on biodiversity values and unlikely to be of a magnitude that would result in a significant impact on the environment (plants and animals) or any matters of National Environmental Significance.

This was concluded based on the following:

- direct impacts would be restricted to:
  - potential for wildlife strikes during operation, including possible impact on a range of species (including Grey-headed Flying-fox and other bird species) which provide contributing attributes to the World and National Heritage values of the GBMA
  - the potential for an aircraft crash to result in an impact on flora and fauna, noting this impact would be highly unlikely and, if it were to happen would only affect a localised area
- indirect impacts are unlikely to result in the loss or significant modification of habitats or populations as:
  - noise impacts – most anticipated noise related impacts on biodiversity would be concentrated within the wildlife buffer for WSI (up to around 13 km from WSI). Most other noise impacts outside these locations (including within the GBMA) would likely be intermittent and unlikely to disturb fauna within the GBMA or affect the habitats of this fauna
  - night-time lighting effects/light spill – even though there may be a slight increase in light (resulting from warning and other lighting indicators on aircraft at night), existing biodiversity (including fauna associated with the GBMA) is unlikely to be significantly affected.

Given the extent of potential impacts and biodiversity values within the region already being exposed to varying degrees of impacts, the project is considered unlikely to lead to long-term impacts or result in a decrease in the quality of existing ecological communities or ecosystems. This includes potential impacts that may jeopardise existing National Park and/or World Heritage-listed statuses for some of the areas within the Sydney Basin.

Further discussion regarding specific impacts to:

- light spill impacts are provided in Section 15.3.2 below
- noise impacts are provided in Section 15.3.4 below
- the World Heritage-listed status of the GBMA is provided in Chapter 22 (Matters of National Environmental Significance) of this Submissions Report.

Alternative flight paths to avoid biodiversity

The development of the preliminary airspace and flight path design was described in Chapter 6 of the Draft EIS. This included the avoidance and minimisation of impacts to biodiversity through:

- early consideration of environmental constraints in the planning phase, including the GBMA and associated sensitive receptors/wilderness areas, as input into the initial concept design options
- implementation of wildlife hazard safeguards prior to and during the operation of the project such as the *Western Sydney Aerotropolis Development Control Plan 2* (Department of Planning NSW, 2022a) (as detailed in Technical paper 5 of the Draft EIS). This is a requirement of others (for example Western Sydney Airport Company Limited, developers and consent authorities) outside of the airspace and flight path approval process.

Not all potential impacts associated with the project could be reasonably avoided or minimised due to the nature and extent of the project, other airport flight path requirements and the design specifications required to safely operate aircraft associated with the WSI.

Further discussion regarding alternative options considered is provided in Chapter 6 of the finalised EIS and Chapter 6 (Project development and alternatives) of this Submissions Report.

Bushfire recovery within the GBMA

The biodiversity assessment identified that the project is unlikely to compound impacts on biodiversity associated with the 2019-2020 bushfires or prevent these areas from recovering. The 'Black Summer' bushfires of 2019–2020 were catastrophic and unprecedented which led to large impacts on biodiversity within the GBMA and surrounds. Given the nature and extent of the project's impacts and the absence of direct impacts upon terrestrial environments, it is considered unlikely that the project would affect immediate or long-term post-fire recovery within areas affected by the Black Summer bushfires.

15.3.2 Biodiversity impacts – Light spill

15.3.2.1 Issue raised

Raised by

Community

Issue

Submissions raised concern that the operation of the proposal at night would result in additional light spill and light pollution which would have an adverse impacts on wildlife within the vicinity of the proposed flight paths. Concerns raised included behavioural and physiological changes to various fauna, in particular nocturnal animals.

15.3.2.2 Response

It is acknowledged that artificial light, including sources associated with the project such as aircraft light, can have adverse impacts on wildlife. The project's operational light would be limited to lights on aircraft as they travel along the flight paths during night time hours. The magnitude of visual impacts at night (including light spill) would be experienced across a small portion of the urban area and would not contrast substantially with the surrounding landscape at night, resulting in a low magnitude of change. Within the intrinsically dark landscapes which experience minimal existing light and where biodiversity values could be most sensitive to changes in light, including large areas of the GBMA, the magnitude of change and impact is considered to be negligible as a result of the project.

Lighting throughout the evening associated with the operational phase of the project may result in some minor impacts on nocturnal fauna less tolerant to or accustomed to light. Nocturnal species such as possums and bats may initially avoid the habitat in the wildlife buffer during nocturnal periods however they are likely to become habituated over time and return to use habitats available in these locations. The magnitude of this impact would be negligible given the high level of light pollution already present in the locality and surrounds which has likely led to biodiversity being somewhat habituated to periodic light disturbance from human activity.

Overall, the assessment concluded that even though there may be a slight increase in light, existing biodiversity, including biodiversity associated with the GBMA, is unlikely to be significantly affected by the project's operational light impacts, and would therefore not impact on the biodiversity attributes within the GBMA.

Details of the assessment of the likelihood of impacts on biodiversity resulting from light spill impacts associated with the project is discussed in Section 7.4.2 of Technical paper 8 and Section 5.3.2 of Technical paper 14.

15.3.3 Biodiversity impacts – Water quality

15.3.3.1 Issue raised

Raised by

Community

Issue

Submissions raised concern regarding potential water quality impacts and the subsequent impacts that this may have on biodiversity. Submissions stated that the proposed flights paths would likely have adverse effects on biodiversity through increased pollution to waterways and waterway habitats through items such as fuel and emissions. It was argued that reductions in water quality would have detrimental impacts on ecological communities located beneath the flight paths as well as downstream, such as marine species, which depend upon clean waterways. Similarly, contamination of drinking water for livestock such as that in farm dams was also identified as an issue of concern.

15.3.3.2 Response

Aircraft pollutants are comprised of vapours, gases, and fine particles which are not expected to deposit to the ground.

Technical paper 12: Human health (Technical paper 12) estimated the deposition rates of the key pollutants relevant to project and their potential impacts on water quality using a highly conservative approach. It identified that aircraft pollutants likely to be generated are dominated by $PM_{2.5}$ which essentially act like a gas in the atmosphere with little or no deposition. Due to this, it is expected that the deposition of pollutants to the ground is highly unlikely to occur. Technical paper 12 identified that the project's potential impacts on water quality would be negligible and not measurable.

Impacts on aquatic ecosystems are therefore considered to be negligible and unlikely to impact on aquatic biodiversity values contained within the GBMA.

Assessment of the likelihood of impacts on biodiversity resulting from impacts to water quality associated with the project is further discussed in Section 7.4.4 of Technical paper 8 and Section 5.3.2 of Technical paper 14.

15.3.4 Biodiversity impacts – Biosecurity

15.3.4.1 Issue raised

Raised by

Community

Issue

Submissions noted that the Draft EIS failed to thoroughly consider any environmental or economic impacts on surrounding wilderness areas should there be a biosecurity breach as a result of the operation of the airport.

15.3.4.2 Response

All aircraft using the proposed flight paths to access WSI from overseas would be subject to strict Australian biosecurity requirements that are currently administered for all Australian airports. No direct impacts or indirect threats associated with weed and/or pest species are expected as a result of the implementation of the proposed flight paths associated with WSI. Any breach would be managed in accordance with existing Australian biosecurity requirements.

15.4 Aircraft noise impacts on biodiversity

15.4.1 Disruption to species due to aircraft noise

15.4.1.1 Issue raised

Raised by

Community, Blacktown City Council, Blue Mountains City Council, IUCN, Susan Templeman MP – Member for Macquarie (Federal)

Issue

Submissions raised objection to the proposal noting that the increase in noise levels would have significant negative effects and result in detrimental impacts on a range of fauna species, ranging from pets and other animals within residential locations, to a wide range of species within the vegetated and designated wilderness areas, including various bats, birds, frogs and other listed threatened species. Overall it was argued in submissions that the proposed aircraft noise was not considered to be compatible with the key wilderness areas over which the proposed flight paths had been identified.

Submissions identified a range of noise levels that would result in impacts to biodiversity, ranging from 40 to 75 dB(A). Submissions argued that the existing levels of noise could be as low as 24 dB(A), in particular in more remote areas such as the GBMA, and that the existing biodiversity in these areas had adapted to these quiet environments.

Effects of concern raised in submissions included the potential of noise increases to result in:

- habitat displacement or avoidance of certain areas by species
- disruption to general communication between species
- disruption to species' ability to hunt and forage for food
- interruption to mating calls, breeding patterns/cycles, and consequently, leading to a reduction in reproductive success
- disruptions to bird calls and decreases in song quality for bird species
- disturbance to nocturnal species
- increased stress levels, confusion and behaviour changes in animals
- reduced territory quality and disruption to nesting activities
- altered migration patterns.

Additionally, it was suggested in submissions that increased noise levels would also affect growth rates of some flora species.

Specific locations of concern with respect to aircraft noise impacts on biodiversity raised in submissions included:

- GBMA in general
- Burragorang State Conservation Area
- Warragamba Protected Area
- Jamison Valley
- Linden.

Specific species and associated impacts identified in submissions included:

- Large-eared Pied Bat, which may experience disruptions in foraging and communication activities due to 24-hour intermittent aircraft noise ranging from 75 to 65 decibels in GBMA habitats. It was noted that microbat calls can be impacted by lower frequency anthropogenic noise, including aircraft noise, affecting the range and acoustic frequency of their calls and, consequently, their foraging behaviour
- Grey-headed Flying-fox, which has been identified as having habitats within the 75 decibel, 70–65 decibel, and 65 decibel noise contours
- Giant Burrowing Frog, Green and Golden Bell Frog and 4 other endangered or vulnerable frog species, which have been identified in areas that may be impacted by contours ranging from 60 to 75 decibels. It was noted that impacts at these noise levels may interfere with their communication, especially during nighttime breeding activities
- Regent Honeyeater, Swift Parrot, Glossy Black Cockatoo and Gang-gang Cockatoo, which have been noted at various locations within various noise contours. Submissions noted that these species may abandon their habitats when increased noise levels occur.

Submissions also noted that the Draft EIS acknowledged that indirect noise impacts to wildlife is not well studied and species-specific knowledge, including for threatened species, was absent for most species living within the GBMA. It was argued that the impact assessment for aircraft noise within Technical paper 8 in the Draft EIS has not applied the precautionary principle in the absence of scientific evidence and has not provided sufficient evidence that the proposed noise impact would not result in a significant impact to species listed under the EPBC Act.

Submissions also provided a comparison between the National Parks and Wildlife Service (NPWS) advice that flying drones in parks can disturb native animals, and therefore questioning what impact ongoing aircraft operations would have as an equivalent detrimental effect on native animals.

15.4.1.2 Response

Alterations to existing noise levels as a result of the proposed flight paths would occur during operation. Noise from aircraft flight operations is among the most significant of the environmental impacts associated with airports.

Key impacts of noise on wildlife were discussed throughout the Draft EIS including technical assessments presented in Section 6.6 of Technical paper 5, Section 7.4.1 and Section 7.8.3 .6 of Technical paper 8 and Section 5.3.2 of Technical paper 14 and included:

- behavioural changes such as avoidance or dispersal from areas affected by noise
- communication interference such as hindering or masking of signals
- physiological impacts such as elevated levels of stress hormones that may affect breeding
- hearing loss for fauna species.

Section 7.4.1 of Technical paper 8 assesses in detail the issue of noise impacts to biodiversity, via literature research and reference to the Wildlife strike risk assessment (Technical paper 5). Key conclusions which were identified from the review of existing literature included:

- past research in wildlife responses to noise has shown large variability between species and individuals at different locations even between individuals in the same population, making multi-species-based risk assessments difficult
- some species are more susceptible to disturbance from noise than others due to their auditory capabilities, social structure, life history patterns and habitat. Further, some species may develop a tolerance when overflight are frequent or regular but others do not
- noise has been found to generally play a minor role as a disturbance factor however in combination with additional optical stimuli can cause a reaction in fauna. Aircraft noise made by jets and sonic booms sometimes cause startle responses however mostly do not result in severe consequences, when they do react to aircraft noise it is often due to previous experience (noting that the aircraft operating at WSI will not break the sound barrier or create sonic booms)

- despite studies observing behaviour changes in wildlife in response to noise, others have observed considerable behavioural flexibility in urban environments exposed to similar noise level extents. Cumulative evidence shows many species, including bird, amphibian and mammals, have altered their call and call periods in response to the predictability of noise patterns produced by aircraft
- the most important consideration with regard to aircraft noise and wildlife is proximity to the Airport Site (where the highest noise impacts are) and frequency of overflights. Furthermore, wildlife previously exposed to noise may be less affected than those who have not, and the time it takes for wildlife to adapt to noise is species-specific. This indicates that noise level impacts are likely to be concentrated in proximity to WSI, for short intermittent periods of time and affect those species which utilise habitats in these locations.

Assessment method

The extent of indirect impacts on biodiversity was conservatively limited to the assessment zones that included the wildlife buffer, the N60 24-hour and N70 24-hour contours, and the flight path buffers. The N60 24-hour and N70 24-hour noise contours were used to assess the extent of noise impacts on biodiversity values as they take into consideration the proposed number of aircraft movements where a Biodiversity Sensitive Receiver is exposed to noise levels at or above 60 dB(A) and 70 dB(A) within a 10 km zone either side of the flight path centrelines in accordance with the Airservices Australia's *Environmental Management of Changes to Aircraft Operations – National Operating Standard* (National Operating Standard) (NOS) (Airservices Australia 2022a). Areas outside of the N60 24-hour and N70 24-hour contours were considered as likely to remain relatively unaffected (or affected to a minor degree) by noise associated with the project and would therefore likely result in negligible impacts.

Assessment

The level of noise generated depends on aircraft engine type (i.e. propeller or jet), size, way the aircraft is flown, aircraft settings, rate of climb, aircraft altitude and meteorological conditions. Jet engines can exceed 150 dB(A) during departure however this decreases as the aircraft increase in altitude and transition into cruising mode, generally generating less than 60 dB(A) once they exceed 10,000 ft (3 km) above ground level. The approximate altitude and distance from the Airport Site at which aircraft reach certain noise levels consists of:

- take-off and initial ascent (0 to 3,500 ft (0 m to around one km) above ground level): jet engines can reach over 150 dB(A) during take-off
- final ascent to cruising altitude (greater than 3,500 to 10,000 ft (around one km to 3 km) above ground level): aircraft usually reach noise levels of between 70 to 80 dB(A) during this period
- cruising and maximum altitude (greater than 10,000 to 20,000 ft (around 3 km to 6 km) above ground level): typically aircraft at altitudes above 10,000 ft (around 3 km) above ground level generally produce less than 60 dB(A).

It is anticipated that most noise related impacts on biodiversity would be concentrated within the wildlife buffer for WSI (up to around 13 km from the WSI runway boundary). Most other noise impacts outside this area would likely be minor or negligible given existing noise levels associated with the existing environment including other aircraft flights operating within the Sydney Basin airspace.

Outside of the wildlife buffer, existing ambient noise levels (including those within the GBMA and other protected areas identified in submissions) would typically be low and influenced by naturally generated noise such as from wind, bird and insects, and noise generated from existing roads and urban development. The Sydney Basin is also currently exposed to noise generated by existing light aircraft, helicopters and at higher altitudes, commercial aircraft movements, similar to those aircraft that would use the flight paths subject to the project.

In terms of the predicted impacts, the noise modelling presented in the Draft EIS indicated that:

- there would be minimal areas where noise above 70 dB(A) would impact the GBMA, wilderness or biodiversity values
- areas affected by N60 (by 2055 as a worst case scenario) would be as follows:
  - over a 24-hour period, the majority of the flights over the GBMA and wilderness areas equate to around 10 to 49 flights over a 24 hour period (depending on the runway mode of operation is in use) that generate noise for short durations over 60 dB(A), or less. Some areas closer to the Airport Site within or adjacent to the GBMA near Lake Burragorang would have more than 100 flights over a 24 hour period that generate noise over 60 dB(A) (depending on the runway mode of operation)
  - during the overnight period all areas within the GBMA and associated wilderness areas are expected to be impacted by 2 to 19 flights over the night period (11 pm to 5:30 am) which are at or above 60 dB(A), or less. Areas closer to the Airport Site within or adjacent to the GBMA near Lake Burragorang would have around 10 to 49 flights overnight that are at or above 60 dB(A)
- the increase in noise will not be an instant maximum noise change in a single year, and will progressively increase over a 30-year period and this is expected to assist in species acclimatisation within the affected areas.

Overall, it is noted that noise may indirectly result in impacts to biodiversity. However given the altitudes of aircraft and frequency of flight over sensitive areas, these impacts are not considered to present a threat to overall biodiversity values listed. Increases or changes to existing noise levels associated with the project on fauna species would be limited and the predicted noise levels are unlikely to be of a magnitude that would threaten the viability of existing biodiversity attributes.

15.5 Wildlife strike

15.5.1 Impact to bird and bat species

15.5.1.1 Issue raised

Raised by

Community, Blue Mountains City Council, Blue Mountains Conservation Society, Greater Blue Mountains World Heritage Area advisory committee, Residents Against WSA Inc (RAWSA), Susan Templeman MP – Member for Macquarie (Federal), Trish Doyle MP – Member for the Blue Mountains (NSW), Wollondilly Shire Council

Issue

Submissions raised concern that the proposed flight paths would result in adverse impacts to various bird and bat species as a result of wildlife strike from operating aircraft. Wildlife of concern were often associated with species associated with the GBMA including: the Fork-tailed Swift; Glossy Ibis; Australian Pelican, Wedge-tailed Eagle; White-breasted Sea-eagle and Grey-headed Flying-fox, which were all identified as locally occurring, 'thermalling' species which are potentially susceptible to increased aircraft strike. It was maintained in submissions that the potential for bird and other animal strikes would have the potential to occur as far from WSI as Katoomba, rather than just within the immediate vicinity of WSI.

It was suggested that the impact of the proposed flight paths (in particular over the GBMA) needed to be more appropriately assessed prior to finalising the EIS.

Additionally, it was requested that the Draft EIS be updated to further consider any impacts from the Grey-headed Flying-fox camp at Scotcheys Creek, Silverdale.

15.5.1.2 Response

Each of the species identified above were considered as part of the assessment (either as part of the wildlife strike risk assessment and/or the biodiversity assessment), including the significance of risk to populations of these species as well as the potential impact to safety on flights through wildlife strike. The assessments were considered to be thorough and in accordance with relevant Australian and international airport assessment requirements including the NASF *Managing the Risk of Wildlife Strikes in the Vicinity of Airports* and ICAO Airport Services Manual.

The wildlife strike risk assessment (Technical paper 5) acknowledged that there are species that present a strike risk at WSI and as a result of the proposed flight paths. In addition, land uses in the vicinity of WSI will have the potential to attract wildlife that will intersect with aircraft operating into and out of the Airport Site. The wildlife strike risk assessment noted that most wildlife strikes in aviation occur at or below 3,500 ft (one km), and therefore of primary concern are the approach and departure paths at this altitude or below. While strikes above this altitude can occur with thermalling species such as Australian Pelican *Pelecanus conspicillatus* and Wedge-tailed Eagle *Aquila audax*, the frequency of high-altitude strikes is comparatively low compared to lower elevations and terrestrial strike impacts.

The wildlife strike risk assessment stated that the review of wildlife survey data on and around the Airport Site identified 4 threatened species of particular concern for potential impact; Grey-headed Flying-fox *Pteropus poliocephalus,* White-bellied Sea-Eagle *Haliaeetus leucogaster,* Cattle Egret *Bubulcus ibis, and* Glossy Ibis *Plegadis falcinellus.* The assessment noted that the impact on protected species due to strikes with aircraft is likely to be minimal. It was noted however that these populations must be monitored to allow for the early detection of emerging issues. Ongoing monitoring will be needed to determine trends, and assessing the effectiveness of safeguarding principles and mitigation applied by the Airport Site and surrounding land users.

With respect to concerns regarding the occurrence of a Grey-headed Flying-fox camp at Scotcheys Creek, Silverdale, assessment identified that this camp is not currently identified on the Australian Government National Flying-fox monitoring dataset as an established camp. However, similar to the assessment of other listed camps discussed in Technical paper 5 and Technical paper 8, the issues and mitigation measures proposed would apply to this camp, and no further specific assessment (or additional mitigation) is considered to be required for this camp.

15.6 Impact to threatened species

15.6.1 Threatened species impacts – General

15.6.1.1 Issue raised

Raised by

Community, Susan Templeman – Member for Macquarie (Federal)

Issue

Submissions expressed disappointment that the proposal would increase the potential risks to existing flora and fauna species. Submissions noted that a number of the areas over which the flight paths would traverse currently contain a range of threatened species and ecological communities. Submissions noted it was imperative to protect these landscapes from the ongoing pressures of human development. Submissions argued that the Draft EIS did not provide sufficient assessment regarding the risks of impact to endangered species. Specific species of concern highlighted in submissions typically included fauna species such as:

- Large-eared Pied Bat (*Chalinolobus dwyeri*)
- Grey-headed Flying-foxes (*Pteropus poliocephalus*)
- Giant Burrowing Frog (*Heleioporus australiacus*)
- Booroolong Frog (*Litoria booroolongensis*)
- Green and Golden Bell Frog (*Litoria aurea*)
- Regent Honeyeater (*Anthochaera phrygia*)
- Swift Parrot (*Lathamus discolor*)
- Glossy Black Cockatoo (*Calyptorhynchus lathami lathami*)
- Gang-gang Cockatoo (*Callocephalon fimbriatum*)
- Greater Gliders (*Petauroides volans*)
- Yellow-bellied Gliders (*Petaurus australis australis*)
- White-bellied Sea Eagle (*Haliaeetus leucogaster*)
- Varied Sittella (*Daphoenositta chrysoptera*)
- Painted Button-quail (*Turnix varius scintillans*)
- East-coast Freetail Bat (*Mormopterus norfolkensis*)
- Eastern Bent-winged Bat (*Miniopterus schreibersii oceanensis*)
- Fishing Bat (*Myotis macropus*)
- Koala (*Phascolarctos cinereus*)
- Cumberland Plain Land Snail (*Meridolum corneovirens*)
- Dural Land Snail (*Pommerhelix duralensis*)
- Common wombat.

Impacts of concern on these fauna species included:

- increase noise levels impacting ability for species to utilise echolocation and undertake communication activities/ calling patterns
- disruptions to foraging and hunting activities
- risk of direct strikes by aircraft flying
- breeding behaviours (in particular with respect to noted frog species)
- concern that frog species may not be able to adapt to aircraft noise and therefore may not be able to move around their habitat.

General regions within the Sydney Basin and flora species were also identified in submissions including:

- Cumberland Plain Woodland
- River Flat Eucalypt Forest
- Shale-Sandstone Transition Forest
- Regionally rare wattle (*Acacia prominens*)
- Bohudi National Park
- Cattai National Park
- Mitchell Park
- Scheyville National Park.

It was noted that species that live within these communities that are endangered would be at risk from further endangerment from elements such as pollution associated with operation of the proposed flight paths.

15.6.1.2 Response

Potential impacts associated with the project such including direct impacts such as wildlife strike, and indirect impacts such as aircraft noise, vibration, air and water quality, increased light and fuel jettisoning were considered for their potential to result in indirect impacts on biodiversity.

The assessment identified that the key impact associated with the project on existing biodiversity species was wildlife strike leading to mortality. Impacts associated with wildlife strike were described and assessed in detail in Technical paper 5 and also Section 15.5 of this report. It was further assessed that there would be no other direct impacts on biodiversity.

All indirect impacts were identified as being negligible or are considered to be unlikely to significantly modify species behaviours or use of habitats that are locally or regionally available. Specifically, with respect to the key issues identified in submissions:

- the likelihood of substantial or significant noise impacts on species was considered to be unlikely. This includes impacting the ability for species to utilise echolocation and undertake communication activities/calling patterns. As the noise changes are unlikely to be substantive this is not considered to be a likely issue of concern. Disruptions to foraging and hunting activities were also considered to be unlikely
- the risk of direct wildlife strikes by aircraft flying were assessed and determined to be unlikely to be substantial (refer to Section 15.5 of this report)
- breeding behaviours (in particular with respect to noted frog species) are unlikely to be significantly or substantially impacted as the noise impacts affecting these behaviours are not likely to be substantial
- concern that frog species may not be able to adapt to aircraft noise and therefore may not be able to move around their habitat is unlikely to be of concern give the low likelihood of substantive or significant noise impacts.

Technical paper 8 provided a full assessment of all potential species that were identified as having the potential to be impacted by the project.

General regions within the Sydney Basin and flora species

With respect to the concern regarding impacts to general regions within the Sydney Basin, none of the areas identified or vegetation types are likely to be impacted to any substantive degree. It is considered that the overall development of WSI will have net positive impact to threatened vegetation in Western Sydney, as outlined in Section 10.3 of Technical paper 8 which noted that:

- to mitigate potential impacts on habitat fragmentation the Stage 1 Development retained 117.1 ha of native vegetation around the perimeter of the Airport Site. This area is known as the 'environmental conservation zone' (ECZ) and will remain undeveloped and managed for biodiversity conservation. The ECZ includes large areas of Cumberland Plain Woodland, riparian habitats along Badgerys Creek, Duncans Creek and Oaky Creek as well as large areas of land which will be revegetated. The entirety of the ECZ occurs within the wildlife buffer
- as part of the Stage 1 Development Biodiversity Offset Delivery Plan, approximately 978.83 ha of land at the Defence Establishment Orchard Hills was set aside as an offset to compensate for the project's residual impacts on biodiversity. The Biodiversity Offset Delivery Plan takes into account specific species (such as the Southern Myotis (*Myotis macropus* roosting habitat), the Cumberland Land Snail (*Meridolum corneovirens*) and various species of flora.

Both the ECZ and Orchard Hills Offset Areas include a range of biodiversity values and form part of local and regional wildlife corridors. These values are encompassed in the above sections.

15.7 Mitigation and management

15.7.1 Inadequate management and mitigation measures

15.7.1.1 Issue raised

Raised by

Community, Blue Mountains City Council, Blue Mountains Conservation Society, Camden Council, Friends of Fernhill and Mulgoa Valley Inc, IUCN, Wollondilly Shire Council

Issue

Submissions stated that the management and mitigation measures proposed for managing impacts to biodiversity were inadequate. In particular, the measures identified to address wildlife strike of Grey-headed Flying-foxes and various bat species were identified as inadequate. Submissions noted that the existing measures were generic and relied on the establishment of committees and further surveys to determine impacts and specific measures at a later time. It was requested that specific information on the mitigation and management procedures proposed to be implemented be provided as part of the finalised EIS.

Submissions requested that revised management and mitigation measures incorporate additional baseline and ongoing monitoring (of the existing biodiversity and acoustic environment) across the areas surrounding WSI and throughout the GBMA prior to commencement of the flight path operations. It was noted in submissions that the monitoring identified in the Draft EIS was focused on monitoring the presence of wildlife from 2026 onwards (after commencement of WSI operations) and that this would be ineffective as it would not prevent wildlife strike because aircraft would already be operating.

A series of specific recommendations were provided in submissions for additional and/or revised management and mitigation measures, which included:

- changing the proposed flight paths so that they do not traverse over the World Heritage area and to avoid wildlife populations, particularly threatened species
- establishment of a system of wildlife monitoring stations at key locations in the Blue Mountains, for at least one to 2 years prior to commencement of WSI operations, and maintenance of these monitors permanently to validate wildlife assumptions and determine management strategies. The findings of these surveys should be used to develop specific wildlife risk management plan(s) for WSI in order to protect existing wildlife and avoid risk to populations of any species
- implementation of a bird and bat monitoring program on an ongoing basis
- commitment to conducting a thorough long-term baseline study of movement and foraging ecology of Grey-Headed Flying-foxes in proximity to WSI
- preparation of regular environmental performance reports with independent auditing and annual inspections onsite to determine whether measures have been implemented in accordance with objectives
- implementation of a curfew on airport operations and other flight restrictions until appropriate management measures have been identified and established
- undertaking comprehensive baseline acoustic monitoring along with ongoing biodiversity monitoring, focusing on key EPBC Act-listed threatened species. It was recommended that restricting noise levels over environmentally sensitive areas, such as the GBMA and WSI wildlife buffer areas, to a maximum of 40 dB(A) to minimise impacts on existing fauna
- request for an independent technical peer review of the potential biodiversity impacts on the GMBA, including wildlife strikes, to validate conclusions drawn in the Draft EIS

- the finalised EIS and flight paths should undergo a full reassessment of 'significant' biodiversity impacts using EPBC Act guidelines and current scientific literature, applying the precautionary principle
- preparation of an Ecological Sustainability Impact Assessment. The finalised EIS and Flight Paths should comprehensively outline ecological sustainability impacts through establishment of an expert Environmental Management Committee to provide advice on environmental issues arising from the development and operation of the airport, following best practice.

15.7.1.2 Response

The project has sought to minimise the potential impacts to biodiversity throughout the development of the preliminary airspace and flight path design by adopting the 'avoid, minimise, mitigate and offset' hierarchy. Not all potential impacts associated with the project could be reasonably avoided or minimised due to the nature and extent of the project, other airport flight path requirements and the design specifications required to safely operate aircraft associated with the WSI.

A series of mitigation measures were proposed as part of the Draft EIS in relation to wildlife management. These included off-airport requirements to mitigate wildlife strike risk for aircraft operating in and out of WSI in land use planning instruments, along with recommendations and guidelines detailed in *National Airports Safeguarding Framework Guideline C* (NASF Guideline) (DITRDCA, 2012).

Other mitigation measures and design safeguards detailed for the project were identified to further minimise impacts on biodiversity values. Of key importance is the implementation of a bird and bat monitoring programs which underpins all wildlife hazard mitigation and airport safeguarding (refer to mitigation measure M2). Robust standardised monitoring programs that regularly collect meaningful data will inform decisions relating to wildlife management programs, identify emerging risks, and determine wildlife activity trends over time.

The monitoring programs will be designed in collaboration with appropriate NSW and Commonwealth authorities.

Residual impacts associated with the project would include occasional aircraft strike and alterations to existing noise, light, air and water quality values. These cannot be avoided or mitigated due to the nature and extent of the project, other airport flight path requirements and design specifications required to safely operate aircraft associated with the WSI.

With respect to the specific mitigation measures requested:

- consideration of alterations to the proposed flight paths are discussed in Chapter 6 (Project development and alternatives) of this submissions report
- preparation of regular environmental performance reports will be the responsibility of WSI's operator, WSA Co
- it is not proposed to implement a curfew for WSI. Further discussion regarding a curfew for WSI is provided in Chapter 5 (Statutory context) and Chapter 10 (Aircraft noise) of this submissions report
- further discussion regarding baseline acoustic monitoring is provided in Chapter 10 (Aircraft noise) of this submissions report
- no additional impact assessments are proposed to be undertaken, including preparation of an Ecological Sustainability Impact Assessment.

Chapter 16 Heritage

This chapter provides a response to the issues raised in submissions specific to Chapter 17 (Heritage) of the Draft EIS.

Overall, submissions raised concerns regarding the heritage impact assessment approach, consultation with First Nations people, and the impact on Aboriginal heritage (including Aboriginal community values) and historic heritage. These concerns were often raised in the context of noise, emissions and visual intrusion. Concerns about mitigation measures to address heritage impacts were also raised.

Aboriginal heritage

The Draft EIS assessed the impact of the preliminary flight paths on Aboriginal sites. The assessment was informed by consultation with key Aboriginal knowledge holders to understand cultural values, the places associated with them and concerns about the potential impacts. The assessment focused on the type of impact that the project could potentially have on heritage values and the site types most likely to be impacted.

The assessment found that many types of Aboriginal sites would not be impacted (such as from noise, emissions and visual intrusion) due to the robustness of the objects and that aircraft (in most cases) would be at such a distance and/or altitude to render the impact from these factors as minimal. Generally, identified places of Aboriginal and cultural significance closest to WSI were identified as likely to experience higher impacts. The preliminary flight paths would not physically impact or restrict use of any Aboriginal site. Visual impacts and noise would affect some Aboriginal sites within and adjacent to the Greater Blue Mountains Area (GBMA).

Measures have been proposed to mitigate the potential impacts. These measures include the Department of Infrastructure, Transport, Regional Development, Communication and the Arts (DITRDCA) ensuring the detailed design phase for flight paths considers Aboriginal places and values (where safe and feasible), undertaking a research program to investigate the potential impact of aircraft emissions on historic and Aboriginal heritage sites, and establishment of a Community Aviation Consultation Group (CACG) for WSI which will facilitate consultation with stakeholders and community on a range of matters including heritage matters.

Historic heritage

Given the large number of historic heritage places within the study area, an approach to gauge relative impacts was identified. The use of 5 and 10 kilometre radii identified places where aircraft might be expected to be lower and therefore potentially have a greater impact. The robustness of heritage places was also considered.

The assessment found that many types of heritage sites would not be impacted due to the robustness of the objects and aircraft (in most cases) would be at such a distance as to render the impact from these factors as minimal. Outside the GBMA, there was no discernible impact on the cultural values of nationally listed places identified.

Many historic properties are located in town centres. The flight path design principles seek to avoid population centres and protect such places from significant impacts, although in some cases aircraft may still be visible in the distance or would be heard. As with the assessment of Aboriginal heritage impacts, a range of measures have been proposed to understand long-term cumulative impacts, mitigate likely impacts and to maximise the retention of cultural values.

16.1 Submission overview

16.1.1 Number and origin of submissions

A total of 1,053 submissions raised matters concerning heritage impacts. The majority of these submissions originated from the Sydney Basin and surrounds as shown in Figure 16.1. Around 8 per cent of submissions did not supply a postcode.

Around 76 per cent of submissions that raised this issue originated from the Western City District (Blue Mountains) with another 6 per cent from Western Sydney (excluding Blue Mountains). Each other location in the Sydney Basin, intrastate or interstate locations produced less than 5 per cent of submissions raising this key issue.

In addition to the submissions received during the Draft EIS exhibition period, the International Union for Conservation of Nature (IUCN) submitted a technical review of the Draft EIS to the Australian Department of Climate Change, Energy, the Environment and Water. The matters raised in this technical review have been captured within this chapter.

16.1.2 Key issue breakdown

A breakdown of the sub-issues within this key issue and the percentage of total submissions that raised each of these sub-issues is outlined in Table 16.1.

Table 16.1 Breakdown of sub-issues in relation to heritage impacts

Sub-issue	Number of submissions that raised the sub-issue	Percentage of submissions that raised the sub-issue
Impact assessment approach	190	2%
Aboriginal heritage impacts	994	12%
Historic heritage	209	2%
Mitigation and management	194	2%

Each sub-issue was raised more often by the Western City District (Blue Mountains). For other Sydney Basin districts, each district typically accounted for around 6 per cent or less within each sub-issue.

Submissions from other intrastate or interstate locations (such as Queensland) also typically accounted for less than 5 per cent within each sub-issue (except for general heritage which was 7 per cent), and a number of submissions in each sub-issue (ranging from 6 per cent to 11 per cent) did not provide a location.

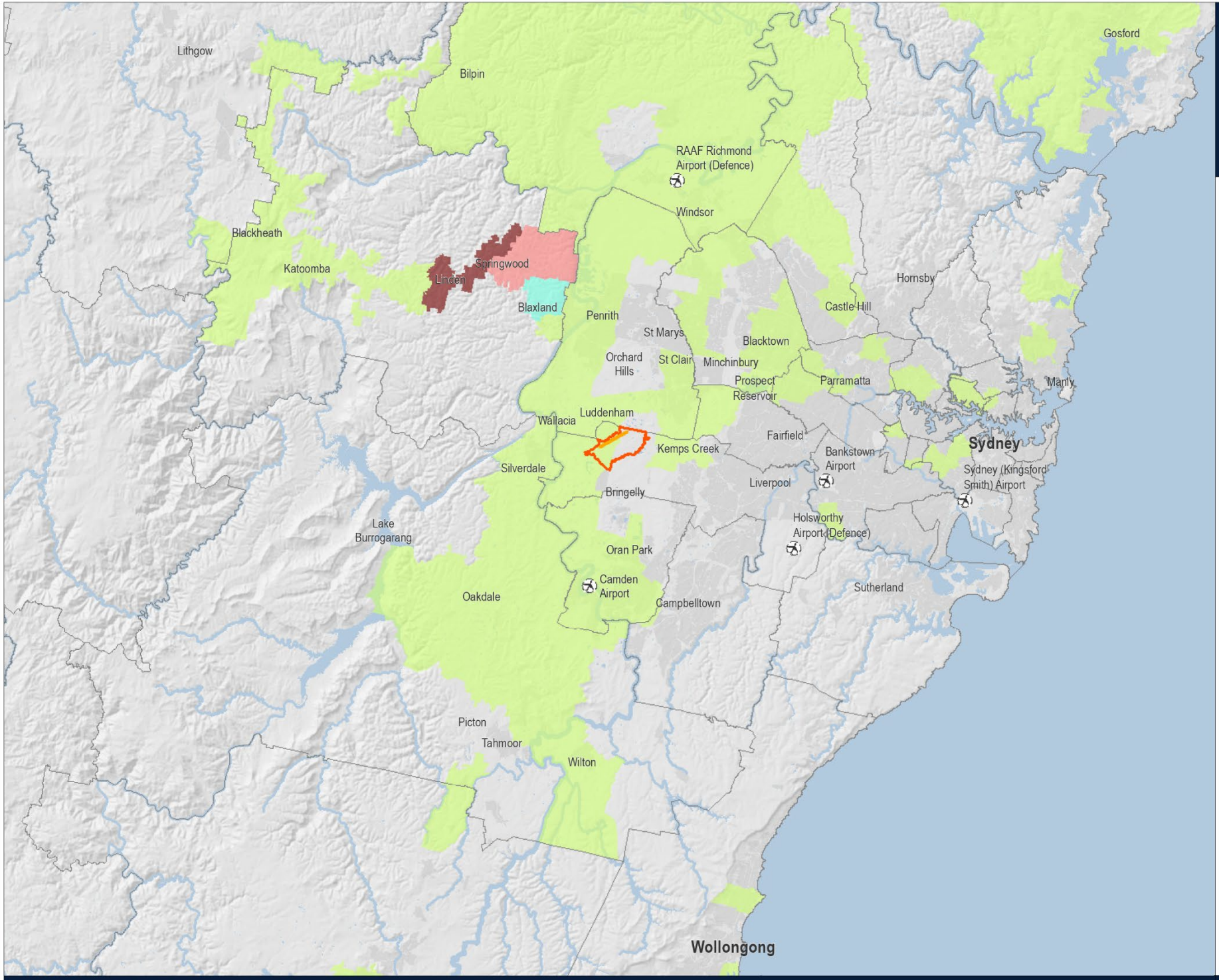


Figure 16.1

Origin of submission in relation to heritage impacts

Legend

- WSI Runway
- Western Sydney International (Nancy-Bird Walton) Airport land boundary
- Local Government Area

Number of submissions by postcode

- 1 - 50
- 51 - 100
- 101 - 150
- 151 - 200
- 201 - 250
- 251 - 300
- 301 - 350
- 351 - 400
- 401 - 450
- 451 - 500
- 501 - 550
- More than 550

0 5 10 km

Coordinate system: GDA 1994 NSW Lambert

Scale ratio correct when printed at A4

1:600,000 Date: 20/06/2024

16.2 Impact assessment approach

16.2.1 Aboriginal heritage

16.2.1.1 Issue raised

Raised by

Community, Blue Mountains City Council, Residents Against WSA Inc (RAWSA), Wollondilly Shire Council

Issue

Assessment approach

Submissions expressed the view that the Draft EIS had not provided an adequate assessment of impacts to significant places of Aboriginal heritage, including Echo Point and The Three Sisters (declared Aboriginal Places). Submissions also expressed concern that impacts were assessed using a desktop assessment method and had not been informed by discussions with Traditional Owners. One submission stated that the finalised EIS should contain a more thorough assessment of the impacts to the network of Aboriginal sites recorded in the study area (over 13,500 sites).

Cultural landscapes

Submissions commented that the Draft EIS failed to recognise the implications to the Aboriginal cultural landscape and recommended that whole landscapes be assessed and not just designated locations or places.

Noise criteria

One submission raised concern about the significance assessment, questioning the noise criteria and the reasons for adopting a predicted noise level of 70 dB(A) in the heritage assessment. The submission noted that elsewhere in the Draft EIS, a predicted noise level of 60 dB(A) was considered to result in a high level, adverse noise impacts, particularly in tranquil or wilderness areas.

16.2.1.2 Response

Assessment approach

The Aboriginal heritage assessment is considered to have provided an adequate assessment in order to consider potential impacts of the project and was informed by consultation with key Aboriginal knowledge holders. The assessment methodology is considered appropriate as it:

- included reviewing a range of existing information relating to Aboriginal cultural heritage values, for example, existing databases, previous cultural heritage studies, and previous studies relating to the potential impact of atmospheric pollution on Aboriginal rock art sites
- included comprehensive and meaningful consultation with traditional knowledge holders (discussed further in Section 16.2.2.2)
- facilitated the identification of the types of impacts that could possibly impact cultural heritage places, for example:
  - impacts on the physicality or fabric of sites, such as from chemical reactions (if any) due to emissions
  - non-physical impacts, such as impacts on ambience from noise or disruption to spiritual connections.

The Aboriginal heritage assessment acknowledged the broad range of sites and types of heritage places that make up the cultural landscape beneath the preliminary flight paths, including all recorded sites, and that all site types would not necessarily be impacted by the project. Further information on the impact assessment approach, including the consultation undertaken with key Aboriginal knowledge holders, is provided in Section 3.1 of Technical paper 9: Heritage (Technical paper 9).

Given the size of the heritage study area, which encompassed a large portion of the Sydney Basin and the GBMA, the assessment did not consider all previously recorded sites on an individual basis and has acknowledged that there would be hundreds of other sites that exist but have not been recorded within the heritage study area. This is because of the limitations in the available data recorded on the Aboriginal Heritage Information Management System (AHIMS), which captures sites recorded by previous studies and are most commonly focused on areas subject to development.

The assessment focused on the type of impact that the project could potentially have on heritage values and the site types that are most likely to be impacted – being sites with demonstrated and/or likely spiritual or ceremonial values (such as rock art sites) that may be affected by noise, visual intrusion and/or air emissions from aircraft. A values-based approach is consistent with *The Burra Charter: The Australia ICOMOS charter for places of cultural significance, 2013* (Australia ICOMOS 2013) (the Burra Charter) which provides the accepted guidance for heritage assessment in Australia which states:

> *Cultural significance means aesthetic, historic, scientific, social or spiritual value for past, present or future generations. Cultural significance is embodied in the place itself, its fabric, setting, use, associations, meanings, records, related places and related objects. (Article 1.2)*

Many of the recorded (and likely unrecorded) Aboriginal sites are unlikely to be impacted by the project. For example, the majority of the recorded sites in the heritage study area comprise stone artefacts and it is likely that the majority of unrecorded sites would be consistent with this site type. Stone artefact sites range from isolated stone artefacts to dense scatters and are the tangible evidence of campsites. Such sites, unless associated with other values, would not be negatively impacted by noise, visual intrusion and/or air emissions from aircraft.

Cultural landscapes

The value of Aboriginal cultural landscapes was recognised in the Draft EIS (refer to Section 4.2 of Technical paper 9), however the pre-invasion Aboriginal cultural landscape of the Sydney Basin has been irrevocably impacted and, in many places, overwritten by subsequent settlement and urbanisation of the landscape.

There are some significant elements of the pre-invasion cultural landscape that remain, such as Aboriginal rock art that extends across a large part of the region, and this retains a high degree of authenticity and integrity (for example, Section 5.2.1 in Technical paper 9).

The assessment adopted a cultural landscape approach in its consideration of the range and spread of heritage places across the landscape through:

- understanding their vulnerability to the types of likely impacts
- listening to Aboriginal people about which places are regularly used by the community today.

The impact on some of the places identified is discussed in Sections 4.2.2 and 6.4 of Technical paper 9.

Noise criteria

A predicted maximum noise level of 70 dB(A) and above was used in the heritage assessment and was considered an appropriate noise level for assessing heritage items and cultural practices. This is because the N70 contour is typically used to assess day-time noise impacts. A noise level of 60 dB(A) is equivalent to a normal conversation at one metre and was considered to have a more applicable impact on noise impact levels for issues such as amenity and impacts to communities. However, the heritage assessment also took into consideration the predicted maximum noise levels (including those below 70 dB(A)), background ambient noise and the frequency of the noise events in the assessment of potential heritage impacts resulting from the project. The impact level/rating also considered other factors in additional to noise, such as visual intrusion.

16.2.2 Consultation with First Nations people

16.2.2.1 Issue raised

Raised by

Community, Blue Mountains City Council, Susan Templeman MP – Member for Macquarie (Federal), Wollondilly Shire Council

Issue

Submissions queried whether First Nations people had been consulted during the assessment or following the outcomes of the assessment. Submissions expressed the view that there had been insufficient engagement with First Nations knowledge holders and stakeholders, and that they had not been adequately included in the decision-making processes during the design of the preliminary flight paths. Submissions noted that no specific information on the project was available at the time of engagement with First Nations people, and therefore any feedback has been limited.

Submissions requested that a comprehensive and meaningful consultation process be undertaken with First Nations knowledge holders and stakeholders to fully understand the impact on Aboriginal heritage, in particular within the GBMA, and that any issues or concerns raised are adequately addressed in the finalised EIS. Submissions queried if Traditional Owners have been consulted, with reference to the Gundungurra Indigenous Land Use Agreement which applies to land to the west and south-west of WSI, including parts of the GBMA.

Submissions stated that this consultation and further assessment should not be deferred to detailed design.

16.2.2.2 Response

Engagement with First Nations knowledge holders and stakeholders was undertaken during the preparation of the assessment to understand cultural values, the places associated with them and concerns about the potential impacts of the project.

The *Engage Early – Guidance for proponents on best practice Indigenous engagement for environmental assessments under the EPBC Act* (Department of the Environment 2016) (Engage Early) and the *Ask First: A guide to respecting Indigenous heritage places and values* (Australian Heritage Commission, 2002) guideline applied to the engagement completed for the project.

Since the issue of the EIS Guidelines and during the preparation of the Draft EIS, the Australian Department of Climate Change, Energy, the Environment and Water (DCCEEW) released an *Interim Engaging with First Nations People and Communities on Assessment and Approvals under the Environment Protection and Biodiversity Conservation Act 1999* (DCCEEW 2023). This interim guideline updates the Engage Early (2016) guideline. The interim guideline advocates for consultation processes that ensure cultural safety, build and maintain trust, engage often and early, negotiates suitable timeframes, negotiate suitable submission formats. The heritage assessment for the project reflects these principles.

Direct engagement during preparation of the Draft EIS was focused on individuals and organisations amongst the First Nations people that are closest to the Airport Site, being the Dharug, Tharawal and Gundungurra nations (which is the equivalent of the combined lands of the Deerubbin, Gandangara and Tharawal Local Aboriginal Land Councils (LALCs)). This included:

- Traditional Owners, Native Title claimants or Indigenous land use agreement parties
- individual knowledge holders recognised as native title claimants with cultural heritage knowledge
- knowledge holders (descended from other Nations, but who have lived in the area a long time and who have the cultural authority to speak)
- individuals recognised as holding cultural heritage knowledge from previous studies and who are accepted by at least one of the organisations listed below
- LALCs – Deerubbin, Gandangara, Tharawal, Metropolitan and La Perouse LALCs

- Local Government Advisory committees
- other organisations – Murru Mittigar, Darug Tribal Aboriginal Corporation, Darug Custodian Aboriginal Corporation, Dharug Ngurra Aboriginal Corporation, Western Sydney Aboriginal Regional Alliance, Tharawal Aboriginal Corporation, Cubbitch Barta, Gundungurra Tribal Council Aboriginal Corporation, Gundungurra Aboriginal Heritage Association, and Blue Mountains Aboriginal Culture and Resource Centre.

In addition to organisations, individuals with knowledge or interests in the cultural values of the study area were interviewed or contacted with offers to provide feedback. The assessment also considered heritage matters raised during the broader engagement activities completed for the project (such as the community information stalls etc).

Multiple opportunities were provided to connect with the project team and provide input. Over the course of the project, in excess of 120 phone calls, emails, virtual meetings and face to face meetings with First Nations people and organisations were held.

Engagement with First Nations knowledge holders and stakeholders assisted in identifying:

- areas of particular high cultural value
- risks to places of high cultural value and/or cultural practices (including perceived impacts).

Consultation resulted in a list of places of particular cultural value (including within the GBMA) that were specifically considered in the Draft EIS and the design of the flight paths.

First Nations people involved in the project were invited to participate in a dedicated briefing session by DITRDCA on the impacts to places of cultural significance. Following the launch of the online Aircraft Overflight Noise Tool, an online briefing of First Nations people was held and a demonstration of the tool was provided so that they could further explore potential noise impacts. During the briefing the impacts on Yellomundee/Shaws Creek and Bents Basin were both acknowledged and raised as matters of particular concern by participants regarding the potential impact of the project. Further contact was made following the release of the Draft EIS, providing information on the exhibition period, how the Draft EIS could be viewed and how submissions could be made.

The consultation undertaken with First Nations knowledge holders and stakeholders was considered to be comprehensive, meaningful and considered adequate. Further detail on the consultation with First Nations knowledge holders and stakeholders is detailed in Section 3.1.3 of the Technical paper 9.

16.2.3 Historic heritage

16.2.3.1 Issue raised

Raised by

Community, Blue Mountains City Council, Camden Council, Wollondilly Shire Council

Issue

Submissions raised concerns that not all heritage sites were assessed in the Draft EIS, or had been inadequately assessed. Submissions requested that the historic heritage assessment be reviewed to ensure that all potentially impacted heritage listed sites are thoroughly assessed and necessary mitigation measures identified. This included:

- the heritage site ‘Maryland’, which is listed on the State Heritage Register (SHR) and is in proximity to WSI and the preliminary flight paths
- Horsley Homestead (located outside the 10 km study area by 500 metres (m)) which would experience aircraft noise and visual impacts from the project
- sites within Wollondilly and Camden Local Government Areas (LGAs), including State heritage items and items that have been identified as potential State heritage items by a local council heritage study where aircraft noise would exceed 70 dB(A) and/or where aircraft would be at low altitudes

- State and local listed walking tracks, such as those within the Blue Mountains LGA and the GBMA, including consideration of the associated social and other heritage values integral to these listings which are tied to recreation and experience of nature and wilderness.

16.2.3.2 Response

Assessment approach

Historic heritage places were adequately assessed in the Draft EIS. Given the large number of historic heritage places within the study area, an approach to gauge relative impacts was identified. A values-based approach is consistent with the Burra Charter as noted in Section 16.2.1 of this chapter. Areas closest to the Airport Site where aircraft would be lower, and either accelerating or decelerating, were targeted as likely places of higher noise and greater (if any) emissions.

The 5 km and 10 km radiuses identified places where aircraft might be expected to be lower and therefore potentially have a greater impact, however this didn't mean other listed sites were not considered (refer to Sections 4.1 and 5.1.2, and Appendix A1, of Technical paper 9). The robustness of heritage places was also considered in the assessment. For example, a range of historic heritage places and how they might be impacted (including large sandstone buildings, complex buildings comprising a range of building fabrics and heritage gardens) have been included in the assessment (refer to Table 5.3 in Technical paper 9). These places may be considered typical examples for other places in the same locality. For example, potential impacts to Fernhill Mulgoa may be assumed to be applicable to other heritage places within Mulgoa. Refer to Chapter 3 of Technical paper 9 for further detail on assessment approach.

Historic heritage sites

Considering the high number historic heritage places within the heritage study area, a selection of State heritage places were considered in detail as exemplars. These were shown in Table 5.3 of Technical paper 9. The rationale for selecting these examples was included within Section 5.6.1 of Technical paper 9. The specific heritage listed sites raised in submissions are discussed further below.

Heritage site 'Maryland'

State Heritage Register site Maryland (SHR #1690) was included in Technical paper 9 as a site within a 10 km radius of WSI (refer to Tables 4.3 and 5.2 in Technical paper 9). However, it was not selected as an example for further assessment of noise and visual intrusion (Table 5.3 in Technical paper 9). This is because Maryland was considered to be similar to other exemplar items such as Fernhill Estate, Camden Park Estate and Belgenny Farm and Kirkham Stables which were considered in detail in the Draft EIS. In addition, Maryland is not beneath a preliminary flight path, although aircraft may still be seen and heard from the location at a noise level of around 42 dB(A). Maryland was noted in Technical paper 9 (Section 7.1.2) as one of several sandstone properties close to WSI that could potentially be included in a monitoring program aimed at quantifying the impacts of aircraft emissions on sandstone buildings.

Heritage site 'Horsley Homestead'

State Heritage Register site Horsley complex (homestead, outbuildings, garden and farm) (SHR #30) was included in Technical paper 9 (Table 5.1) as a State Heritage Register place under a preliminary flight path. However, it was not selected as an example for further assessment of noise and visual intrusion. The maximum noise level (60 dB(A)) and frequency (8–19 arrivals during the day-evening period) of aircraft over Horsley Homestead is expected to have a low-moderate impact on heritage values. This was considered to be similar to other exemplar items such as Fernhill Estate, Camden Park Estate and Belgenny Farm and Kirkham Stables which were considered in detail in the Draft EIS.

Sites within Wollondilly and Camden LGAs

Within the Wollondilly LGA, the following is noted:

- a list of State Heritage listed places within the Wollondilly LGA was included in Appendix A of Technical paper 9, with the exception of the inclusion of Wilton Park that was incorrectly omitted. The impact to the heritage values of Wilton Park is considered to be low, and Technical paper 9 has been updated in the finalised EIS to include the consideration of this site
- 'Future' State heritage items likely to meet State significance thresholds (as identified by Wollondilly Shire Council) are the Suspension Bridge over Nepean River and Vault Hill Cemetery. These items are not yet recognised as having State heritage significance and are not currently on the State Heritage Register. Items can only be added to the State Heritage Register by the Heritage Council of NSW following assessment against criteria and thresholds. Technical paper 9 has been updated in the finalised EIS to include consideration of these sites
- items of local heritage significance (as identified by Wollondilly Shire Council) include Charleville (I267), Ravenswood (I268), Blaxland's Farm (I269), Warragamba Supply Scheme and Warragamba Emergency Scheme (I270) and Blaxland's Crossing (I289). These items were acknowledged as occurring within a 10 km radius of WSI in Technical paper 9 (Table 5.2), and Technical paper 9 has been updated in the finalised EIS to include the likely impacts from the preliminary flight paths.

Within the Camden LGA, the following is noted:

- State Heritage listed places within the Camden LGA are included in Appendix A1 of Technical paper 9. Of these sites, Camden Park Estate/Belgenny Farm (SHR #01697) and Kirkham Stables and Precinct (SHR #1411) were selected as examples for further assessment of noise and visual intrusion. The assessment found that the likely potential impact was low for Camden Park Estate/Belgenny Farm and negligible for Kirkham Stables and Precinct (Table 5.3 in Technical paper 9)
- the remaining State Heritage Listed places within the Camden LGA are either further away from the Airport Site or not under preliminary flight paths. Therefore, the places would be subject to less direct impacts, and/or are of a type of heritage place that is robust in terms of likely impacts from the project, and/or is not assessed as significant in terms of values that might be vulnerable to impact.

Assessment of Blue Mountains walking tracks

The impact on the heritage values of the walking tracks was considered collectively and generally in the assessment. Tracks (by their very nature) wind through the landscape and in certain areas could traverse exposed and elevated contexts or open valleys, some of which may be under preliminary flight paths. In other areas, they would be situated below ridges, under sandstone overhangs and/or in deep narrow valleys. Many tracks in the Blue Mountains connect Aboriginal sites such as engravings, spiritual sites and shelters with pigment art. A walker would likely need to be in an exposed or ridgetop area under a flight path at the specific time when an aircraft is overhead to experience any potential impact.

Walking tracks within the GBMA have been further considered in Technical paper 10: Social (Technical paper 10) and Technical paper 14: Greater Blue Mountains World Heritage Area (Technical paper 14), and these assessments found that visitors may experience some changes to the use and enjoyment of walking tracks within the Blue Mountains.

People who visit and use walking tracks in the N60 and N70 contours are likely to experience moderate changes to their use and enjoyment (refer to Section 6.2.2 in Technical paper 10). The majority of the broader GBMA is largely outside the area predicted to experience aircraft noise at or above 60 and 70 dB(A) (as per Technical paper 1: Aircraft noise (Technical paper 1)). There are no walking tracks in the GBMA within the N70 contours, however some tracks have been identified to be within N60 contours.

16.3 Aboriginal heritage impacts

16.3.1 General

16.3.1.1 Issue raised

Raised by

Community, Blue Mountains City Council, IUCN, Susan Templeman MP – Member for Macquarie (Federal), The Trustees of Linden Observatory

Issue

Submissions objected or expressed concern about the impact of the preliminary flight paths on Aboriginal heritage sites. Submissions stated that impacts (including air and noise impacts) on heritage sites and Country must be avoided or minimised, and heritage values maintained. Submissions opposed the introduction of flight paths over any Aboriginal cultural heritage sites, and opposed the concentration of flight paths and lack of a curfew over Aboriginal heritage sites.

Submissions commented that Aboriginal heritage sites exist all over the study area, especially in declared wilderness areas in the GBMA, and that impacts to these sites had not been adequately considered. The finalised EIS should acknowledge that all Aboriginal sites hold significance, irrespective of statutory recognition, and hold unique cultural values. Submissions stated that the cost to Aboriginal heritage was not included because a value could not be placed on it and therefore it had not been adequately considered when evaluating the overall impacts and benefits of the project.

Submissions noted that the Draft EIS acknowledged that the project would have a moderate impact on Aboriginal heritage sites but submissions expressed the view that a moderate negative impact on the fragile sites would compound over time to have a severe impact. This included impacts on the physical condition but also the cultural values of these sites and connection to Country. Other submissions expressed the view that all negative impacts on Aboriginal cultural heritage would be severe, irreversible and unacceptable. It was stated that negative impacts to ongoing practices and custodial relationships, which are linked to the conditions of integrity for the GBMA, should be avoided.

Submissions identified that there is insufficient research into the adverse effects of aircraft noise, vibration and air emissions on Aboriginal heritage sites (particularly fragile sites), and the potential impacts are uncertain.

Submissions stated that some of the lesser known sites were not robust and could experience long term, irreversible damage from air and noise emissions from aircraft, and visual impacts.

Submissions also raised concern about the threat of fuel jettisoning on Aboriginal heritage sites.

One submission raised concerns about future increased tourism and the risk to Aboriginal cultural sites. An example provided was the Red Hands Caves Aboriginal site at Glenbrook.

Submissions criticised the statement in the Draft EIS that it is not possible to predict the extent of impacts given the complexity of the terrain and orientation of rock shelters in the GBMA. In this respect, submissions expressed the view that more effort was needed. Submissions also criticised the apparent reliance on the fact that aircraft already fly over heritage sites and that this practice is considered acceptable, given aircraft on WSI preliminary flight paths would be lower.

16.3.1.2 Response

It is acknowledged that all Aboriginal sites hold significance, irrespective of statutory recognition, and hold unique cultural values.

The Draft EIS assessed the impact of the preliminary flight paths on Aboriginal sites, and the assessment found that many types of Aboriginal sites would not be impacted (such as from noise, emissions and visual intrusion) due to the robustness of the objects and aircraft (in most cases) would be at such a distance as to render the impact from these factors as minimal. Generally, places closest to WSI are likely to experience higher impacts. The Draft EIS recognised that

all Aboriginal sites are of cultural significance to Aboriginal people as evidence of the activity of their ancestors. Knowledge holders that were engaged acknowledged that designing flight paths to avoid flying over all Aboriginal sites of cultural value would be impossible, however this was not taken to imply that any impacts were acceptable to the Knowledge holders consulted.

The preliminary flight paths would not physically impact or restrict use of any identified (or currently unidentified) Aboriginal sites. Visual impacts and noise were noted as factors that could potentially affect some Aboriginal sites (particularly within the GBMA) and that this can impact cultural values. In particular, noise was identified as having the potential to disrupt cultural practices. The potential noise and visual intrusion at some high cultural value sites are assessed within Table 5.4 of Technical paper 9. Whilst it was acknowledged in Technical paper 9 that aircraft currently fly over the study area, this was only one input into understanding what the potential impact on Aboriginal sites might be.

Measures have been proposed in the Draft EIS to mitigate the potential impacts identified (refer to Table 7.1 of Technical paper 9). These measures include the detailed design of flight paths considering Aboriginal places and sites of high cultural value (where safe and feasible) (mitigation measure H1), undertaking a research program to investigate the potential impact of aircraft emissions on historic and Aboriginal heritage sites (mitigation measure H2), and establishment of a CACG for WSI to facilitate consultation with stakeholders and communities on a range of matters including heritage issues (mitigation measure H3).

A long-term research program has been recommended in the Draft EIS (mitigation measure H2). It is unlikely that long-term impacts would arise from noise on lesser known sites in the Blue Mountains area. Impacts from aircraft noise would not affect the robustness of sites (such as stone artefacts, Aboriginal rock shelters and art sites), however it was acknowledged that it has the potential to detract from the experience and enjoyment of some sites. Long-term impacts could potentially arise from an accumulation of chemicals (due to air emissions) over-time. This is however considered unlikely, although no quantitative studies have been undertaken that measure the accumulation of chemical compounds on sandstone to rock art pigments from aircraft emissions (refer Technical paper 2: Air quality (Technical paper 2)).

Fuel jettisoning will only be carried out in accordance with appropriate procedures (specifically, the Aeronautical Information Publication Australia, Part 2 – En Route (AIP ENR), as per mitigation measure HR3. All fuel jettisoning would occur at an altitude of at least 6,000 feet (ft) (approximately 1.8 km) above ground level to ensure total dissipation into the atmosphere prior to contacting the ground, except in the case of emergencies (Airservices Australia, 2023c). Most fuel evaporates within the first few hundred metres, and fuel jettisoning occurs only very rarely, and because of this it is unlikely that cultural heritage values of Aboriginal rock art site will be impacted from fuel jettisoning.

Although tourist access is anticipated to increase from the project (particularly the GBMA), it is not expected that this would lead to an increased risk to Aboriginal sites as a result of the preliminary flight paths associated with the project. The *Greater Blue Mountains World Heritage Area Strategic Plan* (NPWS, 2009) provides for the integrated management, protection, interpretation and monitoring of the parks and reserves that make up the world heritage area, including cultural heritage and indigenous values (such as protecting cultural heritage values). International standards and guidance, such as the *ICOMOS International Charter for Cultural Heritage Tourism (2022): Reinforcing cultural heritage protection and community resilience through responsible and sustainable tourism management*, provide frameworks for the management of cultural heritage tourism. Tour operators would also have controls in place to avoid people damaging sites. Direct management of heritage impacts from general tourism is outside the scope of this project.

Many Aboriginal sites are located in protected valleys, and it isn't possible to predict the extent of impacts for many unknown sites due to the complexity of terrain height and orientation of rock shelters in the GBMA. The quality and information on AHIMS site cards varies, and most sites have minimal information recorded. Predicting the potential emission and noise impact on sites requires more information from a representative selection of sites. A simpler and more effective way of determining any impact is selecting a representative range of art sites from various landform locations for a long-term monitoring study (as per mitigation measure H2).

16.3.2 Aboriginal heritage sites

16.3.2.1 Issue raised

Raised by

Community, Blue Mountains City Council, Blue Mountains Conservation Society, Susan Templeman MP – Member for Macquarie (Federal), Trish Doyle MP – Member for the Blue Mountains (NSW), Yanama Budyari Aboriginal Corp

Issue

Submissions identified a range of Aboriginal places, sites or cultural heritage locations when expressing concerns or objections, specifically impacts to:

- the Three Sisters and Echo Point, Katoomba. Submissions requested justification for why impacts were concluded to be low to moderate given the concerns expressed by First Nations people. Submissions noted visual and amenity impacts of the project are considered to be significant and would reduce the significance of this site
- Bents Basin and Shaws Creek Aboriginal Place, and Yellomundie Regional Park. Submissions stated that the Draft EIS has identified severe impact to these locations, and that this impact is unacceptable
- Burragorang Valley, which is a culturally significant area to the Gundungurra people
- Koobawilla (place where stars are reflected in the water) at Belgenny Farm, South Camden
- Bouddi National Park, which has Aboriginal cultural heritage and contains important heritage sites.

Submissions queried why other Aboriginal sites had not been considered in the assessment. Some of these sites (within the Blue Mountains) included:

- Old Man Kangaroo Rock carving in Lawson
- Horseshoe Falls Shelter and Gloria Park Wells, grinding grooves, rock shelter and (potential) rock carving in Hazelbrook
- Ticehurst Park, which has grinding grooves, mundoes (footprints), watering holes and Emu Rock carving in Faulconbridge. Submissions stated that this site also has a connection to the Emu in the Sky constellation
- King's Cave shelter and Linden Ridge Fire Trail axe grinding grooves, carvings, and stone arrangements in Linden.

In raising these issues about specific Aboriginal places and sites, submissions criticised the engagement completed to inform the assessment and conclusions in the Draft EIS. Submissions stated that further engagement is required. This is discussed in Section 16.2.2 of this Submissions Report.

16.3.2.2 Response

The Draft EIS assessed potential impacts to a range of selected Aboriginal sites, and the assessment found that the project would significantly impact the Aboriginal cultural values of Bents Basin and the Shaws Creek Aboriginal Place (due to the position of preliminary flight paths, frequency of overflight and the predicted noise levels). These places are of cultural importance with values associated with peace, tranquillity and connection to nature.

Specific sites noted in submissions that were assessed in detail in the finalised Technical paper 9 included:

- Bents Basin – the impact on cultural values is expected be severe. The predicted noise levels are around 80–85 dB(A)) and there would be around 200 aircraft movement above 60 dB(A) per day due to its close proximity to WSI
- Shaws Creek Aboriginal Place, Yellomundee Regional Park – the impact on cultural values is expected be severe. The predicted noise levels are around 60–65 dB(A)) and there would be around 10 to 20 aircraft movement above 60 dB(A) per day (by 2055) due to its proximity to WSI

- Emu Rock Engravings, Faulconbridge (including a site at Ticehurst Park) – the impact on cultural values at the engraving sites located at Faulconbridge is expected be moderate. At Ticehurst Park, the predicted noise levels would be around 60–65 dB(A)) and there would be 10 to 19 aircraft movement above 60 dB(A) per day by 2055. The Emu in the Sky constellation is strongest around March to April, and would likely be impacted by night-time flights during this time
- the Three Sisters – the impact on cultural values is expected be low to moderate given the altitude of the aircraft and predicted noise level. The site has the potential to be impacted by visual intrusion, however the predicted noise levels are low (around 50–55 dB(A)) and there would be no aircraft movement at or above 60 dB(A).

Further detail on the estimated noise and visual intrusion for these sites can be found in Table 5.4 of Technical paper 9. A proposed mitigation measure addressing concerns raised in submissions is for the detailed design phase to consider Aboriginal cultural places and values, where safe and feasible (H1).

Other sites or locations noted in submissions included:

- Burragorang Valley – impacts across this area were discussed with First Nations people using large scale photos. A number of preliminary flight paths overlap across part of the valley (for example, north of Nattai) and the altitude of aircraft would range from 5,000 to 20,000 ft (1.5 km and 6 km) above the ground surface. Noise is predicted to not exceed 65 dB(A)
- Koobawilla – this site is not beneath a preliminary flight path, although it is located in a departure transition area (meaning aircraft could overfly this area). This site has a predicted noise level of around 42 dB(A). There is expected to be no disruption to the Aboriginal values associated with the reflection of the stars
- Bouddi National Park – part of the park would be overflown by a preliminary flight path (Runway 05 Departure North-east (non-jet) Day). Aircraft are expected to be at a height of around 20,000 ft (6 km) above runway level, and the frequency of flights would be low. The impact to the park is expected to be negligible to low.

Some Aboriginal sites were raised in submissions as not having been considered in the assessment. The Emu Engravings at Faulconbridge/Ticehurst Park has been discussed above, and the other sites included:

- Old Man Kangaroo Rock carving in Lawson
- Horseshoe Falls Shelter and Gloria Park Wells, grinding grooves, rock shelter and (potential) rock carving in Hazelbrook
- King's Cave shelter and Linden Ridge Fire Trail axe grinding grooves, carvings and stone arrangements in Linden.

While the sites listed above were not separately considered in the assessment, there was assessment of the project's impact on Aboriginal rock art sites within the study area and this includes rock art in the Blue Mountains. Section 5.4.5 of Technical paper 9 sets out this assessment. The first 2 sites occur around ridgetops in the Blue Mountains, and the key risk is the unknown impact of emissions on sandstone-based art sites (refer Technical paper 9, Section 5.4.5). The last site relates to several different types of sites, including a listed heritage walking track. Assessing impacts to walking tracks is complex due to the length of the tracks and the varied topographic contexts (discussed in Section 16.2.3 of this chapter). Emissions resulting in chemical/pollutants being deposited on the ground are expected to be negligible (as per Technical paper 2). While the rock shelter is unlikely to be impacted by emissions (as it is protected by an overhang), the impact of even minor deposits from emissions on the grinding grooves and/or other horizontal sandstone surfaces is unknown. The visual and noise disruption at these sites would be moderate, increasing to severe as the frequency of overflight increases over time.

The Draft EIS has adopted a precautionary view as no known studies of the impacts of aircraft emissions on rock art (including painted, abraded and/or engraved sandstone surfaces) have been undertaken in Australia. A long-term study has been recommended in the Draft EIS (mitigation measure H2).

16.3.3 Aboriginal community values

16.3.3.1 Issue raised

Raised by

Community

Issue

General

Submissions commented on the impact of the preliminary flight paths on First Nations people and their relationship to Country. Submissions stated that:

- all cultural heritage sites are highly significant and integral to culture and wellbeing
- impacts on cultural values and connection to Country for Aboriginal nations have been ignored, had not been considered or adequately considered in the airspace and flight path design, or in the impact assessment
- the impacts of the project are inconsistent with caring for Country
- impacts to First Nations people would be significant.

Submissions expressed concern that the project would impact cultural values, cultural activities, knowledge sharing and connections with ancestors, the peace and tranquillity of these sites, and spiritual connections for custodial responsibilities. Particular concerns related to specific places (such as Shaws Creek Aboriginal Place) as well as sites of cultural importance to Dharug and Gundungurra people.

Submissions stated that cultural and spiritual practices hold quiet and undisturbed natural areas in high regard, and that preserving low noise environments is essential for respecting cultural heritage and spiritual connections to the land. Excess and constant noise impacts in areas that are normally remote or quiet would impact these cultural activities and connection to Country.

Submissions also stated that impacts to the environment (flora, fauna, water quality) by the project would impact cultural values and connections to Country.

Disruption to land-sky connection, and the Emu in the Sky constellation

Submissions stated that the project would disrupt or sever the land-sky connection and Sky Country, and/or that the Draft EIS had not adequately considered or disregarded this potential impact.

Submissions expressed concern with or strongly objected to the potential disruption to the Emu in the Sky constellation, and impacts to sites associated with the constellation (such as the Emu in the Sky site at Faulconbridge). Submissions commented that the Emu in the Sky constellation is of very high importance to many Aboriginal nations and that land-sky connections and Dreaming would be lost due to the high concentration of flights in one area and the lack of a curfew. Submissions also stated that not enough recognition had been given to the impact of aircraft contrails on viewing the Emu in the Sky constellation.

Submissions commented on the Aboriginal songlines and the impact the proposed flight would have on these. It was noted in the submissions that stars reflect Aboriginal songlines in the sky and people would follow those reflections on the ground.

16.3.3.2 Response

General

The Draft EIS has considered the impact of the preliminary flight paths on First Nations people and their relationship to Country, and the assessment found that noise (if and where it occurs) is a potential detrimental factor and visual intrusion is an impact, especially on places that are regularly used by Aboriginal people for a variety of reasons (such as spirituality and education).

The assessment recognised that all Aboriginal sites have cultural value for First Nations people. Several places of particular cultural value/significance to Aboriginal stakeholders were identified during the assessment consultation activities and these sites were considered in the design of the flight paths. The assessment considered:

- cultural values related to concepts of peace, tranquillity, connection to nature
- spiritual/dreaming cultural values
- places of memory and family experiences.

The preliminary flight paths would not physically impact or restrict use of an Aboriginal site. However, it is acknowledged that noise and visual intrusion could potentially impact some Aboriginal cultural values. Noise, in particular, has the potential to disrupt cultural practices at a site, which could lead to its use being discontinued. Due to the position of preliminary flight paths, frequency of overflight and the predicted noise levels, the project would significantly impact the Aboriginal cultural values of Bents Basin, the Shaws Creek/Yellomundee Aboriginal Place, and Linden Ridge sites which are places of cultural importance (discussed in Section 16.3.2 of this chapter). Impacts to other key sites of cultural significance identified through engagement would have low to moderate impacts due to noise and/or visual intrusion.

Shaws Creek/Yellomundee Aboriginal Place and Bents Basin will be taken into account in detailed design of flight paths (mitigation measure H1). In additional to the heritage mitigation measures (summarised in Section 16.3.1 of this chapter), Technical paper 1 includes aircraft noise mitigation and management measures identified for the project.

Impacts to the environment, such as flora, fauna and water quality, has the potential to impact cultural values and connection to Country. However, the project is not likely to have significant impacts (residual or otherwise) in relation to biodiversity. There would be no direct impacts, such as vegetation removal, on biodiversity values (other than wildlife strike leading to mortality). Indirect impacts associated with the project include potential changes to noise, light, air quality, water quality and ecosystems associated with aircraft overflight, and most indirect impacts have been assessed as minor or negligible in severity (refer to Technical paper 8: Biodiversity (Technical paper 8) for information on impacts to biodiversity values from the project).

Disruption to land – sky connection, and the Emu in the Sky constellation

The importance of Aboriginal sites that are connected to stories that link places on the land with the stories about the constellations such as the Emu in the Sky sites at Faulconbridge are acknowledged in the finalised EIS.

Knowledge holders consulted as part of the project stated that around March and April was the most important time for the connection between the emu and the sky and the engraving site at Faulconbridge. Two sites connected to the Emu in the Sky are located at Falconbridge. One site is not directly under a preliminary flight path, however the location is close to a proposed departure transition area for WSI which means it could be overflown. The other site is located at Ticehurst Park, which would be directly overflown by 5 flight paths. The predicted noise levels would be around 60–65 dB(A)) and there would be 10 to 19 aircraft movement above 60 dB(A) per day by 2055.

The assessment presented in the Draft EIS recognised that the intrusion of aircraft overhead at these sites could potentially result in detrimental indirect impacts to the cultural values of this site. The impact on cultural values at the engraving sites at Falconbridge are expected be moderate. The Emu in the Sky constellation is strongest around March to April, and would likely be impacted by night-time flights during this time.

DITRDCA will ensure that the detailed design phase considers Aboriginal cultural places and values, including the Emu in the Sky, noting that safety is not negotiable and that capacity, environment and efficiency factors must also be considered in the flight path design. This mitigation measure is listed as H1 in Table 24.1 of the Draft EIS.

The issue raised in submissions that stars reflect songlines is a very general comment. Songlines may relate to specific constellations, however avoiding all actions under stars would be impossible and would mean that no activity would occur anywhere in the sky. An example where songlines have been considered in the Draft EIS is at Bents Basin and the story of the Guranty (also known as Gurungadge or Gulguer), which means whirlpool or spinning. The basin is home to this dangerous aquatic creature, and is part of a long creation story that links places in the journey from the south coast through the southern highlands and across the GBMA to the western side of the mountains near Fish River (refer Section 4.2.2 of Technical paper 9). First Nations people continue to recount these Dreamtime stories and to teach their children to respect the place created by these beings. The spiritual and dreaming/contemporary teaching cultural values of Bents Basin have been considered in the assessment (refer to Table 5.4 and Appendix B1 of Technical paper 9) and would apply to other culturally sensitive areas.

16.4 Historic heritage impacts

16.4.1 General

16.4.1.1 Issue raised

Raised by

Community

Issue

Assessment approach

As identified in Section 16.2.3, submissions expressed concern that the heritage assessment had not considered or inconsistently considered impacts to all potentially impacted heritage items. Submissions disagreed with the conclusions that impacts to items beyond 10 km would not be anticipated as these sites are already overflown by other aircraft activity, as this had not accounted for the fact that WSI aircraft would be more frequent and at lower altitudes.

Continuation of uses

Submissions expressed the view that impacts of the project could risk the continuation of uses of heritage buildings, due to:

- impacts of aircraft noise, for example at Luddenham
- the impacts to the Blue Mountains economy.

Submissions raised concerns that the Draft EIS would impact heritage buildings (fabric) and/or gardens due to aircraft emissions, and/or that no consideration was provided to avoid or minimise these impacts.

Issues concerning impacts to the World Heritage Area values or listing have been captured in Chapter 23 (Other issues) of this Submissions Report.

16.4.1.2 Response

The Draft EIS assessed the impact of the preliminary flight paths on historic heritage sites, and the assessment found that many types of heritage sites would not be impacted (such as from noise, emissions and visual intrusion) due to the robustness of the objects and aircraft (in most cases) would be at such a distance as to render the impact from these factors as minimal. Generally, places closest to WSI were predicted as likely to experience higher impacts. Outside the GBMA, there were no discernible impact on the cultural values of nationally listed places identified.

Many historic properties are located in town centres. The flight path design principles sought to avoid population centres and have worked to protect such places from significant impacts, although in some cases aircraft may still be visible in the distance or would be heard. At greater distances from WSI, noise and visibility of aircraft begins to diminish, and emissions are likely to disperse and be less concentrated.

Assessment approach

Historic heritage places were assessed in the Draft EIS, and the assessment identified an approach to gauge relative impacts. It is acknowledged that there are a large number of historic heritage places within the study area. The 5 km and 10 km radiuses identified places where aircraft might be expected to be lower and therefore potentially have a greater impact, however this did not mean other listed sites were not considered. Whilst it was acknowledged in Technical paper 9 that aircraft currently fly over the study area, the assessment also took into account the frequency and altitudes of aircraft using WSI preliminary flight paths (refer to Section 16.2.3 of this chapter for further detail on the assessment approach).

Continuation of uses

Aircraft noise

It is anticipated that users of heritage buildings within noise contours (such as in Luddenham) may experience some changes to the use and enjoyment of the space. Impacts due to tangible and intangible impacts on non-Aboriginal cultural heritage were considered in Technical paper 10, and the assessment found that while some noise (and visual) impacts may impact the way people enjoy historical places, it is very unlikely this would cause severe impact to non-Aboriginal cultural values. In particular, the impact from noise depends on the frequency of repeated high decibel occurrences and a consideration of the ambient or background noise. It is not expected that heritage buildings and their uses would be discontinued as a result of potential noise (and visual) impacts from the project and technical interventions (to some extent) such as double glazing may assist in reducing noise within buildings.

Blue Mountains economy

Although tourist access is anticipated to increase from the project (particularly the Blue Mountains), it is not expected that this would lead to an increased risk to historic heritage sites, such as visitor damage as this would already be managed through effective tourism management strategies, interpretation planning, and visitor management and monitoring of heritage places. Potential impacts to the Blue Mountains economy is not expected to result in heritage buildings and their uses being discontinued.

The preliminary flight paths of the project have the potential to affect the tourism industry both positively (through increased tourist access) and adversely (if it results in loss in amenity to sensitive land uses). While the location of the preliminary flight paths over significant tourist destinations, in particular some sites in the Blue Mountains, has the potential to negatively affect the amenity of tourist experiences in the area (either through the visual intrusion of aircraft or the noise they would generate), the location and access to an international airport closer to these destinations is also expected to provide a boost to this industry.

Further discussion regarding the potential economic impacts of the project on the Blue Mountains is provided in Chapter 18 (Economic) of this Submissions Report.

Heritage buildings and gardens

Potential impacts to the fabric of heritage buildings and/or heritage gardens have been considered in the assessment:

- heritage gardens:
  - the potential noise and visual impacts on the Everglades gardens (SHR #1498) was considered in the assessment (as an example of a heritage garden), and found that the impacts are expected to be low (refer to Section 5.6.1 and Table 5.3 in Technical paper 9). The site is not beneath a preliminary flight path, although it is located in a departure transition area (meaning aircraft could overfly this area). Other gardens are also mentioned in the assessment, and it is acknowledged that heritage gardens are an important element of many Blue Mountains heritage properties

  - climate change impacts on the heritage gardens of the Blue Mountains are not well understood (refer to Executive Summary and Section 6.2 in Technical paper 9). A program of monitoring and research is recommended to quantify and understand the impact of aircraft emissions on heritage gardens in the Blue Mountains, including the cumulative impact of stress from emissions and climate change in the area (refer to Section 7.1.2 in Technical paper 9).
- heritage fabric of buildings and structures:
  - the likely slow acting and moderate (but unknown and potentially irreversible impacts) on some fabric is acknowledged throughout Technical paper 9
  - a program of monitoring and research has been recommended to better understand the impacts of emissions on the fabric of heritage buildings and structures (refer to Section 7.1.2 in Technical paper 9).

16.4.2 Historic heritage sites and places

16.4.2.1 Issue raised

Raised by

Community

Issue

Submissions raised objection to or concerns that the preliminary flight paths would impact numerous non-Aboriginal heritage items and that these sites require protection from potential impacts. This included:

- townships that have heritage value or contain heritage items, such as Luddenham, Wallacia, Mulgoa, Mount Wilson and Kurrajong Heights
- listed heritage items within the Blue Mountains, such as the Hydro Majestic at Medlow Bath, items or areas associated with the European explorers as well as heritage items associated with the GBMA, due to aircraft noise or visual intrusion
- Linden Observatory, due to the effects of aircraft lights, turbulence, and contrails on observations (a State heritage item). Submissions expressed concern that the State heritage status of this site would be impacted as a result.

16.4.2.2 Response

Impacts to heritage townships

Townships have not been considered as heritage items in their entirety as they haven't been assessed against the accepted heritage significance criteria and found to meet the thresholds for local and/or state heritage significance. Some townships hold clusters of significant heritage items, and the impacts experienced by a specific item may also be assumed to relate to other similar properties in the town. For example (from Section 5.6.1 of Technical paper 9), Fernhill Estate is located in Mulgoa, and the village of Mulgoa and surrounds have a number of items of local and State significance. Potential impacts on Fernhill Estate are considered similar to other nearby heritage places.

Luddenham

There is one site of local heritage significance in the suburb of Luddenham listed in the Penrith Local Environmental Plan (LEP) 2010 (Penrith City Council, 2010), being the Luddenham Road Alignment (#843) (refer to Technical paper 9, Table 6.2). This site is of a type that is relatively robust from potential impacts from the project (such as noise, visual intrusion and emissions). It is a built structure (road) and comprises modern asphalt with no remnants of the original road visible (Extent Heritage 2020).

There are also several heritage sites in Luddenham Village listed in the *State Environmental Planning Policy (Precincts – Western Parkland City) 2021* (NSW), and Technical paper 9 has been updated in the finalised EIS to include the consideration of these sites. Impacts to these heritage properties would range from no impact to moderate impact, depending on the values for which the places are listed, and the indirect visual and noise impacts from the project, noting that not all heritage properties are directly overflown.

The exception is for the heritage listed Luddenham Public School. The continuous use as a school forms part of its heritage value. Noise disruptions during the day would be frequent and are expected to increase in frequency over time, noting the internal noise levels would be dependent on the condition of the building fabric and/or recent additions/modifications to the buildings. The impact of high noise events on the heritage value is assessed as moderate to severe, depending on modifications that the asset owner may implement in response to aircraft noise. Any such modifications would be subject to heritage approvals.

Kurrajong Heights

Kurrajong Heights is overflown by two preliminary flight paths (Runway 05 Arrival North night and Runway 05 Arrival (RNP) North night). When Runway 05 is in use during the overnight period, aircraft would be descending between 10,500 ft (3.2 km) and 8,000 ft (2.4 km) above runway level at Kurrajong Heights. An average of 3, up to a maximum of 8, arrivals could overfly this location during the overnight period. There are several sites in Kurrajong Heights of local heritage significance listed in the Hawkesbury LEP 2012 (Hawkesbury City Council, 2012). Each of these sites falls outside the N60 noise contours and single event noise contours for WSI, however aircraft may still be seen and heard from the sites at a predicted noise level of around 42 dB(A). For this reason, the impact on the heritage values of these places has been assessed as negligible to low. There are no State significant or Nationally listed heritage places in this area.

Mulgoa

Mulgoa is a historic rural village with several significant historic heritage properties, such as Fernhill Estate and St Thomas's Church. These properties are overflown by preliminary flight paths (Runway 05 Arrival East Day, Runway 05 Arrival North Day and Runway 05 Departure South Night) at relatively low altitudes. The noise level is predicted to be a maximum of 70 decibels during a typical overflight by the aircraft types expected to use WSI. There are also several sites of local heritage significance within Mulgoa listed in the Penrith Local LEP 2010 (Penrith City Council, 2010). Given the aircraft altitude and aircraft noise, Fernhill and other heritage places at Mulgoa would be subject to moderate impacts to any heritage values that are associated with the tranquillity of rural settings, and indirect impacts to the fabric of heritage buildings where noise mitigation measures are introduced such as double glazing and insulation. The heritage impacts of such changes to State Heritage Register listed items will be managed through the standard requirements for permits and assessment under the *Heritage Act 1977* (NSW). Several of the heritage places are sandstone buildings and Technical paper 9 noted that whilst emissions are considered unlikely to meet the ground surface, a precautionary approach is recommended because the long-term and cumulative effects of aircraft emissions on architectural sandstone buildings in Australia has not previously been investigated. To address this a long-term research program has been recommended in the Draft EIS (mitigation measure H2).

Wallacia

Wallacia would be overflown by 4 preliminary flight paths at relatively low altitudes. There are several sites of local heritage significance within Wallacia listed in the Penrith LEP 2010 (Penrith City Council, 2010), including the Luddenham Homestead and archaeological site (#A849), and these sites have been identified as being listed on a statutory list within a 10 km radius of WSI (refer to Table 5.2 in Technical paper 9). Further assessment has been presented in the finalised EIS and Technical paper 9 (refer to Appendix D of the technical paper). Impact to the majority of the heritage places at Wallacia range from no impact to moderate impact depending on the type of heritage values for which the properties are listed, with the exception of Wallacia Public School. Similar to Luddenham Public School, the impacts to this place would depend on internal noise levels which are dependent on the condition of the building fabric and/or additions/modifications to the buildings.

Mount Wilson

Mount Wilson would be overflown by 2 preliminary flight paths at altitudes of between 17,500 ft (5.3 km) and 20,000 ft (6 km) above runway level, and is also located in an arrival transition area (meaning aircraft could overfly this area). There are several sites of local heritage significance within Mount Wilson listed in the Blue Mountains LEP 2015 (Blue Mountains City Council, 2015). Each of these sites falls outside of the N60 noise contours for WSI, however aircraft may still be seen and heard flying to and from WSI at a noise level of around 60 decibels. As the sites are not predicted to experience sustained or regular aircraft noise exceeding 60 decibels, the impact on the heritage values of these places has been assessed as negligible to low.

Heritage listed items in the Blue Mountains

Whilst the GBMA is listed for its World and National values, historic heritage values/places are not explicitly listed. Nevertheless, there are many places of known local heritage significance and some of state heritage significance within the GBMA.

Within the study area there are 28 places on the State Heritage Register that occur within the Blue Mountains LGA, which reflects the rich history of the area. There are also sites of local heritage significance within the Blue Mountains. Some cultural values are sensitive to additional aircraft noise, and the frequency of flights can exacerbate this. This applies to the GBMA and those heritage places within it that are valued for their serenity and their ability to connect people to the spirituality of nature. The significant value of other heritage places lies primarily in the fabric of the building or structure and such values will not be impacted directly by noise. The degree to which the fabric of heritage places will be directly impacted by aircraft emissions is expected to be low as it is anticipated that few (if any) emissions will reach the ground surface. The Draft EIS recommended a long-term research program to gather quantitative data on this possible impact (mitigation measure H2).

Given the large number of historic heritage places within the study area, an approach to gauge relative impacts was identified. A values-based approach is consistent with the Burra Charter as noted in Section 16.2.3 of this chapter. Historic sites identified as exemplars are listed in Section 5.6 of Technical paper 9, and the reasons for the selection of these sites. The Hydro Majestic and the Linden Observatory are identified in Technical paper 9, but were not carried forward as exemplar sites. These are considered further below.

The Hydro Majestic

The Hydro Majestic is overflown by a preliminary flight path (Runway 05 Departure West Day), and is also located in a departure transition area. When Runway 05 is in use during the day-evening period, aircraft will be climbing between 17,500 ft (5.3 km) and 20,000 ft (6 km) above runway level, with an average of 5, up to a maximum of 11, departures that could overfly this location.

Aircraft from preliminary flight paths would be at relatively high altitudes over the Hydro Majestic, and the site is not located within the N60 or N70 noise contours. For this reason, the heritage values of this property would not be negatively impacted by the project. Road traffic noise (including heavy vehicle noise) is currently an issue, and internally (in the publicly assessable areas) noise mitigation measures are in place due to the traffic noise.

Linden Observatory

The Linden Observatory (SHR #1807) is a unique heritage place used as a dark sky site by amateur astronomers, and is managed by a private trust.

Further assessment of the impacts to activities at this observatory was completed as part of this Submissions Report and is presented in Section 17.5.1 of this Submissions Report. This found that most of the activities at the Linden Observatory (SHR #1807) should still be able to occur, potentially at a reduced capacity. Most of the impacts of the project would require a temporary pause in activities on a given night and/or adaptation to activities conducted at the site. The light emitted by passing aircraft is short-term with the sky reverting to being dark once the aircraft passes. The entire sky would not be impacted.

The heritage impact to the Linden Observatory from the preliminary flight paths is expected to be moderate. The listed values of the Linden Observatory do not include the dark sky. While there would be some intermittent impact to the dark sky, the project is not anticipated to result in the loss of the State Heritage listing for this item or significantly diminish the significant values for which the site is recognised.

16.5 Mitigation and management

16.5.1 Aboriginal heritage

16.5.1.1 Issue raised

Raised by

Community, Blue Mountains City Council, Camden Council

Issue

Submissions stated that the proposed mitigation and management measures were too general and generated uncertainty in how sites of spiritual or high cultural significance would be protected and monitored. Submissions requested that the finalised EIS contains specific mitigation measures for sites that could be impacted by the project. This includes Koobawilla at Belgenny Farm in South Camden.

Submissions criticised mitigation measure H1 (refer to Chapter 24 of the Draft EIS), which notes that detailed design phase consideration of Aboriginal cultural places is subject to safety, which is not negotiable, and would also consider capacity, environment and efficiency factor. This could mean that Aboriginal values, places and sites would be overridden by business needs. Submissions also criticised that this was being considered during detailed design, that proactive measures should be implemented to avoid or minimise impacts, or that preliminary flight paths should be changed now to achieve these outcomes. Sites referred to in submissions included Shaws Creek Aboriginal Place.

Submissions requested further detail on the proposed research program outlined in mitigation measure H2 and what this would entail, including what response would occur if damage was identified. Submissions expressed concern that this program would not commence until 2026 and impacts would have already started to occur, while others supported the inclusion of the research and monitoring program.

Submissions also requested that the finalised EIS should include:

- strategies to minimise impacts to the land-sky connection and other important cultural sites due to the visual intrusion of aircraft
- strategies to minimise noise impacts and evaluate impacts on cultural activities and connections to Country
- measures to address environmental impacts to Country in connection to impacts to flora, fauna, and waterways
- measures to mitigate aircraft emission impacts on rock shelter sites.

16.5.1.2 Response

In most cases the flight path design has sought to avoid impacts on Aboriginal Places. The design of the flights paths (described in Chapter 6 (Project development and alternatives) of the Draft EIS) has been an iterative process with consideration given to significant cultural places and the values which might be impacted by aircraft flying overhead. It is acknowledged that several sites of particular significance to Aboriginal stakeholders would be indirectly impacted by the project. It was further acknowledged by the Aboriginal knowledge holders engaged as part of the Draft EIS that designing flight paths to avoid flying over all Aboriginal sites of cultural value would be impossible.

Further consideration has been given in the Draft EIS to avoid and minimise impacts on Aboriginal cultural heritage during detailed design and operation through proposed mitigation measures H1, H2 and H3 set out on pages 24-9 and 24-10 in Chapter 24 of the Draft EIS.

Mitigation measure H1

Mitigation measure H1 requires DITRDCA to ensure that the detailed design phase considers Aboriginal cultural places and values, noting that safety is not negotiable and that capacity, environment and efficiency factors must also be considered in the flight path design. This includes (but not limited to) Aboriginal Places or sites such as Emu Cave Aboriginal Place, Emu Engraving sites in Faulconbridge, Linden Ridge sites, Euroka Clearing Nye Gnorang and Shaws Creek in Yellomundee Regional Park. However, it is acknowledged that it is unlikely with respect to the Bents Basin site that any changes to the flight paths design would be able to effectively mitigate the impacts on the cultural values of this place due to its position relative to the Airport Site and runway alignment. Koobawilla at Belgenny Farm was specifically mentioned in submissions, and, as discussed in Section 16.3.2 of this chapter, there is expected to be no disruption to the Aboriginal values associated with the reflection of the stars.

Submissions criticised the qualifications in mitigation measure H1, however the primary consideration in designing flight paths and an airspace system must be the safety of air navigation. The *Air Services Act 1995* (Cth) requires that Airservices Australia "in exercising its powers and performing its functions, must regard the safety of air navigation as the most important consideration." The safety of air navigation ensures the safety and protection of aircraft passengers and communities under the flight paths.

Notwithstanding the above, Aboriginal knowledge holders who were consulted in the assessment of the project have remained clear that they are concerned about possible impact of emissions on rock art in the Blue Mountains area and do not find the likely impacts to Bents Basin and Yellomundee to be acceptable. They have confirmed that they would like to be involved in and to see the results of the proposed research and monitoring program (mitigation measure H2) and for DITRDCA to take measures to avoid Bents Basin, Yellomundee and the sites listed in Section 7.1.1 of Technical paper 9 during detailed design (mitigation measure H1). Aboriginal knowledge holders will be involved in and see the results of the proposed research and monitoring program (mitigation measure H2). DITRDCA will seek to minimise effects of flight paths on Bents Basin, Yellomundee and the sites listed in Section 7.1.1 of Technical paper 9 during detailed design, noting the other factors that must be taken into consideration, including safety.

Mitigation measure H2

WSI is scheduled to begin operations in 2026 and the likelihood of air emissions potentially resulting in impacts to Aboriginal rock art sites is generally considered to be minimal. However, it is recognised that even minimal impacts on irreplaceable heritage places may accumulate over time. For this reason, a research program has been proposed as a precautionary approach. Baseline studies would also be conducted prior to WSI operation. The timing of mitigation measure H2 is therefore considered appropriate.

This research program would include the collection and analysis of data over a multi-year period, and it is proposed that a number of Aboriginal sites would be identified as monitoring sites (such as Aboriginal rock engraving sites and Aboriginal rock shelter with art). It would commence prior to flights commencing to gather baseline data and would investigate:

- the potential impact of acid rain and acidic aerosols derived from WSI aircraft emissions on rock art
- the potential impact of rock art surface micro-nutrients and chemicals derived from WSI aircraft emissions on rock art
- the potential impact of airborne dust derived from WSI aircraft emissions on rock art surfaces.

Monitoring of emissions from the project and potential impacts would extend over a period of at least 5 years.
The monitoring program would include:

- locations and impact closest to WSI and within the GBMA
- control sites and baseline conditions (pre WSI operational baseline and control studies)
- monitoring of rain acidity (and its precursors NOx and SO_2) both prior to and following airport. This will assist in determining if this is a significant issue for their conservation management
- an annual assessment of the condition of rock art at the selected monitoring sites along with a photographic record that allows a multi-year comparison of condition

- a program of dust monitoring, including the conduct of baseline studies, to determine dust deposition prior to and during WSI operation. The management of dust deposition on rock art panels includes a number of directly effective strategies, including reversal of impact
- the integration of Aboriginal stakeholder consultation and participation, which is recognised as being a critical and necessary factor in the design and conduct of the monitoring and research program. Actions will need to be compatible with cultural values and focused with reference to traditional owner knowledge and priorities.

The results of the research would provide valuable information to guide future decision making in relation to flight paths. This information would feed into future design and planning of the Sydney Basin flight paths and condition assessments of Sydney Basin rock art. For further detail on the monitoring program refer to Section 7.1 in Technical paper 9.

Other measures

Separate mitigation measures have been identified to manage risks of fuel jettisoning, wildlife strike and aircraft noise, and further detail on these measures can be found in Chapter 24 of the Draft EIS. Consideration of aircraft noise on cultural practices would be a relevant consideration in mitigation measure H1.

No additional mitigation measures to address flora, fauna and water quality are considered necessary.

16.5.2 Historic heritage

16.5.2.1 Issue raised

Raised by

Community

Issue

Submissions expressed the view that further consideration must be given to avoid and minimise impacts on non-Aboriginal heritage items, including Maryland, Horsley Park, Linden Observatory and items within the Blue Mountains. This related to aircraft noise, aircraft emissions and visual intrusion of aircraft, and requests for preliminary flight paths to be adjusted.

Submissions also stated that the Draft EIS acknowledged that heritage items within the Blue Mountains are valued for their serenity and the ability for people to connect to nature, which would be impacted by the frequency of flights but approaches to address these impacts has not been considered further.

16.5.2.2 Response

The design of the flight paths has been an iterative process with consideration given to significant cultural places and the values which might be impacted by aircraft flying overhead. The preliminary flight paths have been designed according to the flight path design principles, the first of which states overflights of residential areas and noise sensitive facilities will be avoided to the maximum extent possible.

Many historic heritage items are clustered in residential areas (such as Katoomba), and are to the extent possible avoided by the preliminary flight paths. It is acknowledged that designing flight paths to avoid flying over all historic heritage sites would be impossible.

Further consideration has been given in the Draft EIS to avoid and minimise impacts on historic heritage items and places during detailed design and operation (refer to Table 7.1 of Technical paper 9).

Mitigation measure H2

Similar to Aboriginal heritage, mitigation measure H2 recommends the implementation of a research and monitoring program to investigate the potential impact of aircraft emissions on the fabric of historic sites, in consultation with Heritage NSW, including:

- the potential impact of acid rain and acidic aerosols derived from WSI aircraft emissions on the fabric of heritage buildings, including on timber, stonework paint finishes and roofing materials
- the potential impact of micro-nutrients and chemicals derived from WSI aircraft emissions on stonework, lime mortars and timber fretwork
- the potential impact of airborne dust derived from WSI aircraft emissions on heritage structure surfaces.

The research program would commence prior to flights commencing to gather baseline data and include:

- several sites under or close to flight paths and several control sites outside flight paths
- pre WSI operational baseline and control studies
- commence as soon as possible and before the commencement of flights to and from WSI, and extend over a period of at least 5 years
- make recommendations about appropriate mitigation and management strategies (where significant and or cumulative impact from WSI operation is detected).

The inclusion of potential monitoring sites, such as Maryland or Horsley Homestead, would be determined in consultation with Heritage NSW and property owners.

A whole-of-basin flight path review is scheduled for 2030, and information from the research program would contribute to future decision-making regarding flight paths.

Linden Observatory

As discussed in Section 17.5 of this Submissions Report, users of the Linden Observatory would need to adapt some operations due to the presence of WSI preliminary flight paths, and that the introduction of flight paths should not prohibit the ability to obtain Night Sky accreditation at the level proposed. No further mitigation is proposed.

Aircraft noise

For some historic properties, especially those in rural contexts where night-time noise has been low, noise may be a consideration for historic buildings that are used as residences. Aircraft noise mitigation and management measures have been recommended for the project, including measures relating to flight path design, communication and noise complaints. Further detail on these measures can be found in Chapter 24 of the Draft EIS, and Technical paper 1.

Visual intrusion

Historic heritage sites have been considered in Technical paper 7: Landscape and Visual Amenity (Technical paper 7). This technical paper identified places on the State and local heritage registers, and heritage is a component of the landscape character sensitivity levels and landscape and visual impact assessment. Mitigation measures for visual impacts have been incorporated into the project. The design of the flight paths aimed to minimise noise and other environmental impacts, including visual impacts. No further mitigation is proposed.

Social values

The Draft EIS acknowledged that the Blue Mountains and many Indigenous and historic places within it are valued for their serenity and their ability to connect people to the spirituality of nature. The Draft EIS found (Technical paper 10) that while some noise and visual impacts would impact the way people enjoy historical places, it is very unlikely this would cause impact to non-Aboriginal cultural values. No further mitigation is proposed.

Chapter 17 Social

This chapter provides a response to the issues raised in submissions specific to Chapter 18 (Social) of the Draft EIS.

Submissions expressed concern or objected to the project on the grounds of social impacts. This spanned concerns relating to impacts on the way of life, surroundings, and community as well as impacts to health, wellbeing and livelihoods. Submissions were also critical about the impact assessment approach and mitigation measures identified in the Draft EIS.

The assessment methodology completed for the project responded to the EIS Guidelines issued for the project and was guided by the NSW Department of Planning and Environment's Social Impact Assessment Guideline for significant projects 2023 and Airservices Australia's *Environmental Management of Changes to Aircraft Operations – National Operating Standard* (National Operating Standard) (NOS) (Airservices Australia 2022a). The assessment has considered a range of actual and perceived impacts on a broad range of the social and community issues, including changes to community composition, inequality and vulnerability, way of life, livelihoods, health and wellbeing.

The social impacts identified in submissions are primarily the result of aircraft noise and the hours of operation of WSI. It is acknowledged that increased exposure to aircraft noise in areas in the vicinity of WSI and under its proposed arrival and departure flight paths will be an unavoidable consequence of aircraft operations at WSI. The airspace design has been developed on the requirement for WSI to operate 24-hours, 7 days a week, and has considered, to the extent practical, noise mitigation. To address residual impacts of the project, noise abatement procedures would be developed further alongside the implementation of the Noise Insulation and Property Acquisition (NIPA) policy. The post-implementation review would also be conducted around 12 months after the airspace and flight path changes are implemented.

Submissions also raised concerns about the impacts on Linden Observatory and the lack of consideration of this facility in the Draft EIS as well as concern that the project would impact the ability to obtain 'Dark Sky Place' accreditation. A technical review of the matters raised by the trustees and users of this facility was completed. This review found that the presence of 5 flight paths corridors would disrupt certain activities and that this would require users of the facility to adapt some operations. However, most of the activities should be able to occur, potentially at a reduced capacity. Dark Sky accreditation for an Urban Dark Sky Place or Dark Sky Community is based on the conditions on the ground. Skyglow, or how bright the sky is, does not factor into the application. The project would not impact the potential Dark Sky accreditation when an application is made.

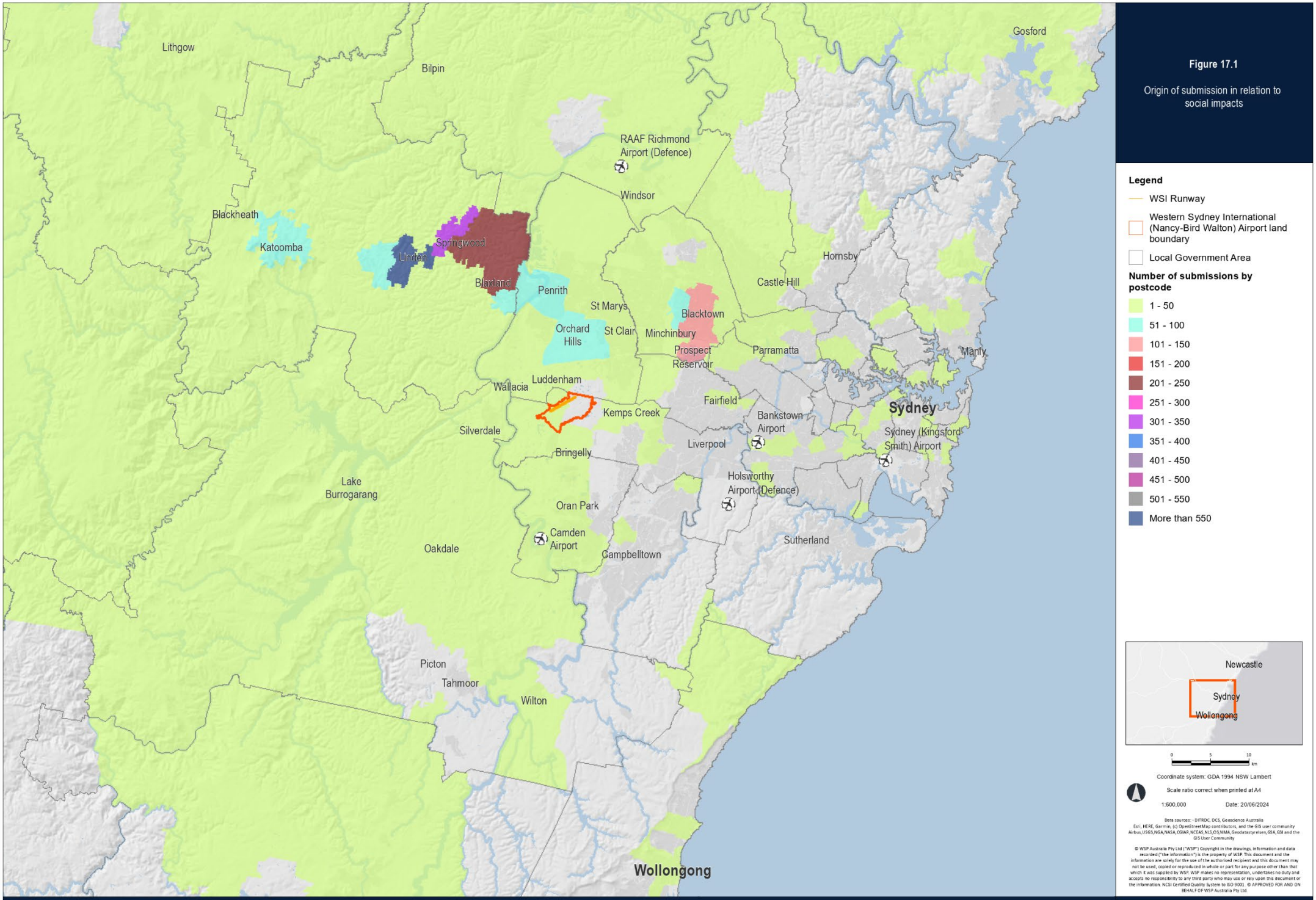
17.1 Submission overview

17.1.1 Number and origin of submissions

A total of 3,333 submissions raised matters concerning social impacts. The majority of these submissions originated from the Sydney Basin and surrounds as shown in Figure 17.1. Around 14 per cent of submissions did not supply a postcode.

Around 61 per cent of the 3,333 submissions originated from the Western City District (Blue Mountains) followed by the Central City District at around 12 per cent and Western City District (excluding Blue Mountains) at 8 per cent.

The remainder originated from other districts of the Sydney Basin, or intrastate and interstate locations.


Lithgow
Bilpin
Gosford
RAAF Richmond Airport (Defence)
Windsor
Blackheath
Katoomba
Springwood
Linden
Blaxland
Penrith
St Marys
Orchard Hills
St Clair
Minchinbury
Blacktown
Prospect Reservoir
Parramatta
Castle Hill
Hornsby
Manly
Sydney
Sydney (Kingsford Smith) Airport
Bankstown Airport
Fairfield
Liverpool
Holsworthy Airport (Defence)
Sutherland
Wallacia
Luddenham
Kemps Creek
Silverdale
Bringelly
Lake Burrogarang
Oran Park
Camden Airport
Campbelltown
Oakdale
Picton
Tahmoor
Wilton
Wollongong
Figure 17.1
Origin of submission in relation to social impacts
Legend
WSI Runway
Western Sydney International (Nancy-Bird Walton) Airport land boundary
Local Government Area
Number of submissions by postcode
1 - 50
51 - 100
101 - 150
151 - 200
201 - 250
251 - 300
301 - 350
351 - 400
401 - 450
451 - 500
501 - 550
More than 550
Newcastle
Sydney
Wollongong
0 5 10 km
Coordinate system: GDA 1994 NSW Lambert
Scale ratio correct when printed at A4
1:600,000
Date: 20/06/2024
Data sources: - DITRDC, DCS, Geoscience Australia
Esri, HERE, Garmin, (c) OpenStreetMap contributors, and the GIS user community
Airbus,USGS,NGA,NASA,CGIAR,NCEAS,NLS,OS,NMA,Geodatastyrelsen,GSA,GSI and the GIS User Community
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C:\Users\AURC508271\WSP O365\AU-WKG - Geospatial - AIS - Documents\Projects\PS130347_WSA_Airspace_EIS\Mxd\07_CommunityEngagement_PostEIS\PS130347_F1701_Social_240619.mxd | Author: R.Choi
www.wsp.com

17.1.2 Key issue breakdown

A breakdown of the sub-issues within this key issue and the percentage of total submissions that raised each of these sub-issues is outlined in Table 17.1.

Table 17.1 Breakdown of sub-issues in relation to social impacts

Sub-issue	Number of submissions that raised the sub-issue	Percentage of submissions that raised the sub-issue
Impact assessment approach	18	<1%
Way of life and surroundings	623	7%
Health and wellbeing	425	5%
Linden Observatory and Dark Skies	459	5%
Mitigation and management	520	6%

Each sub-issue was raised more often by the Western City District (Blue Mountains), followed by the Western City District (excluding Blue Mountains). The exception to this was for issues concerning:

- the management and mitigation of social impacts. For this sub-issue, the majority of the submissions originated the Central City District (55 per cent)
- Linden Observatory and Dark Skies concerns. For this sub-issue, the Central City District was the second largest group of submissions after the Western City District (Blue Mountains).

Submissions from other districts of the Sydney Basin, intrastate and interstate locations typically represented less than 5 per cent of submissions each for all sub-issues. Up to 10 per cent of submissions did not supply a location for each sub-issue.

17.2 Impact assessment approach

17.2.1 Assessment methodology

17.2.1.1 Issue raised

Raised by

Community, Blue Mountains City Council, Camden Council, Fairfield City Council

Issue

Submissions made comment on the adequacy of the assessment completed in the Draft EIS, specifically that the assessment did not:

- satisfy the Department of Planning and Environment's *Social Impact Assessment Guideline for significant projects 2023* (NSW Department of Planning, Infrastructure and Environment, 2023) (NSW SIA Guidelines)
- include an adequate evaluation of the physical and perceived impacts of the WSI operations to social cohesion and associated community or cultural connections
- identify any meaningful mitigation options in response to perceived or actual impacts to community health
- consider the potential social concerns relating to airport related risks and hazards, and provided no mitigation in response to these concerns

- address issues concerning the degree and duration of impacts to existing residents due to the construction and operation of WSI
- include an analysis of the implications of increased pressure on social services due to WSI, and impacts to housing availability and affordability due to worker relocation
- consider impacts on children's learning and cognitive development in the Blue Mountains
- include a social equity assessment on the implications of 24-hour operations at WSI, noting that a greater proportion of vulnerable and at-risk families and communities exist in the vicinity of WSI and health impacts from environmental noise may be greater among certain vulnerable groups.

It was also stated that the Draft EIS provided only a limited assessment of the social implications of the locality changing from rural and low-density to a highly urbanised area, noting some communities may consider this transition as undesirable and stressful.

A submission queried how social infrastructure and services were identified, and criticised none were identified in St Clair.

17.2.1.2 Response

The assessment methodology undertaken for the social impact assessment responded to the EIS Guidelines issued for the project and was guided by the NSW SIA Guidelines, in particular for identifying and assessing the significance of social impacts. The SIA also considered Airservices Australia's *NOS (Airservices Australia, 2022a).* Further detail on the methodology is provided in Chapter 3 of Technical paper 10: Social (Technical paper 10).

The assessment has adequately considered actual and perceived impacts of the project on a broad range of social issues, including impacts to community composition and cohesion, cultural values and connection, housing affordability and availability, and sense of safety due to airport-related risks and hazards. The concerns about the socio-economic sustainability of Luddenham Village and accessibility to social services has also been captured in this assessment. Further detail on these assessments is provided in Chapter 6 of the Technical paper 10.

The assessment has focused on the changes that the WSI flight paths could introduce to the study area. Impacts from the Stage 1 Development of WSI (Stage 1 Development) was considered as part of the baseline conditions.

The 2016 EIS relating to Stage 1 Development addressed WSI's construction and operations impacts, including impacts related to:

- worker relocation increasing pressure on social services, housing availability and affordability
- changes from rural and low-density to a highly urbanised area
- degree and duration of WSI construction impacts.

The assessment of potential impacts to children's behaviour, attentiveness, and cognitive learning in educational settings determined that children attending educational facilities under the N60 and N70 noise contours in the study area; an area which includes educational facilities in the Blue Mountains, would experience a Low pre-mitigated impact. This impact would be experienced more acutely by children with cognitive disability, resulting in a Medium pre-mitigated impact for this group. Further detail is provided in Section 6.5.3 of Technical paper 10.

The assessment acknowledges that there is a high concentration of people living in vulnerable conditions within the local and regional study areas. As per Socio-Economic Indexes for Areas (SEIFA) indicators the least advantaged suburbs are Greendale, Badgerys Creek, Kemps Creek, Austral, Rossmore and Warragamba, while the least disadvantaged suburbs are in Cobbitty, Luddenham, Silverdale, Mount Vernon and Mulgoa. The assessment determined that for those living under the N60 24-hour, N60 night-time and N70 contours who are experiencing disadvantage, it is almost certain the change would be experienced as a moderate impact, resulting in a High pre-mitigated impact in 2033 and 2055. Further detail is provided in Section 6.1.2 of Technical paper 10.

Social infrastructure and services in St Clair that are within 10 km of WSI are identified in Section 4.4 of Technical paper 10 and Appendix C4.2. Social infrastructure identified in St Clair within 10 km of WSI included 6 schools, 10 medical centres, 4 community centres, St Clair Library, St Clair Youth Centre and 5 places of worship.

No daycare facilities were identified in St Clair that are within the 10 km radius of WSI runway. St Clair is included in the local study area of the SIA, therefore all impact ratings corresponding to the local study area included St Clair.

17.2.2 Engagement

17.2.2.1 Issue raised

Raised by

Community

Issue

Submissions criticised or questioned the engagement that was completed for the assessment that was presented in the Draft EIS, specifically:

- engagement was completed prior to the release of the preliminary flight path design, and therefore any engagement was limited to speculation and resulted in an inaccurate assessment. Submissions noted that the finalised EIS should be updated with further engagement
- queried how the study areas were defined, noting some areas were included in the 2016 EIS but were not included in the summary of the socio-economic impacts of the Draft EIS and questioned if this influenced engagement with these communities
- engagement completed for the assessment did not include some of the more populated suburbs in the regional and local study areas
- queried how areas were identified for door knocking and surveys, noting areas such as Horsley Park, Cecil Park or Freeburn Park were not captured. Submissions also disputed claims that engagement had occurred within Penrith LGA as identified in Technical paper 10
- door knocking and surveys were not completed at times that would enable people to participate, which limited success in the engagement completed.

17.2.2.2 Response

The assessment acknowledges that engagement was completed prior to the release of the preliminary flight path design and identified this limitation in Section 3.3.4 of Technical paper 10. The assessment determined that limited publicly available flight path information resulted in a sense of uncertainty and limited people's capacity to make decisions about their futures. After consultation completed for the social impact assessment, the Department of Infrastructure, Regional Development, Communications, and the Arts (DITRDCA) released the online Aircraft Overflight Noise Tool (in June 2023, prior to the display of the Draft EIS), which allowed people to gain a better understanding of the flight paths and noise exposure at their residences and in places of interest. The implications of limited information were identified as a Medium pre-mitigated impact to people's capacity to effectively engage and influence decision-making over issues that may affect their lives in both the local and regional study area.

DITRDCA conducted targeted engagement during the Draft EIS public exhibition period with those eligible for insulation. 124 landowners and residents located partly or fully within the Australian Noise Exposure Concept (ANEC) 20 composite contour for the 2040 assessment year were engaged (by doorknocking and/or leaving of a letterbox flyers) offering one-on-one meetings.

There were 33 separate meetings held with landowners following the initial contact by DITRDCA with the 124 landowners and residents located partly or fully within the Australian Noise Exposure Concept (ANEC) 20 composite contour for the 2040 assessment year (by doorknocking and/or leaving of a letterbox flyers).

The key issues raised by landowners included the eligibility criteria to participate in the program, the types of works that could be undertaken, how older properties could be treated, how much assistance would be provided, who would manage and pay for the works, whether properties would be compulsorily acquired, the timing for applications, when works will be undertaken and the likely noise experience after works were completed.

Other key issues included aircraft noise impacts at night, possible impacts on rainwater quality and land planning restrictions. Landowners also provided feedback on considerations for how 'natural boundaries' could be applied in finalising the program eligibility boundary.

Meetings with landowners had identified many people who had lived on their properties for extended periods – some for several decades – some properties had been in the family hands for several generations and other properties where the extended family lived in multiple dwellings on the same property.

The study area for the assessment was defined considering communities affected by ANEC 20, N60 24-hour, N60 night-time and N70 contours, as well as air quality and visual amenity impacts. The assessment engagement focused on obtaining feedback from those who would likely be most affected.

Feedback sought by DITRDCA during community engagement events, an online survey, and briefings with key organisations and stakeholders, was considered in the assessment. In total, 2,681 people were engaged across all pop-up locations and a total of 804 surveys were completed. Due to this extensive engagement, additional engagement in more populated suburbs in the regional and local study areas was not conducted.

Areas for the first round of door knocking were identified by randomly selecting residents and businesses within a radius of 1.5 km from WSI. For the second round, the area was adapted to cover the ANEC 20 and N70 contours, as well as residents hosting noise loggers for the noise assessment.

Horsley Park and Cecil Park were not considered for door knocking as they are outside the ANEC 20 and N70 contours. Freeburn Park is considered part of Luddenham suburb and was subject to door knocking.

Engagement with stakeholders and residents to inform the assessment within the Penrith LGA comprised Penrith City Council, Penrith Valley Chamber of Commerce, Mulgoa Valley Landcare, Wallacia Progress Association, Wallacia Public School, Luddenham Public School, Luddenham Progress Association, Mt Wilson Progress Association and residents of Luddenham Village, Mt Vernon, Wallacia, Warragamba, and Greendale.

During door knocking a "sorry we missed you" letter was left at 30 residences where people were unavailable to participate directly. The letter provided contact details, and invited residents to engage with the assessment team at a time that suited them. There were no responses to these letters.

17.3 Way of life impacts

17.3.1 Impacts to way of life, surroundings and community

17.3.1.1 Issue raised

Raised by

Community, Blue Mountains City Council, Camden Council, Greater Blue Mountains Area World Heritage Property Advisory Committee, Mulgoa Valley Landcare Group Inc, Trish Doyle MP – Member for the Blue Mountains (NSW), Wallacia Progress Association

Issue

Submissions objected to or expressed concerns about impacts to the way of life, surroundings and community. Submissions attributed these impacts to aircraft noise (including annoyance), aircraft frequency and the altitude of aircraft during the day and night. Other contributing factors included changes in air quality, landscape and visual impacts or impacts to the environment generally. Concerns were also raised specifically with the use of RRO at night and impacts on overflown communities at night.

Submissions expressed that the potential impacts (including residual impacts) on the way of life, community and surroundings have been underestimated or downplayed, or not adequately assessed. Impacts identified included changes to local character of places and communities, impacts to the enjoyment of social infrastructure or people's homes, or the impacts to surroundings (primarily Greater Blue Mountains Area (GBMA) and adjoining bushland) due to aircraft noise.

Submissions stated that there is uncertainty in the community on what changes would occur, or what the implications would be on way of life, surroundings and the community.

Impacts to way of life and surroundings

Submissions identified the following concerns or objections with regard to impacts to way of life and surroundings:

- loss of residential amenity and impacts to the enjoyment of people's homes
- impacts to the enjoyment of social infrastructure by residents, visitors or tourists
- impacts to the enjoyment and use of outdoor and indoor spaces (private or public) by residents, visitors or tourists, or impacts to outdoor lifestyles and outdoor community gatherings, such as recreational and sightseeing activities (field sports, hiking, cycling, walking, lookouts, etc), impacts to creative arts in outdoor and indoor contexts (art galleries, theatres), and impacts to meditation centres
- impacts to surroundings, such as:
  - impacts to quiet, natural and/or wilderness environments, or ability to access or experience these areas once the project is operational
  - impacts to the night sky
  - impacts to the environment (such as air quality, water quality and biodiversity) or heritage (including places, items, or the GBMA), including the quality of the environment
  - disruption to people's connection to an area, community, the natural environment, or culture
- detrimental or profound impacts to lifestyle or liveability of the area.

Submissions identified that these impacts would also occur to future communities in urban growth areas or future generations.

Submissions identified the values that have attracted residents, visitors or tourists to an area (such as quiet, tranquil environments, sense of community, rural lifestyles, or sustainable lifestyles), are highly sensitive to change given the low noise environment or setting (bushland or rural) and expressed concerns about impacts on resident's way of life or surroundings as a result of the project.

Areas identified in submissions included (but is not limited to) Luddenham (Luddenham Village and Twin Creeks), Wallacia, Silverdale, Mulgoa Valley, Orchard Hills, St Clair, Emu Plains, Emu Heights, the lower Blue Mountains, the mid-Blue Mountains, Hornsby Shire and the Central Coast.

With respect to Luddenham Village, submissions identified the social changes that have occurred since the approval and construction of WSI and other supporting infrastructure projects, and the impacts that would occur once the project is operational. Submissions stated that the community would be severely impacted by noise, changes in air and water quality, and visual impacts, changing the amenity, community, health and lifestyle of the area.

Community cohesion

Submissions expressed concern that the project would impact cohesion within overflown communities.

It was stated that people would move out of established communities and/or that these areas would be less desirable for future residents as a result of the project. This would result in the loss of long-term residents with established connections in the community, with an increase in shorter-term residents or a loss in cohesion until new residents develop connections within the community. Submissions expressed concern that people would lose a sense of belonging, social networks or generational connections as people move out of an area, particularly the elderly or where children choose to live elsewhere. Submissions expressed the view that less people would wish to move to, reside in or visit areas

impacted by the project, resulting in subsequent impacts on community cohesion and livelihoods (for example, due to changes in employment opportunities within the tourism industry).

Some concerns were also expressed about the presence of WSI increasing population or the urbanisation of certain areas, resulting in changes to smaller communities.

Submissions stated that communities impacted by the project have been previously impacted by major flooding or bushfire events, and that this project would further erode the sense of community or community cohesion.

Areas identified in submissions raising concerns about community cohesion included (but is not limited to) Luddenham Village, Wallacia, Silverdale and the Blue Mountains.

Inequity of impact and benefit

Submissions raised objections or concerns that the project would impact more vulnerable communities or would increase the socio-economic disadvantage of already disadvantaged communities. Submissions claimed that the project has disproportionately impacted disadvantaged communities or those who have less time to engage, including those who work shifts, young families or come from non-English speaking backgrounds.

Submissions have objected to the project or on the flight path design on the basis of inequity of impact, with submissions stating that Western Sydney residents (particularly at night) or certain communities who are overflown more frequently and/or at lower altitudes have been treated unfairly or differently in comparison to communities elsewhere. These concerns were often associated with the request for changes in the flight path design, a change in operating hours or controls on aircraft movements to provide increased respite.

Submissions also identified that some in the community do not wish to move or cannot move and cannot afford to install or run air conditioning as a measure to manage aircraft noise. Submissions expressed the view that the project could fracture the community due to differences in impact (geographically) or the ability to soundproof homes.

Submissions stated that impacts to communities cannot be offset by the benefits of the WSI, or that the benefits of WSI would not be equitably distributed within impacted communities.

Submissions expressed that they have felt that the proposed flight paths have been imposed on them without consultation or agreement, with many stating that they had moved into an area to get away from urban environments despite the lower provision or proximity to social infrastructure, or the consequences of longer commute times.

17.3.1.2 Response

Impacts to way of life and surroundings

Impacts to way of life and surroundings considered the value community members place on their lifestyle as well as their level of concern. Impacts to way of life and surroundings were informed by the outcomes of Technical paper 1: Aircraft noise (Technical paper 1), Technical paper 2: Air quality (Technical paper 2), and Technical paper 7: Landscape and visual (Technical paper 7).

The assessment determined High pre-mitigated impacts to way of life due to loss of residential amenity in the local study area (refer to Section 6.2.1 of Technical paper 10). The local study area extends to 18 Suburbs and Localities, which include Luddenham, Wallacia, Silverdale, Mulgoa Valley, Orchard Hills and St Clair.

Medium pre-mitigated impacts to way of life due to loss of residential amenity are expected in the regional study area, which includes Camden, Emu Heights, Emu Plains and Blue Mountains.

The difference in magnitude for the local and regional study areas was determined by understanding the potential amenity changes resulting from the project. The assessment identifies that people residing within the ANEC 20 contour (about 310 residences) would be more continuously affected by noise when compared with those residing in the broader regional study area. For the broader regional study area, the assessment identifies that 132,000 people would be exposed to an average of more than 10 daily movements above 60 dB(A) within the Blacktown, Penrith, Blue Mountains, Liverpool, Camden and Wollondilly LGAs. Technical paper 2 identified that no unacceptable impacts to the local air quality are expected, including odour.

High pre-mitigated impacts resulting from changes to the way people use and enjoy social infrastructure are expected for people residing in the local study area and for visitors to the GBMA under N60 and N70 contours. Medium pre-mitigated impacts are anticipated for those within the broader GBMA and the regional study area. The difference between ratings recognises that people within the local study area will be affected by greater frequency of noise, and recognises that for visitors to GBMA, their values and sense of enjoyment might change when visiting areas under WSI flight paths.

In regards to surroundings, the assessment considered impacts to social values associated with the Blue Mountains. This is detailed in Section 6.6.1 of Technical paper 10. A Medium pre-mitigated impact was determined for the whole of the study area for 2033, and by 2055 a High pre-mitigated impact is anticipated. These ratings were determined considering that by 2033, while some noise and visual impacts may potentially occur to the wilderness areas, they are generally insignificant for the vast majority of wilderness areas and are not considered to be such that they would interfere with the values attributed to the wilderness nature of the GBMA. For the 2055 scenario, the N60 contour would extend over a greater section of the Blue Mountains National Park to the west, which would result in a High pre-mitigated impact. It is possible that due to the wider affected area, people will change their behaviour and change where they go to enjoy the GBMA, preferring areas where they notice less aircraft-related impacts. People may value and increase their attachment to areas that are not significantly overflown by aircraft.

Regarding the night light impacts, the social impact assessment considered the findings of Technical paper 7, which concluded that Euroka, Katoomba River crossing, Ingar, Murphys Glen and Burralow Creek campgrounds would have views to the sky where aircraft using the proposed flight paths may be seen. Overall, the effect of aircraft lighting would be experienced across a small portion of the landscape, resulting in a low magnitude of change. However, due to the very high visual sensitivity, it is anticipated that there would be a high-moderate visual impact.

The sense of safety and of the clean environment assessment concluded that the project would result in a medium pre-mitigated impacts within the local study area, and Low pre-mitigated impacts within the regional study area (refer to Section 6.6.2 of Technical paper 10 for further detail). The ratings were supported by examining the findings from the technical reports supporting the EIS. Key findings include the following:

- there is no evidence of impacts from current aircraft emissions on the Sydney Basin's drinking water catchment
- for the 2033 scenario, there is no tangible or significant impact to air quality from the project. Increases in NO_2 are generally limited to a radius of approximately 5 to 6 km of the Airport Site attributable to aircraft near or at ground level, primarily during take-off and landing
- for the 2055 scenario, the impact of emissions from the project on the existing pollutant concentrations would be negligible and would be unlikely to be discernible above background concentrations, except for NO_2 where an increase is expected in the vicinity of the airport, just outside the north-western section of the Airport Site boundary
- fuel jettisoning would be conducted at an altitude of at least 6,000 feet (ft) (approximately 1.8 km) above ground level to ensure total dissipation into the atmosphere prior to contacting the ground, except in the case of emergencies (as per AIP ENR) (Airservices Australia, 2022a). Note that fuel jettisoning is a rare event.

By the time aircraft travel along the flight paths over Hornsby Shire and the Central Coast, aircraft are already at 20,000 ft (6 km) above runway level. While these areas fall outside the N60 and N70 composite contours, the community may still see and hear aircraft flying to and from WSI. However, this disturbance would not be at a level that would impact way of life and surroundings.

The assessment considered the socio-economic sustainability of Luddenham Village and acknowledged the high level of concern from community members and organisations about the future of Luddenham Village (refer to Section 6.4.2 of Technical paper 10). A High pre-mitigated impact was determined for the 2033 scenario. In addition, the assessment identified the following High pre-mitigated impacts for Luddenham Village under the 2033 scenario:

- community composition and sense of belonging
- way of life due to residential amenity loss
- use and enjoyment of social infrastructure
- wellbeing because of aircraft operation noise and emissions.

The following measures are identified in the Draft EIS to mitigate and adaptive manage impacts to way of life, the community and surroundings:

- the NIPA, which includes a noise insulation program for property owners that are partly or fully within the ANEC 20 composite contour for the 2040 assessment year
- noise abatement procedures (NAPs) designed to reduce the impact of aircraft noise on the community
- Airservices Noise Complaints and Information Service which will help to identify operations of concern and possible opportunities for improvement
- Aircraft Noise Ombudsman who conducts independent reviews of Airservices Australia's and Defence's management of aircraft noise-related activities
- WSI Community Aviation Consultation Group (CACG) will be established and undertake consultation with stakeholders and community, including social organisations, to seek feedback on social issues and to promote the social and economic welfare of the community (see mitigation measure S1)
- Airservices Australia will undertake a post-implementation review of the flight path design and implementation (refer mitigation measure N6)
- fuel jettisoning will be carried out in accordance with appropriate procedures (specifically, the Aeronautical Information Publication Australia, Part 2 – En Route (AIP ENR), as per mitigation measure HR3.

The assessment anticipates that after implementing existing controls and proposed management measures, pre-mitigated impacts rated High will result in Medium residual impacts, and Medium will result in Medium to Low residual impacts.

Finally, a series of refinements to the preliminary flight paths have been identified as part of ongoing development and following submissions received during the public exhibition of the Draft EIS. The key refinements proposed are:

- minor refinement to flight path D10 to provide a more westerly alignment north of Linden, which would move the Runway 23 northern jet departures preliminary flight path approximately one nm (2 km) further away from Mt Tomah and 0.9 nm (1.8 km) from Mt Wilson residential areas, therefore providing additional separation between the revised flight path and these communities and provide further separation from overflight of the Emu Cave Aboriginal Place site
- removal of Required Navigation Performance – Approval Required approach (A13) south of Linden, which would result in a measurable noise benefit to the communities of Linden and Faulconbridge when RNP AR capable aircraft are approaching Runway 05 at night
- minor refinement to flight path A12 (RRO night approach to Runway 05) to provide a more southerly alignment, reducing the level of direct community overflight, potentially reducing noise impacts to these communities
- refinements to the RRO runway mode of operation (refer to Section 24.1.5) as follows:
  - the withdrawal of preliminary flight path D28 for jet operations and the reallocation of those aircraft to preliminary flight path D32 (refer to Section 24.1.5.1)
  - the introduction of a new RRO mode noise abatement procedure (RRO-NAP) (refer to Section 24.1.5.2).

These refinements are described in detail in Chapter 24 (Refinements to the project since exhibition) of this Submissions Report and informed by the technical assessment in the Addendum to Technical Paper 1 of the EIS. Airservices Australia will continue to develop and review noise abatement procedures in consultation with key stakeholders as per mitigation measure N2.

Community cohesion

The assessment has recognised High pre-mitigated impacts to community composition and sense of belonging for Luddenham Village, Badgerys Creek, Kemps Creek, Greendale and Silverdale communities due to their proximity to the ANEC 20. Medium pre-mitigated impacts are identified for the rest of the local study area, which includes Wallacia. Low pre-mitigated impacts are identified for the regional study area, which includes the Blue Mountains.

This difference in ratings recognises that those within and in close proximity to the ANEC will experience greater impacts. The assessment recognises that by 2055, the population in the abovementioned areas would have already experienced changes to community composition resulting from various planned developments and will be living in areas under new planning frameworks outside of ANEC 20.

The assessment also considered that the Western Sydney Aerotropolis Precinct Plan and associated developments are expected to result in an influx of new residents and workers to the local study area, who may access services provided in Luddenham Village. It is anticipated that by 2055 Luddenham Village would have grown and changed.

Further detail is provided in Section 6.1 of Technical paper 10.

Inequity of impact and benefit

The assessment acknowledged that there are multiple vulnerability conditions to which the populations in the local and regional study areas are exposed. The assessment determined that vulnerable groups within the ANEC 20, N60 and N70 contours will almost certainly experience increased inequality, resulting in a High pre-mitigated impact. Across the rest of the study area, it is anticipated that the project will result in a Medium pre-mitigated impact.

In October 2023, DITRDCA released the draft NIPA. The final NIPA policy, based on the aircraft noise assessment and feedback from the local community and other important stakeholders, is included in the finalised EIS. Further detailed information on the NIPA program, including program guidelines and application processes, will be released prior to the implementation of the NIPA program in mid-2025.

Under the NIPA, DITRDCA will invite owners of properties that are partly or fully within the ANEC 20 composite contour, for the 2040 assessment year, to participate in the program. Noting that ‘natural boundaries’ would also be considered for the application of the NIPA. Natural boundaries could include extending eligibility to buildings on both sides of the street where only one side is within the ANEC 20, or to buildings outside the ANEC 20 but where part of the property is within the contour. Natural boundaries could also extend eligibility up to green zones or parks where appropriate.

Participation in the NIPA will require individual assessment of each property and buildings by noise experts, followed by application of noise treatments to buildings within the ANEC 20 contour. Acquisition of a property by DITRDCA is automatically considered for buildings within the ANEC 40 composite contour, for the 2040 assessment year.

The analysis has not identified any properties within the ANEC 40. However, the draft NIPA establishes some additional criteria that will be considered for potential acquisitions of properties outside the ANEC 40, but within the ANEC 20. The main factor for consideration is whether noise insulation treatments are effective and efficient due to circumstances such as the building’s age and condition.

The NIPA is based on previous domestic programs for Sydney (Kingsford Smith) Airport and Adelaide Airport. However, this NIPA has a lower noise impact eligibility threshold compared to both Sydney and Adelaide airports. The lower eligibility threshold is based on the low background noise levels in areas surrounding WSI, the greenfield status of the site, and the fact that WSI is intended to operate 24-hours a day.

The assessment acknowledges that the proposed mitigations might not be able to address the potential increase in inequality, in particular for vulnerable groups under ANEC 20, N60 and N70 contours for the 2033 and 2055 scenarios, and therefore a High residual impact has been determined (refer to Chapter 9 of Technical paper 10).

Nevertheless, the design refinements described above (and detailed in Chapter 24 (Refinements to the project since exhibition) of this Submissions Report), in addition to the mitigation measures proposed in N2 and N3 may help to address some of the noted increases in inequality, particularly for communities where overflight has been reduced.

17.4 Health and wellbeing impacts

17.4.1 Impacts to health and wellbeing, and livelihoods

17.4.1.1 Issue raised

Raised by

Community, Blue Mountains City Council, Camden Council, Wallacia Progress Association

Issue

Submissions objected to or expressed concern about the impacts to the health and wellbeing of individuals, vulnerable groups, children or the community generally due to aircraft noise (particularly sleep disturbance and annoyance), changes in air and water quality, and visual and landscape impacts. This included future communities in growth areas. These concerns were often associated with the request for changes in the flight path design, a change in operating hours or controls on aircraft movements to provide increased respite.

Specific concerns included:

- mental health impacts, including anxiety and stress due to impacts of the project on the environment or their surroundings, impacts due to sleep disturbance or annoyance, or the uncertainty of impacts (for example, unpredictability of when flights would occur, due to the long timeframes since WSI was identified, or due to delays in the strategic plan for Luddenham Village)
- physical and mental wellbeing impacts (including social isolation) due to the changes to the amenity and enjoyment of their homes, sense of belonging, outdoor lifestyles and/or recreation, access to quiet environments, impacts to the environment or due to people staying indoors to avoid impacts (primarily aircraft noise)
- impacts to vulnerable people, such as those with auditory sensitivities
- impacts to support networks due to people moving away from areas due to the project
- impacts to quality of life, sense of security, safety, personal space and solitude.

Submissions also expressed concern about the impacts to school children and cognitive development due to aircraft noise at schools, at home (for example, when studying) or in outdoor learning environments (such as nature-based learning). This would lead to further socio-economic disadvantage.

Submissions stated that the project would impact the Blue Mountains economy, impacting the livelihoods of residents that work in tourism including accommodation providers. Submitters identified their roles in the community or civil service, and expressed concerns that impacts to health and wellbeing would impact their ability to participate. Impacts to people's livelihoods due to property value impacts, or disruptions to home-based businesses or working from home conditions were also identified in submissions.

Submissions stated that individuals would be forced to live with windows closed, or be unable to afford to install and/or run air-conditioning due to the costs.

Submissions expressed that the assessment of potential impacts to health, wellbeing and livelihoods is highly subjective and/or has been underestimated or downplayed. This included the residual impact ratings provided in the Draft EIS. Submissions requested that the assessment in the finalised EIS is revised in collaboration with NSW Health and that measures should be identified to address the concerns about human health.

Areas identified in submissions included (but is not limited to) Luddenham Village, Wallacia, Silverdale, Orchard Hills and the Blue Mountains.

17.4.1.2 Response

The assessment considered the potential impacts related to health and wellbeing and identified High pre-mitigated impacts to wellbeing for residents of Luddenham, Greendale, Silverdale, Wallacia and Kemps Creek due to changes to amenity, and where people might experience night time disruption and annoyance. Medium pre-mitigated impacts to health and wellbeing were determined for those residing within the overall local study area. Further detail is provided in Section 6.5 of Technical paper 10.

For those located within the regional study area and who may also be frequent visitors to the GBMA, it is unlikely they would experience noticeable changes to their wellbeing, resulting in a Low pre-mitigated impact.

Assessment ratings considered pre-existing health conditions within the study area, as well as other groups likely to be more affected by air and noise pollution, including:

- people with disabilities or carers, particularly those experiencing post trauma stress or sensory disorders that may perceive noise as a trigger
- refugee and asylum seeker populations, who may also be more affected by noise – this was particularly mentioned during consultation that informed the assessment for the Fairfield, Blacktown and Penrith areas
- shift workers needing sleep during the day – noting significant numbers of shift workers employed at the various hospitals and health services in the South West Sydney Local Health District
- people living in caravans permanently with no noise insulation.

The difference between assessment ratings for the local and regional study areas reflects differences:

- in noise exposure and the proportion of populations living under N60 and N70 noise contours identified in Technical paper 1
- the number of people likely to experience sleep disturbance identified and proportion of populations in areas that are predicted to be highly annoyed by aircraft noise as identified in Technical paper 12: Human health (Technical paper 12)
- predicted NO_2 concentrations identified in Technical paper 2
- finally, changes to the enjoyment and use of public space were considered to determine impacts to wellbeing.

Changes to children's behaviour and attentiveness at school was determined as a Low pre-mitigated impact, as it is possible that children attending educational facilities under the N60 and N70 noise contours in the broader local study area and regional study area would experience some level of distraction that could affect their attentiveness and cognitive learning. However, this impact would be experienced more acutely by children with cognitive disability, resulting in a Medium pre-mitigated impact for this group.

By 2055, it is anticipated that children with cognitive disability attending Mamre Anglican School will experience a High pre-mitigated impact.

Impacts to tourism and livelihoods associated with the GBMWHA were determined as Low pre-mitigated impact for the local and regional study area for both 2033 and 2055 scenarios. This rating is largely informed by the number of short-stay accommodations inside the N60 contour (26) and the N70 contour (zero). Technical paper 11: Economic (Technical paper 11), determined that it is not expected any of those places would lose any revenue in any measurable way. In addition, Technical paper 11 concluded that the visual impacts are not considered significant enough to result in any measurable economic impacts in terms of visitation numbers to the Blue Mountains area. Consequently, there would be no loss in tourism spend in the area and hence no impacts on the local economy.

Impacts to property values for the 2033 and 2055 scenarios are anticipated to be a Low pre-mitigated impact for the regional study area, and Medium pre-mitigated impact for the local study area in the 2033 scenario. These ratings are informed by the literature review that informed Technical paper 10 about the impacts of aircraft noise on property values and the outcomes of the economic assessment contained within Technical paper 11.

Technical paper 11 concluded that impacts to property values would be compensated by capital gains driven by population growth (by increasing housing demand). Technical paper 11 predicted that properties within the ANEC 20 will be subject to greater property value loss, when compared to those within N70 contours. However, However, the technical paper indicated that while the impact appears high, residential values in Western Sydney have increased considerably over the past 10 years, for example in Blacktown and Penrith LGAs both have increased by 130 per cent (more than doubled) since September 2012, resulting in an average 6.3 per cent real growth rate per annum. Hence for a dwelling inside the N70 contour, an immediate loss in value of 4.0 per cent would be 'made good' by less than one year of growth in real capital gain.

Under the NIPA, DITRDCA will invite owners of properties that are partly or fully within the ANEC 20 composite contour for the 2040 assessment year to participate in the noise insulation program. Participation in the noise insulation program will require individual assessment of each property and buildings by noise experts, followed by application of noise treatments to eligible buildings. Acquisition of a property is considered for buildings within the ANEC 40 composite contour for the 2040 assessment year on a case by case basis consistent with the formal policy.

The residual assessment of wellbeing impacts considered the following measures, which are outlined in the EIS:

- noise abatement procedures
- the NIPA
- establishment of a Community Aviation Consultation Group
- Airservices' Noise Complaints and Information Service
- Aircraft Noise Ombudsman
- WSI Community Aviation Consultation Group, to undertake consultation with stakeholders and community, including social organisations, to seek feedback on social issues and to promote social and economic welfare of the community
- post-implementation review.

The assessment anticipated that after implementing existing controls and proposed management measures, pre-mitigated impacts rated High will result in Medium residual impacts, and Medium will result in Medium to Low residual impacts.

17.5 Linden Observatory and Dark Skies

17.5.1 Linden Observatory

17.5.1.1 Issue raised

Raised by

Community, Blue Mountains City Council, Susan Templeman MP – Member for Macquarie (Federal), Trustees of Linden Observatory, Western Sydney Amateur Astronomy Group (WSAAG)

Issue

Submissions stated that the project would significantly degrade the quality of the night sky for astronomical observations at the State heritage listed Linden Observatory due to the effect of lights from aircraft, atmospheric turbulence and contrails. Submissions stated that as a result, the ongoing viability of the Linden Observatory for active astronomy and continuation of activities at the site would be jeopardised. Concerns included impact to:

- the ability to undertake astrophotography at the site
- the contribution to astronomy through research and education if activities cannot continue
- the continuation of amateur astronomy at the site (e.g. WSAAG)
- the ability to use lasers during educational sessions.

In expressing these concerns, submissions stated that:

- impacts on the observatory have not been assessed in the Draft EIS (including social impacts), including the identification of the site as a former observatory
- the Linden Observatory operates under a trust to enable amateur astronomers to observe the night sky. The Trustees work with the WSAAG to provide an accessible dark sky site to operate from, while WSAAG assist in maintenance and investment efforts for the site. The Trustees have future plans for further investment at the site
- the optical telescope (referred to as the Beames telescope) is not in working order but there are plans to restore the telescope in the future. The 30" (760 mm) Evans telescope, a research grade telescope, is operational and is the largest publicly accessible telescope in NSW
- activities at the site have contributed significantly to the science of astronomy
- the observatory's Bortle rating (measure of the quality of the night sky) is 3–4 and could be impacted
- costly equipment (at the site or an individual's brought to the site) could no longer be used. Current users of the site may cease activities or could be subject to increased costs, due to the need to travel further to access alternative facilities if Linden Observatory is impacted.

Submissions from the community expressed concern that educational sessions and the visitor's experience would be disrupted due to aircraft noise impacts.

Submissions stated that changes to the flight paths should be made to avoid interference with the Linden Observatory. Submissions referred to recommendations by the International Astronomy Union (IAU) that flight paths should not be closer than 5 km to provide the full area of sky needed for observation and to stay below 10° of the observing horizon.

17.5.1.2 Response

The historical importance and ongoing role of the Linden Observatory is acknowledged.

A technical review of the matters raised by Trustees of Linden Observatory and WSAAG was completed by a Fellow of the Australian National University within its College of Science. This review is provided in Appendix A of this Submissions Report.

Flight path corridors that pass directly above the Linden Observatory are:

- Runway 23 North Departure Day-Evening (D10)
- Runway 23 North-East and North Departure Night (D23 and D24)
- Runway 23 North RRO Departure (D29)
- Runway 05 Night Arrival (A10, A13).

Runway 05 Departures during the day-evening and a radar vectoring area is located to the north of Linden Observatory.

The review assumed that aircraft within the flight path corridor is positioned on the closest point to the Linden Observatory, noting the centreline for all flight path corridors do not pass directly above the observatory. The flight paths that pass above or near the Linden Observatory would have an impact on observations after 9 pm in summer and 6 pm in winter.

Most flights paths that are of consequence to Linden Observatory are passing through the eastern sky. This part of the sky is already most impacted by sky glow from Sydney and objects are already limited. The western and southern sky generally have more objects in the early evening to look at for outreach and educational purposes and are the least impacted by the project.

Lighting from aircraft would impact observations when passing through the field of view of the telescope. Visual observations would need to be suspended. If using a camera, this would mean the exposure would have to be stopped. The impact would not last longer than the aircraft is the field of view. For long exposures, shorter exposures stacked or combined would need to be implemented (should this not already occur due to satellites). This is common practice in both scientific observations and astrophotography.

Turbulence can affect the resolution of objects that are being observed and can last longer than lighting effects. The majority of these effects are short lasting and, in most cases, activities could resume in a given patch of sky after a short period on a given night (usually 5 to 20 minutes). This is the case at other observatories. The length of the effects is highly dependent on the weather conditions and local climate, noting that it can leave transparent layers of clouds hours after passing the field of view.

Most of the impacts of the project would require a temporary pause in activities on a given night. For astrophotography, this may require pauses up to 20 minutes in some cases for a given flight due to turbulence from passing aircraft. For activities like outreach and education, activities would be able to resume sooner. However, the entire sky would not be impacted and observations in another part of the sky, particularly to the west and south would be able to resume much sooner.

Activities such astrophotography and other activities that involve the recording of photometric (and if done, spectroscopic) observations would be impacted. However, exposures can be set to shorter periods, avoiding the impact of the flight and then stacked together.

It is acknowledged that users of the Linden Observatory would need to adapt some operations due to the presence of WSI flight paths. This would include the adjustment of timing of activities around flight paths, observing based on locations of targets in the sky (i.e. observing at times more to the west and south) and some changes to photometric observations. Most of the activities should still be able to occur, potentially at a reduced capacity.

It is acknowledged that aircraft noise at Linden Observatory would be audible, with maximum noise levels (L_{Amax}) of 60–65 dB(A). However, Linden Observatory noted in their submission, from an astronomical, and in particular, astrophotography perspective, aircraft noise has insignificant to no adverse effect.

Use of lasers

With respect to the use of handheld lasers during educational activities, current legislation in NSW only exempts members of an approved astronomical association to possess lasers that exceed one mW (milliwatt). The maximum allowed is 20 mW. The Astronomical Society of Australia's advice is that this power is excessive for astronomical purposes. In practice, lasers are typically less than 5 mW and have a range less than one nm (2 km).

CASA and airports have procedures for notification and the use of lasers. Either regular notification to WSA Co or an understanding astronomers would be using these on some nights at Linden Observatory can be established. Only astronomers are allowed to use these lasers and would not point them at aircraft, as is already the situation.

International Astronomy Union

Submissions referred to a paper concerning International Astronomy Union's recommended buffer distances to observatories by flight paths. This is not a directive as claimed in submissions and/or the paper referenced in submissions. Flights from Sydney (Kingsford Smith) Airport heading to and from Asia regularly pass directly over (albeit at cruise altitudes) over Siding Spring Observatory. They also pass at lower altitudes, and within 5 km near Mt Stromlo Observatory.

Airservices Australia is not aware of International Astronomy Union's agreements to request or enforce directives on airspace owned or controlled by the Commonwealth of Australia. Airservices Australia is also not aware of any current or past applications by Linden Observatory to CASA for consideration of restricted airspace over the privately owned amateur observatory. There is also no directive in Airservices Australia's Operations/Flight Path & Airspace Design Procedures to avoid observatories in general and the Linden Observatory in particular.

The Airspace Act 2007 (Cth) (the Airspace Act) and Airspace Regulations 2007 (Cth) (Airspace Regulations) provide the power for CASA's Office of Airspace Regulation (OAR) to declare volumes of airspace to be restricted under certain circumstances. These circumstances are primarily related to aviation safety. The OAR are unaware of any other international agreements that would effectively restrict access to the airspace in the vicinity of the observatory. In any case the Airspace Act and Airspace Regulations are the only legally enforceable means of achieving that outcome, and compliance with any other agreements would most likely be voluntary.

17.5.2 Dark Skies

17.5.2.1 Issue raised

Raised by

Community, Blue Mountains City Council, Susan Templeman MP – Member for Macquarie (Federal), Trustees of Linden Observatory, WSAAG

Issue

Submissions identified that Linden Observatory, with the support of the Blue Mountains City Council, is in the process of seeking Dark Sky accreditation to be a 'Dark Sky Place', with a plan for Linden to be a 'Dark Sky Community'. Submissions stated that the site meets the criteria for a 'Dark Sky Place' (21 magnitudes per arc second), even with sky glow toward the east from Sydney. Submissions raised concerns that the project may jeopardise this accreditation, primarily due to the impact of atmospheric turbulence which can blur visibility of stars and reduce the number of magnitudes visible.

Submissions also raised concerns with the impacts on the dark sky of the Blue Mountains generally or the GBMA, and the impact on the quality of observation conditions.

17.5.2.2 Response

The process of accreditation and designation as an Urban Dark Sky Place, or Dark Sky Community by Dark Sky International (formerly known as the International Dark Sky Association) does not take airplane traffic into consideration for designation. As an Urban Dark Sky Place or Dark Sky Community, the skyglow, or how bright the sky is, does not factor into the application. The project is not expected to impact the ability of the Linden Observatory to obtain Dark Sky accreditation when an application is made.

17.6 Mitigation and management

17.6.1 Social

17.6.1.1 Issue raised

Raised by

Community, Blue Mountains City Council, Camden Council, Penrith Council, Friends of Fernhill and Mulgoa Valley Incorporated, Wollondilly Shire Council

Issue

Submissions criticised or made comment on the social mitigation measures identified in the Draft EIS, and in doing so, criticised the mitigation measures identified for aircraft noise, the flight path design and hours of operation.

Submissions stated that comprehensive mitigation strategies are required for communities that would experience negative social impacts as a result of the project, including way of life, surroundings, livelihoods, community, health and wellbeing. Mitigation strategies should include the provision of compensation, funding of initiatives or investment in public infrastructure, particularly where there is the potential for further disadvantage for vulnerable groups, impacts on tourism or the inequitable distribution of benefits. It was stated that the potential further disadvantage in communities due to the project must be addressed.

Submissions requested that measures to address quality of life impacts be delivered now and with consideration of the future growth of the airport. Submissions expressed concern that measures would be deferred with no consistent oversight from the Australian Government.

Submissions stated that the Australian Government, not WSA Co, should be responsible for the implementation of the social mitigation measures, as the Australian Government is considered to be better suited to represent the best interests of the community in responding to adverse social impacts.

Submissions supported further engagement outlined in the mitigation measures, but questioned how effective or genuine this engagement would be given the flight paths would be approved. It was questioned how engagement would mitigate the social impacts resulting from aircraft noise if noise impacts are not meaningfully addressed.

It was requested that local councils be involved in any monitoring completed for the project and provided the results of any monitoring.

Submissions identified that Luddenham Village residents are unable to move due to the current property market and will continue to reside in the area irrespective of the land use zoning. These submissions objected to the lack of mitigation in response to social impacts resulting from the project, and WSI generally.

17.6.1.2 Response

The social impacts identified in submissions are primarily the result of aircraft noise and the hours of operation. The airspace design has been developed on the basis of WSI operating 24-hours, 7 days a week, and has considered, to the extent practical, noise mitigation.

The airspace and flight path design process for WSI has sought to optimise flight paths based on safety, efficiency, capacity, and noise and environmental considerations, while minimising changes to existing airspace arrangements in the Sydney Basin to the greatest extent practical. Where possible, the proposed flight paths have avoided and minimised impacts. However, increased exposure to aircraft noise in areas in the vicinity of WSI and under its proposed arrival and departure flight paths will be an unavoidable consequence of aircraft operations at WSI.

For those in the community that would be significantly impacted by aircraft noise from WSI, the NIPA has been prepared to insulate pre-existing eligible properties that are partly or fully within the ANEC 20 contour, or acquire properties within the ANEC 40 contour. As identified earlier within this chapter, the ANEC 20 contour is a lower threshold of eligibility when compared to Sydney (Kingsford Smith) or Adelaide airports in recognition of the green field nature of WSI's development, the lower background noise levels in surrounding areas, and the 24-hour nature of WSI's operations. DITRDCA will implement the NIPA program during detailed design until the completion of the program (mitigation measure N1).

There are also a number of existing commitments or controls in place that would complement the mitigation measures identified in the EIS. This includes commitments within the 2016 EIS and the outcomes of strategic planning in the vicinity of WSI. Land use planning such as land use zoning in particular has been an effective means to ensure that land use near WSI is compatible with noisy aviation activities by minimising the population affected by aircraft noise.

A series of refinements to the preliminary flight paths have been identified as part of ongoing development and following submissions received during the public exhibition of the Draft EIS. The key refinements proposed are:

- minor refinement to flight path D10 to provide a more westerly alignment north of Linden, which would move the Runway 23 northern jet departures preliminary flight path approximately one nm (2 km) further away from Mt Tomah and 0.9 nm (1.8 km) from Mt Wilson residential areas, therefore providing additional separation between the revised flight path and these communities and provide further separation from overflight of the Emu Cave Aboriginal Place site
- removal of Required Navigation Performance – Approval Required approach (A13) south of Linden, which would result in a measurable noise benefit to the communities of Linden and Faulconbridge when RNP AR capable aircraft are approaching Runway 05 at night
- minor refinement to flight path A12 (RRO night approach to Runway 05) to provide a more southerly alignment, reducing the level of direct community overflight, potentially reducing noise impacts to these communities
- implementation of a new night-time (11 pm to 5:30 am) RRO-NAP. This would result in avoiding overflying over communities as much as possible, including Wallacia and Mulgoa, however would result in additional overflight of parts of Silverdale and Warragamba.

In addition, noise abatement procedures included in the preliminary design include the use of noise preferential flight paths which, where possible, direct aircraft operations away from noise sensitive areas. This includes the use of different flight paths between 11 pm and 5.30 am, when additional airspace flexibility is available as a result of substantially diminished Sydney (Kingsford Smith) Airport operations during this period. Other noise abatement procedures which may be included in the detailed airspace design such as the use of noise abatement departure procedure climb profiles. The final procedures would be developed further and finalised by Airservices Australia in consultation with aircraft operators, airlines, WSA and FoWSA/WSI CACG. This is reflected in mitigation measure N2.

The post-implementation review would also be conducted around 12 months after the airspace and flight path changes are implemented. In accordance with Airservices' NOS, this would identify opportunities to improve outcomes for communities (mitigation measure N6).

The responsibility of mitigation measures has been assigned according to the responsible party. WSA Co is the responsible party for the implementation of the WSI CACG and employment policies at WSI. It is standard practice for operators of federally leased airports to implement the CACG, noting the chair would be independent.

17.6.2 Linden Observatory

17.6.2.1 Issue raised

Raised by

Community, Blue Mountains City Council

Issue

Submissions stated that mitigation measures are required to address the conflicts with the Linden Observatory, particularly those concerning the effects of turbulence and contrails and implications to the proposed Dark Skies accreditation for the observatory.

17.6.2.2 Response

As discussed in Section 17.5, users of the Linden Observatory would need to adapt some operations due to the presence of WSI flight paths, and that the introduction of flight paths should not prohibit the ability to obtain Night Sky accreditation at the level proposed.

A number of design refinements have been made to the project which will reduce aircraft overflight over Linden Observatory. These include changes to the RRO runway mode of operation as follows:

- the withdrawal of preliminary flight path D28 for jet operations and the reallocation of those aircraft to preliminary flight path D32 (refer to Section 24.1.5.1 of Chapter 24 (Refinements to the project since exhibition) of this Submissions Report))
- the introduction of a new RRO mode noise abatement procedure (RRO-NAP) (refer to Section 24.1.5.2 of this Submissions Report).

No further mitigation is proposed.

Chapter 18 Economic

This chapter provides a response to the issues raised in submissions specific to Chapter 19 (Economic) of the Draft EIS.

Overall, submissions raised concerns regarding the assessment approach undertaken to consider the economic impacts of the project, the potential impacts on property value and impacts on tourism associated with the Blue Mountains. Submissions also commented on general economic impacts including impacts to businesses, tourism, lifestyle and the broader Sydney Basin. Submissions also commented on the mitigation and management strategies outlined in the Draft EIS.

The final assessment of the proposed flight paths concluded that any economic loss experienced due to the operation of WSI flight paths would be broadly counteracted by the economic benefit associated with the operation of 24-hour airport. It is not expected that there would be a measurable impact to tourism or the region due to the operation of the flight paths. Any impacts to property values are expected to be temporary and are not expected to have a significant impact in the long term. The Department of Infrastructure, Regional Development, Communications, and the Arts (DITRDCA) has finalised the Noise Insulation and Property Acquisition policy (NIPA). The NIPA aims to identify which residences are eligible for either land acquisition or property upgrades such as noise attenuation. All other compensation measures that were requested are not considered necessary due to the minimal economic impact of the project.

Further assessment of the potential economic impacts of the project are provided in Chapter 19 of the finalised EIS.

18.1 Submission overview

18.1.1 Number and origin of submissions

A total of 882 submissions raised matters concerning economic impacts, accounting for around 10 per cent of all submissions raised. The majority of these submissions originated from the Sydney Basin and surrounds as shown in Figure 18.1.

Of the 882 submissions that raised economic impacts, around 56 per cent originated from the Western City District (Blue Mountains) followed by the Western Sydney District (excluding Blue Mountains) at 17 per cent.

Around one per cent of the 882 submissions originated elsewhere from NSW and other interstate locations. Around 16 per cent of the submissions did not supply any post code data.

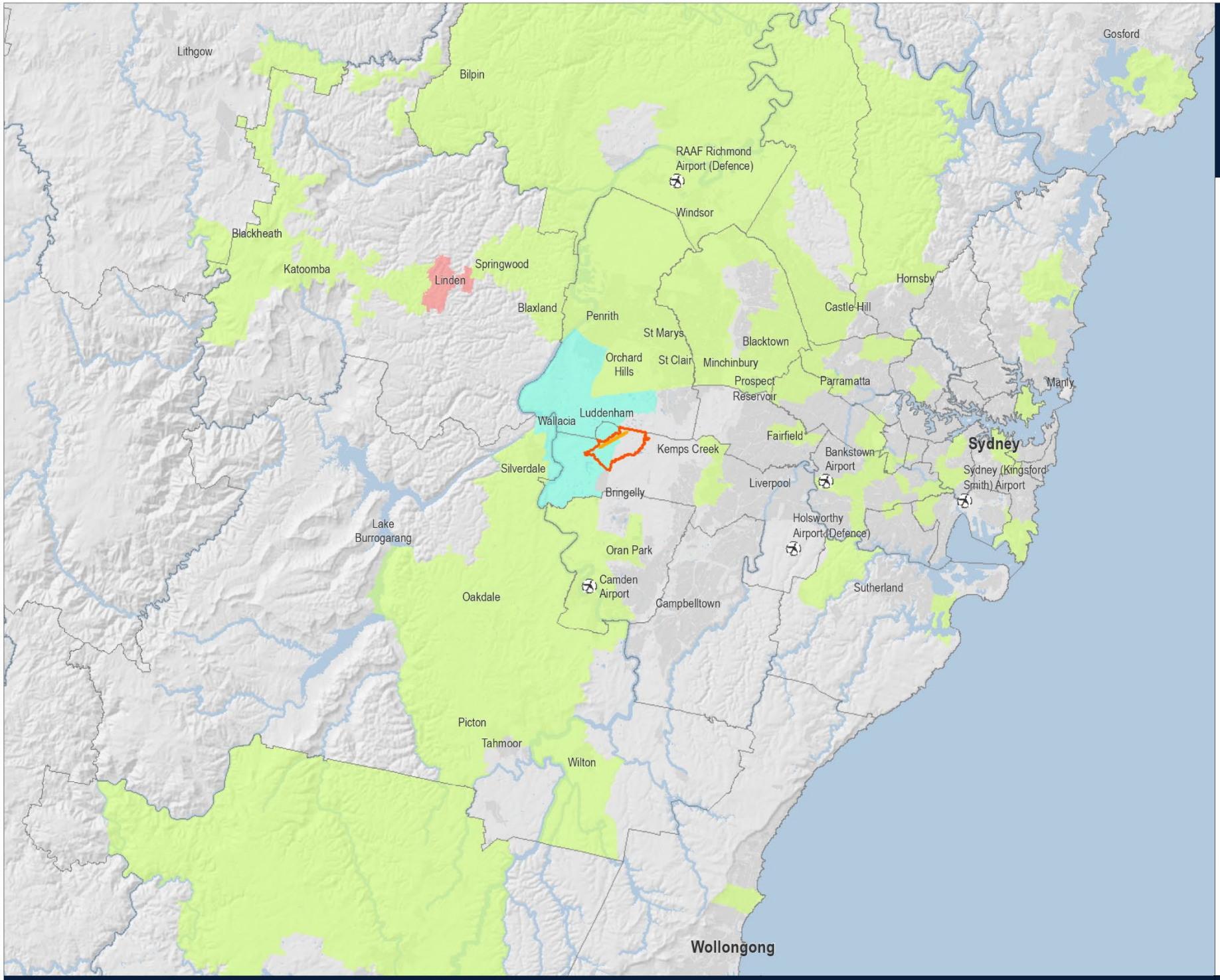


Figure 18.1

Origin of submission in relation to economic impacts

Legend

- WSI Runway
- Western Sydney International (Nancy-Bird Walton) Airport land boundary
- Local Government

Number of submissions by postcode

- 1 - 50
- 51 - 100
- 101 - 150
- 151 - 200
- 201 - 250
- 251 - 300
- 301 - 350
- 351 - 400
- 401 - 450
- 451 - 500
- 501 - 550
- More than 550

0 5 10 km

Coordinate system: GDA 1994 NSW Lambert

Scale ratio correct when printed at A4

1:600,000 Date: 20/06/2024

18.1.2 Key issue breakdown

A breakdown of the sub-issues within this key issue and the percentage of total submissions that raised each of these sub-issues is outlined in Table 18.1.

Table 18.1 Breakdown of sub-issues in relation to economic impacts

Sub-issue	Number of submissions that raised the sub-issue	Percentage of submissions that raised the sub-issue
Impact assessment approach	29	<1%
Impacts to property value	474	6%
Impacts to Blue Mountains economy	341	4%
Economic impacts – general	82	1%
Mitigation and management	58	1%

The Western City District (in total) generally accounted for around 70 per cent or more of submissions within each key issue. Each sub-issue was raised more often by the Western City District (Blue Mountains) community followed by the Western City District (excluding Blue Mountains) community, with exception for the mitigation and management sub-issue where this issue was raised slightly more often by Western City District (excluding Blue Mountains) community.

For sub-issues that captured general economic or property value concerns, there was little difference between the Western City District (Blue Mountains) community and Western City District (excluding Blue Mountains) communities. For the Blue Mountains economy sub-issue, around 77 per cent originated from the Western City District (Blue Mountains) community with around 8 per cent originating from Western City District (excluding Blue Mountains) community.

For other Sydney Basin districts, each district typically accounted for around 10 per cent or less within each sub-issue. Submissions from other intrastate or interstate locations also typically represented 2 per cent of less for each sub-issue, and up to 25 per cent of submissions in each sub-issue did not provide a location.

18.2 Impact assessment approach

18.2.1 Tourism and wilderness area impacts

18.2.1.1 Issue raised

Raised by

Community, Blue Mountains City Council, Blue Mountains Conservation Society, Stephan Bali MP – Member for Blacktown (NSW)

Issue

Submissions stated that the Draft EIS lacked inclusion of analysis of economic impact of the WSI flight paths on tourism. Submissions referred to the Draft EIS, which stated the increased access to tourist destinations that WSI would facilitate, in particular for tourists visiting areas such as the Greater Blue Mountains Area (GBMA), was considered to outweigh the potential adverse amenity impact of the flight paths. Submissions questioned these claims, suggesting there was no evidence to support these assertions.

Submissions also suggested a holistic analysis of economic impacts should be undertaken as a priority in the finalised EIS. This included requests that the additional analysis include the range of adverse impacts of WSI on the unique character and visitor experience of the Blue Mountains as well as Dark Sky values.

Submissions suggested the use of additional sensitive tourist and recreation areas be included in future modelling such as walking tours, sporting events and canoeing/kayaking trails, along with other viewing locations into the World Heritage Area from outside the Blue Mountains LGA.

Submissions stated that the economic assessment was not supported by any study to account for increased visitation by day visitors at the expense of higher value overnight visitors to the region, or included economic modelling that assessed the value of wilderness areas in the GBMA in order to evaluate impacts relative to the benefits of WSI. These impacts were primarily associated with aircraft noise and loss of visual amenity where submissions questioned the accuracy of statements contained in the Draft EIS such as 'the flight paths generally avoid tourist destinations'.

There was also a concern that the metrics used in the Draft EIS, such as the number of jobs created, skewed the economic assessment. Submissions were concerned that the economic benefits to tourism were overstated if the assessment approach was similar to the framework developed by Airport Council International Europe. Submissions raised concerns that this potential negative impact of increased tourism on the Blue Mountains had not been appropriately captured in the economic assessment.

Submissions stated that the Draft EIS overestimated overall demand for increased access to key tourist destinations such as the GBMA whereby WSI does not automatically increase visitor numbers. Submissions also questioned the claim that tourists would prefer to use WSI rather than Sydney (Kingsford Smith) Airport.

18.2.1.2 Response

The economic impact assessment considered the potential impacts to tourism due to the operation of WSI flight paths and concluded that while the flight paths have the potential to generate some disbenefits, there is an opportunity to take advantage of the proximity of the Blue Mountains to WSI. Given hotels, restaurants, shops and other venues where tourists spend money are outside the N60 contour, it was assessed that there would be no loss in tourist spending and jobs related in the Blue Mountains. Although the Draft EIS did not quantify assumptions regarding positive impacts on tourist numbers as a result of this proximity, WSI has the potential to contribute to additional tourism spend in the Blue Mountains given reduced travel times. For example, holiday packages could be sold with flights in and out of WSI and overnight accommodation in the Blue Mountains.

Regardless of the scenario considered, the impacts on the formal economy (measured by support of jobs or gross value added) are considered to be insignificant when compared to the economic outputs of WSI. The noise and visual impacts from aircraft may potentially have some adverse impact on the enjoyment of nearby recreational activities, possibly leading to some decrease in demand in the most affected areas. However, some of this reduced demand is expected to some degree to be offset or redirected to other regions, including less affected areas within the Blue Mountains.

The challenge with incorporating 'informal' recreational tourism such as camping, bush walking, sporting events and canoeing/kayaking stems primarily from data limitations. Notwithstanding this, these activities are largely recreational and their contribution to job creation and gross value added is considerably lower than that of overnight tourists staying in hotels and similar accommodation (Tourism Research Australia, Regional and Local Government Area Profiles from 2009/10 to 2022–2023).

In addition to the above, and for context, the main tourist area in the Blue Mountains is the Upper Blue Mountains from Lawson to Mt Victoria with Wentworth Falls, Leura, Katoomba and Blackheath. These are the primary destinations for staying overnight and for daytime tourist activities such as sightseeing, bushwalking, canyoning, adventure and other activities. Springwood, located in the mid-Blue Mountains, is also a popular destination, although to a considerably lesser extent than the Upper Blue Mountains. Springwood is 1.6 nm (3 kilometres (km)) from the nearest N60 contour. In the Upper Blue Mountains, all the towns, lookouts and nearby bushwalks are more than 2.7 nm (5 km) from any N60 contour.

While there are numerous lookouts and bushwalks in the Blue Mountains, very few are located inside the N60 contour for any of the assessed scenarios. None of the lookouts listed on the Visit NSW site (https://www.visitnsw.com/destinations/blue-mountains/scenic-lookouts) are located within these contours. Both the Blue Mountains City Council (https://www.bmcc.nsw.gov.au/camping) and NSW National Parks (https://www.nationalparks.nsw.gov.au/camping-and-accommodation/search?StayOption=1&TentType=0&Near=Blue+Mountains+National+Park) manage campgrounds in the Blue Mountains. None of these campsites have been identified as being listed within any assessed N60 contour. The Murphey Glen and Ingar gardens are located approximately 300m from the closest N60 contour. All other noted campgrounds are located at least one nm (2 km) from any N60 contour.

The economic impacts to both formal and informal tourism in the Blue Mountains along with the opportunity to provide positive impacts on tourism was considered in Section 5.3 of Technical paper 11: Economic (Technical paper 11).

The economic assessment did not adopt the Airport Council International Europe framework or methodology in its assessment of economic impacts. The Europe framework uses input output multipliers to assess impacts. Multipliers have several shortcomings that can result in misinterpretations resulting in some overestimation of impacts (refer to Australian Bureau of Statistics (ABS) – Using I/O Tables for analysis and NSW Research Paper 'Treasury Employment support estimates - methodological framework'). To avoid these limitations, the economic assessment quantified the negative impacts of the flight paths and weighed them against the positive impacts of WSI itself. The contribution to wealth from WSI was based on estimated jobs on the WSI itself and did not include any input-output multiplier impacts. As stated above, WSI is expected to generate economic benefits to Sydney and NSW and the flight paths are a consequence of WSI operations (refer to Section 4.1 of Technical paper 11 for further discussion).

18.2.2 Health and wellbeing impacts

18.2.2.1 Issue raised

Raised by

Community

Issue

Submissions stated that the economic assessment did not include any economic valuation of impacts to health and wellbeing due to the project or operation of WSI when evaluating the impacts relative to the benefits of WSI (such as increased burden on the health system, or reductions in work productivity).

One submission cited increased burden on the health system due to aircraft noise generated by flight paths for Brisbane Airport, as documented in *Brisbane – Aviation Noise Pollution, Public Health and Wellbeing* (Foley 2023).

18.2.2.2 Response

The referenced research, which has not been peer reviewed, suggests that Queensland could incur a yearly health and social cost of $2.1 billion due to aircraft noise from Brisbane Airport unless a curfew and flight cap are implemented. This figure is based on an assumed cost of $9,000 per person per year, derived from a methodology used in a study on Brussels Airport in Belgium. However, the study acknowledges that direct comparisons with Brussels are challenging due to income and cost-of-living disparities. To account for these differences, the per capita cost estimates for Brussels were halved to approximately align with those for Brisbane residents, arriving at the $9,000 figure. There is a lack of additional evidence provided in the research project to validate this $9,000 per capita per-year assumption.

For context, Australia's total expenditure on health goods and services in 2021–22 was approximately $241.3 billion, averaging around $9,365 per person (Australian Institute of Health and Welfare, 2023, Health Expenditure). Given this context, the estimated yearly health and social cost attributed to aircraft noise appears disproportionately high compared to total expenditure per person on health.

There is ongoing debate regarding threshold levels, metrics and scope of analysis in assessing and quantifying negative health impacts from aircraft noise in terms of additional costs per person, and there is a potential risk of double-counting when using methods like the hedonic pricing method. Nonetheless, it is a widely accepted measure and for this reason, impacts on health and well-being have not been quantified (Berry et al, 2014).

Social and economic factors significantly influence health and well-being and contribute up to half of health status measures, whereas physical environmental factors like noise and air quality play a smaller role, making up about 10 per cent of health status measures (Canadian Institute for Advanced Research, 2002). Employment and income are crucial determinants of health and wellbeing, benefiting individuals, families and communities (Ministry for Primary Industries, 2014).

Noting that the flight paths cannot be viewed in isolation from WSI itself, as it is a crucial component of this development, the 2016 EIS estimated that WSI would generate 8,730 direct jobs by 2031, increasing to 61,500 by 2063, with an additional 4,439 indirect jobs by 2031 and 27,148 by 2063. These employment opportunities span aviation, retail, hospitality and other related industries and will contribute to enhanced social outcomes. Furthermore, the infrastructure expansion at WSI will bolster NSWs' connectivity to the global economy, fostering long-term productivity improvements for employees and businesses across the state. These employment opportunities, as well as increased productivity facilitated by WSI and the flight paths, would contribute positively to the health and well-being of the community, offsetting the negative physical environmental issues.

18.3 Impacts to property value

18.3.1 Reduction in property value

18.3.1.1 Issue raised

Raised by

Community, Camden Council, Melissa McIntosh MP – Member for Lindsay (Federal), Mulgoa Valley Landcare Group Inc, Wallacia Progress Association, Wollondilly Shire Council

Issue

Submissions expressed concern with the impact to property values due to the project or questioned the impact to property values as described in the Draft EIS. This was often raised in association with the impacts of aircraft noise (particularly at night), the lack of a curfew or respite, and/or the impact to the amenity of an area or region. Submissions stated that increases to property values would increase housing inequality.

In raising concerns about impacts to property values, a number of submissions referred to evidence provided in Australian and international studies, including those referred to in the Draft EIS which stated that property values would decrease by 10 to 19 per cent where aircraft noise occurs between 65–85 dB(A). This was identified to dispute the conclusions in the Draft EIS that stated the impact on property values were unlikely to occur where a property is within the N60 contour, or that the Draft EIS assessment had not accounted for the noise impacts at night, and/or impacts to unique features valued by the community that can influence property values, such as the Blue Mountains.

Submissions also raised concern that there could be a negative impact in the immediate future, before WSI is fully established, given the increase in individuals wishing to sell and the uncertainty of impacts for future buyers.

Submissions stated that airport and/or aircraft noise will impact (or already had impacted) property values as the development of WSI had prevented the ability to subdivide existing parcels of land or build additional structures on properties (e.g. extensions or secondary accommodation).

In questioning the impacts to property values outlined in the Draft EIS, submissions raised concerns that an analysis of property value impacts near other metropolitan airports did not apply to suburbs surrounding the Airport Site or the communities in the Blue Mountains.

Submissions proposed the examination of sale prices of similar properties with comparable size and improvements both under flight paths and those not affected by such flight paths. This comparative analysis was suggested as an effective method to identify areas at risk of devalued property due to lower levels of desirability and ownership appeal associated with flight paths.

18.3.1.2 Response

Technical paper 11 incorporated a robust assessment of impacts (both negative and positive) on property values. The assessment presented in the Draft EIS covered impacts at the dates (2033, 2040, 2055) WSI is in operation rather than impacts in the immediate future, which were covered in the 2016 EIS and not re-prosecuted or used in a comparative analysis in the Draft EIS. Given the Stage 1 Development would produce no impact to property values, the cumulative impact of all activities at WSI would make very little difference to the assessment of property values.

Analysis of property value impacts near metropolitan airports presented in the Draft EIS relied on available, peer reviewed data. Based on the review, no evidence was identified to support measurable impacts on property prices for those suburbs surrounding WSI or communities in the Blue Mountains was available at the time of writing. The rates of reduction in residential property values adopted in the Draft EIS are summarised in Table 18.2 (refer to Table 5.3 of Technical paper 11 for additional detail).

Table 18.2 Predicted average loss in value according to modelled aircraft noise

Noise Contour	Dwellings in 2033	Dwellings in 2055	% loss in value
N60 (10+ movements in 24-hrs)	50,000	65,600	No discernible impact
N70 (5+ movements in 24-hrs)	1,700	4,300	3.0%
ANEC 20	93	320	9.5%
ANEC 25	22	58	14.7%
ANEC 30	6	15	19.8%
ANEC 35	1	5	25.0%

The ANEC 20 to ANEC 30 rates noted in Table 18.2 are identical to the rates concluded in the JLL study (Western Sydney Airport EIS, Potential Impacts on Property Values, JLL 2016). The rates adopted in the Draft EIS for the N60 and N70 contours were derived from a separate conclusion in the JLL study which is that an additional unit of ANEF results in a loss in value of between 0.4 to 1.1 per cent.

The assessment of property values in the Draft EIS indicated that any loss experienced due to the operation of WSI flight paths would be counteracted by the economic benefits associated with the operation of a 24-hour airport. Property values for non-residential land uses are expected to experience no discernible impact while also benefiting from the boost to the economy WSI itself brings. The forecasted loss to residential property values within the N60 and N70 contours are expected to be counteracted by the overall regional increase to property values overtime. The total maximum impact to property values were estimated to be around $53 million dollar loss in 2033, which would increase to a cumulative loss of $148 million by 2055. These forecasts are measured in 2022 Australian dollars. If the average real growth rate of 6.3 per cent per annum continues to occur like it has done since 2012, these maximum forecasted losses are expected to make relatively little impact to actual house prices. This is explained in greater detail in Section 5.4 of Technical paper 11.

It is possible that marketability and property values are currently impacted by WSI and the proposed flight paths. Historically, following the completion and commencement of operations of projects like Brisbane Airport, property prices have reverted to normal levels. Anecdotal evidence also suggests similar patterns have been observed with other infrastructure projects, particularly major road developments. Therefore, under this scenario, it is anticipated that prices would also return to normal following project completion and commencement of operations.

Most of the previous research and studies undertaken that were covered in the JLL study (JLL 2016) as well as the Queensland University of Technology (QUT) study (*The Impact of Aircraft Noise on Brisbane Residential Property Sectors 1988–2020*, QUT 2020) on the Brisbane adopted hedonic price modelling (or multiple regression analysis) which examines sale prices in locations affected and not affected by flight paths to determine how much flight paths affect property values as well as the levels of confidence in the result.

The QUT study found little impact as a result of changes in flight paths, concluding that:

> *'the 2020 residential sales analysis does not provide substantial evidence that the change in aircraft movements following the opening of the new parallel runway in July 2020, has had a definable impact on the movement in house prices in suburbs that are now subject to increased exposure to aircraft noise. There is no evidence of decreased prices and decreased capital growth and there has not been a definable increase in prices and returns for suburbs that are now less impacted by aircraft noise'*.

A further study considered was Melbourne Airport's Third Runway (Chapter D2 Economic Impact Assessment) which included an assessment on the likely impacts on residential property values. For this study, it was noted that:

> *'62 suburbs of Melbourne (including suburbs affected by flight paths) were analysed. The assessment found that the location of residential properties under a Melbourne flight path had no significant long-term impact on annual movements in house prices. It was found that house price growth in a number of flight path-affected suburbs had outpaced that of other Melbourne suburbs with similar socioeconomic profiles that were not under a flight path. More specifically, the study found that there was negligible impact to property value regardless of whether a property was located directly under a flight path, within aircraft noise contours or adjacent to the airport.'*

18.3.2 Impacts to personal finances

18.3.2.1 Issue raised

Raised by

Community, Wallacia Progress Association

Issue

Submissions expressed concern that impacts to property values would impact savings for individuals or could:

- prevent people from selling properties due to reductions in value
- impact the costs of home insurance
- impact the cost of housing and/or renovations (to account for aircraft noise attenuation), or
- place individuals or families at a financial disadvantage where they could not sell their properties due to aircraft noise impacts.

18.3.2.2 Response

The impact on savings is relevant if the value of homes is significantly impacted. As documented in the Draft EIS (refer to Section 19.5.3) and discussed in Section 18.3.1 above, only around 0.5 per cent of dwellings inside the N60 contour would be inside the ANEC 20 contour (around 320 dwellings by 2055). These are the dwellings that have the potential to be significantly impacted with an average loss of 10.9 per cent in the value of their homes. Real capital gain in house prices in the area have been above 6 per cent per annum over the past 10 to 15 years. Hence the majority of homes inside the ANEC 20 contour are considered to make good any potential loss in property value in around 2 years growth, mitigating any expected financial disadvantage to those home owners.

18.4 Impacts to the Blue Mountains economy

18.4.1 Impacts to nature-based tourism

18.4.1.1 Issue raised

Raised by

Community, Blue Mountains City Council, Blue Mountains Conservation Society, Mount Wilson Progress Association Inc and Mt Irvine Progress Association, Residents Against WSA Inc (RAWSA), Susan Templeman MP – Member for Macquarie (Federal), Trish Doyle MP – Member for the Blue Mountains (NSW)

Issue

Submissions expressed concern that the project would impact tourism in the Blue Mountains, including activities within the GBMA (including wilderness areas and nature-based businesses (such as bushwalking, climbing, canyoning, camping, bike riding, star gazing) and businesses within the urban areas (such as restaurants, cafes, accommodation, and health/wellbeing businesses). Concern was primarily raised around the impact of aircraft noise during day and night in urban areas and natural areas, as well as changes to the amenity and enjoyment of the region and tourist areas such as The Three Sisters.

Tourism was identified as being a major contributor to the Blue Mountains economy (with almost 5 million domestic and international visitors per year (Blue Mountains Visitor Profile)) is a key sector for employment in the local government area (40 per cent of jobs producing $121 million in wages) and important to the livelihoods and quality of life of communities in the local government area.

Submissions stated that any benefit of employment by WSI would be offset by the impacts to the tourism and hospitality sector in the Blue Mountains. It was argued in submissions that the values of the Blue Mountains area that are important to the economy have not been given sufficient recognition in evaluating the economic impacts of the project (including quiet environments, landscapes, and clear skies).

Submissions questioned how tourism would benefit the Blue Mountains economically given lack of direct access and public transport between the GMBA and the airport. Submissions also stated that the economic benefits to tourism in Blue Mountains would not be felt by local tourism service providers but instead by international providers catering to international travellers arriving through WSI.

Submissions suggested that increased tourism as an economic benefit to the region may not appropriately counterbalance impacts as the Draft EIS suggested. Submissions cited the negative impacts to tourism due to an increase in inappropriate recreation and tourism activities that will degrade the World Heritage experience, as reported by the *Greater Blue Mountains Area Strategic Plan* (NSW DECC, 2009).

Concerns were raised that the potential increase in day visitors to the Blue Mountains would occur at the expense of higher value overnight visitors and the overall Blue Mountains economy.

Submissions showed particular concern for the Grose River, its status as a wild river and the impacts to Blue Mountains tourism if its amenity was changed due to aircraft noise.

Submissions stated that the economic benefits of WSI need to be balanced against the impacts on tourism economy of the Blue Mountains.

18.4.1.2 Response

It is acknowledged that a substantial component of the local economy for the Blue Mountains region is dependent on, or related to, the tourism industry. While most tourists who visit the Greater Blue Mountains are day trippers, it is noted that there are a number who stay overnight and longer.

The Draft EIS considered the potential economic impacts of the project on tourism in the Blue Mountains. The assessment noted that:

- in relation to potential noise impacts, tourist accommodation such as hotels, motels and camping grounds may have the potential to be impacted and lead to fewer tourists staying for more than a day, which could have a marked impact on local tourist accommodation. It was also noted that there is only one short stay accommodation venue within the N60 contour within the Blue Mountains, meaning the potential of impacts on this type of accommodation would be minimal. It was acknowledged that the key impact that may affect people visiting the Blue Mountains for a day could be due to aircraft noise while they're undertaking any outdoor pursuits (including overnight tourist activities such as camping)
- as previously noted, the main tourist area in the Blue Mountains is the Upper Blue Mountains from Lawson to Mt Victoria with Wentworth Falls, Leura, Katoomba and Blackheath being the primary destinations for staying overnight and for daytime tourist activities such as sightseeing, bushwalking, canyoning, adventure, and other activities. Springwood in the mid-Blue Mountains is also a popular destination although to a considerably lesser degree than the Upper Blue Mountains. Springwood is 1.6 nm (3 km) from the nearest N60 contour. In the Upper Blue Mountains all the towns, lookouts and nearby bushwalks are more than 2.7 nm (5 km) from any N60 contour. Additionally, none of the main walking trails, campsites and lookouts have been noted as being inside any N60 contour and hence the impact on passive recreation is likely to be minimal
- in relation to visual amenity and wilderness experience impacts, recreational activities are generally not expected to be substantively impacted by the project. The visual impacts of the project were concluded to range from negligible to moderate-high. Walls Lookout and Echo Point (including views of the Three Sisters and Jamison Valley) would experience a moderate-high visual impact due to the high sensitivity of these views. WSI flights would be perceptible moving across the view even though the altitudes are high. Within the more remote and wilderness areas of the GBMA, there are scattered day use facilities and campgrounds that would largely not be impacted by aircraft flightpaths. Specifically, the operation of the flight paths is not expected to impact the Grose River, its status as a wild river, or its importance as a tourist destination within the Blue Mountains.

The inclusion of 'informal' recreational tourism such as camping, bush walking, sporting events and canoeing/kayaking is complex largely because of data limitations on the extent of usage of these locations. These activities are largely recreational and their contribution to job creation and gross value added is low in comparison to the contribution from overnight tourists staying in hotels and similar accommodation. The noise and visual impacts from aircraft may have some adverse impact on the enjoyment of the recreational activity. A worst-case scenario would be some fall in demand in the more affected areas. However, some of this reduced demand would be redirected to other areas including other (less affected) areas in the Blue Mountains.

Conversely, the Draft EIS noted that it is expected that due to the location of an international airport closer to the GBMA, that there could be benefits to tourism in the Blue Mountains. It was noted that WSI could provide a boost to the tourists within the area outweighing the potential impact of the flight paths. As aircraft fly over such a distinct and unique area of Australia, tourists will be able to gain an appreciation over the area and could choose to stay in the area for longer. The flights that will use WSI could bring more people into Western Sydney who may have previously flown into Sydney (Kingsford Smith) Airport and therefore not been close enough to the area for a visit.

With respect to direct access to the Blue Mountains, as noted above, a significant level of transport infrastructure is under construction to ensure WSI has strong links to the rest of the Sydney Basin. Access to the Blue Mountains will be improved with the M12 motorway, Northern Road upgrade and the Metro line to St Marys Train Station. These improvements will benefit all visitors to Blue Mountains, from day-trippers to overnight domestic and international tourists.

One study on the impacts of changes in aircraft noise exposure on outdoor recreation was completed in 2010 (Krog et al 2010). This paper examined the behavioural responses to changes in aircraft noise exposure in local outdoor recreational areas near airports. Results from a panel study conducted in conjunction with the relocation of Norway's main airport in 1998 were presented. Results indicate that changed aircraft noise exposure may influence individual choices to use local outdoor recreational areas, suggesting that careful considerations are needed in the planning of air routes over local outdoor recreational areas. However, considerable stability in use, and also fluctuations in use unrelated to the changes in noise conditions were found.

In the case of the main recreational area near the new airport, the study showed visitors had perceived some deterioration due to increase aircraft noise exposure. However it generally did not change their decisions about visiting the area. Visitors continued to visit the area and simply adapted to the change. Likewise there was little increase in visitation numbers to the recreational area near the decommissioned airport.

Overall, while it is acknowledged that the experience of some of the recreational and tourism activities may be impacted by increased visual or noise intrusion associated with aircraft movements, impacts associated with the project are not considered substantial enough to result in any measurable impacts in terms of tourist visitation numbers to the Blue Mountains and wider GBMA.

18.5 Economic impacts – General

This category captures issues raised in submissions concerning economic impacts of the project. Matters relating to Blue Mountains economy or tourism has been captured separately under Section 18.4.

18.5.1 Impacts to businesses

18.5.1.1 Issue raised

Raised by

Community, Penrith City Council, Sydney Gliding

Issue

Submissions expressed concern on the impacts of aircraft noise on businesses, including rural industries or businesses (such as horse agistments or other livestock that is sensitive to noise). Submissions also raised concerns on the impacts of loss of amenity on businesses (such as cafes, restaurants, wellness retreats, galleries and art workshops, bookshops, various healthcare providers, and small crop agricultural businesses). Submissions stated that these impacts would potentially lead people (local residents) to relocate which would reduce clientele.

Submissions stated that other local businesses that directly benefit from tourism industry such as accommodation and short-term rental providers would also be impacted.

18.5.1.2 Response

The number of tourist related businesses impacted significantly by the flight paths are expected to be limited. All tourist accommodation in the Blue Mountains and other tourist venues are outside the N70 contour (refer to Section 18.4.1).

There may be some possible adverse amenity impacts on certain rural businesses where these are located in close proximity to WSI. However, it is not expected that a majority of rural businesses would be adversely impacted on rural properties from amenity impacts.

18.5.2 Regional benefits

18.5.2.1 Issue raised

Raised by

Community

Issue

Submissions stated that there are no obligations (such as an MOU) placed on WSA Co to employ local residents, and therefore the benefits of increased jobs in the region aren't guaranteed, and/or that investment has also not been equitable in Western Sydney as only areas immediately surrounding WSI benefited from investment and not communities overflown by WSI flight paths. Submissions stated that the economic impacts of the flight paths should consider more closely the impact on the range and diversity of job opportunities and businesses.

18.5.2.2 Response

The Draft EIS assesses impacts from the WSI flight paths rather than WSI itself which were previously assessed in the 2016 EIS. It is not the intent of the current assessment to identify any obligations placed on WSA Co. in regards to specific requirements for local employment opportunities. Further information about jobs created by WSI can be found at Job opportunities | Western Sydney Airport.

18.5.3 Productivity, relocation, and health impacts

18.5.3.1 Issue raised

Raised by

Community, Wallacia Progress Association

Issue

Submissions stated that sleep disturbance and decreased wellbeing would result in increased risk of accidents and health issues, leading to increased financial burdens on the health system, and queried what the economic cost would be due to the project. Submissions often cited the study released by the Brisbane Flight Path Community Alliance for Brisbane Airport or a study commissioned by the Sleep Health Foundation.

Submissions raised concern that loss of amenity would limit investment and uptake of residents in the area. Submissions stated that retirees (who are a significant proportion of the Blue Mountains population and contribute a strong economic value) will relocate due to loss of amenity, substantially reducing the region's economic value.

Submissions also stated that the disruption to sleep would result in reduced productivity or would cause people to relocate out of the area due to night time noise, resulting in adverse impacts to the economy.

Submissions stated that the increased cost of running air conditioning due to aircraft noise would increase the burden on personal finances.

18.5.3.2 Response

The issues of economic impacts of the project, financial burden, relocation of existing residents as a result of the flight paths have been covered in Section 18.3.1 of this Submissions Report.

Existing residents could relocate for any number of reasons or combination of reasons; there is no evidence to suggest retirees are, or are not, likely to relocate due to the flight paths. Even if they do, the replacement of retirees with other household types is likely to improve economic performance given that retirees do not produce goods and services, nor are they large consumers of wealth by comparison to other household types.

The relative increase in the costs of air conditioning (presumably due to closing windows to avoid aircraft noise) expenses such as the installation or increased costs of running air conditioning are beyond the scope of this assessment. Typically, noise attenuation measures are not required outside the N70 contour which would generally occur within close proximity to WSI.

Discussion regarding potential sleep disturbance is provided in Chapter 19 (Human health) of this Submissions Report and Appendix G (Assessment of the refinements to the project) of the EIS.

18.5.4 Other tourism impacts

18.5.4.1 Issue raised

Raised by

Community

Issue

In addition to concerns raised specifically on the impacts to Blue Mountains economy and tourism, submissions identified concerns to tourism elsewhere, including in areas around Thirlmere, Wallacia, Silverdale, Warragamba and surrounding area and the Central Coast (such as Bouddi National Park) due to WSI flight paths and aircraft noise.

Submissions also raised concerns that a decrease in Blue Mountains tourism would not only have local effects but also have detrimental impacts to both NSW and Australia's economy via loss of business.

18.5.4.2 Response

There are very few facilities for tourists in the suburbs of Thirlmere, Wallacia, Silverdale, Warragamba. Wallacia currently has a recreation reserve, a golf course and a 30-room hotel – all 3 of which are within the N60 contour of a flight path but outside the N70 contour. The economic impacts on the facilities as a direct result of aircraft noise from the flight paths are immeasurable.

Bouddi National Park is situated over 50 km away from the nearest N60 contour.

The research has shown that the impact on tourism in the Blue Mountains would be low. Further discussion regarding potential tourism impacts is provided in Appendix G (Assessment of the refinements to the project) of the EIS.

It is not expected that there would be any detrimental impacts on the wider NSW and Australia economies.

18.6 Mitigation and management

18.6.1 General

18.6.1.1 Issue raised

Raised by

Community

Issue

Submissions queried if or what compensation would be provided due to property value loss or costs (including cost to install air conditioning or other noise attenuation) or due to the inequity of impact where some areas have the advantage of rezoning. Submissions referred to the Draft EIS which stated that property values would decrease by 10 to 19 per cent where aircraft noise occurs between 65–85 dB(A).

Submissions suggested the government establish a buy back scheme at current market value for residences affected by aircraft noise and loss of amenity.

Submissions queried what compensation would be provided to businesses within the Blue Mountains due to impacts to nature-based tourism due to aircraft noise.

18.6.1.2 Response

While the Draft EIS acknowledges potential loss in property value, the estimates are presented as maximum impacts and do not account for the rapid increase in residential prices in the region by almost 24 per cent since the announcement the Airport. Given the projected increase in residential values in Western Sydney in the following years, these value loss estimates would be 'made good' within 6 months.

DITRDCA has finalised the NIPA, which identifies which residences are eligible to be considered for either land acquisition or property upgrades such as noise attenuation. The purpose of the NIPA policy is to provide noise mitigation to those eligible properties that will be significantly impacted by aircraft noise in the first 10 to 15 years of WSI's operations. The program is not intended to provide compensation. Properties outside the eligibility area will still see and hear aircraft. This has been discussed in Section 10.4.1 of Technical paper 1: Aircraft noise (Technical paper 1).

Other expenses such as the installation and increases in the operation of air conditioning are beyond the scope of this assessment.

The economic assessment has considered impacts to the Blue Mountains economy and has found that there would be no loss in tourism spend in the area. The region would also likely boost tourism in the region due to greater accessibility to the GBMA. As such, compensation for businesses within the Blue Mountains are not considered necessary. This is discussed in greater detail in Section 5.3 of Technical paper 11.

Chapter 19 Human health

This chapter provides a response to the issues raised in submissions specific to Chapter 20 (Human health).

Overall, submissions raised concerns about the impact assessment approach and the assessment of potential impacts to human health. These concerns predominately related to the impacts of aircraft noise, especially sleep disturbance. Other issues expressed concern about human health impacts arising from changes in air quality and water quality, alongside concerns about impacts to mental health and wellbeing.

The human health impact assessment focused on the short and long-term health effects on community health as a result of the project. The assessment considered health effects where there is robust evidence that aircraft noise results in adverse health outcomes – specifically noise annoyance, sleep disturbance, cardiovascular effects and cognitive impairment. As acknowledged in the Draft EIS, it is possible that the project would result in potentially significant increases in sleep disturbance, noise annoyance and to a lesser extent, cognitive impairment for children. These impacts have been identified at a number of receivers located close to the runway, as well as beneath the approach and take off routes. Most of these potentially significant impacts are located within the existing or predicted 20 ANEC contour, where land use controls are in place to prevent future sensitive development within these contours. A range of mechanisms to manage aircraft noise would also be in place to manage noise impacts. This includes the implementation of the Noise Insulation and Property Acquisition (NIPA) for eligible residences within the 20 ANEC contours, and the implementation of noise abatement procedures.

The human health impact assessment considered the modelled air pollutants as well as the concentrations in air. While the assessment has evaluated short-term or acute changes in air concentrations, most of the focus of the assessment relates to chronic or long-term exposures to changes in air concentrations. The assessment has not identified any issues of concern in relation to impacts on community health due to changes in air quality in the local or regional study area.

The assessment in the Draft EIS compared the calculated water concentrations to the Australian Drinking Water Guidelines, which are protective of all adverse health effects for all members of the community for potable use of the water every day for a lifetime. The assessment did not assume that water filters would be present, which was a concern for those in the community that use tank water. The concentrations that may be present in drinking water supplies as a result of the project are negligible and the impacts to community health are negligible.

In relation to mental health, wellbeing and other quality of life outcomes, the Draft EIS looked at whether the available studies provide sufficient evidence that aircraft noise causes the effects evaluated and if an exposure-response relationship can be established. There is no evidence to date that supports these statements.

19.1 Submission overview

19.1.1 Number and origin of submissions

A total of 3,469 submissions raised matters concerning human health impacts. The majority of these submissions originated from the Sydney Basin and surrounds as shown in Figure 19.1.

Of the 3,469 submissions, around 64 per cent of the submissions that raised human health impacts originated from the Western City District (Blue Mountains) followed by the Western City District (excluding Blue Mountains) at 17 per cent.

Around 2 per cent of the 3,469 submissions originated from intrastate or interstate locations (such as Tasmania and Queensland). Around 10 per cent did not supply any postcode data.

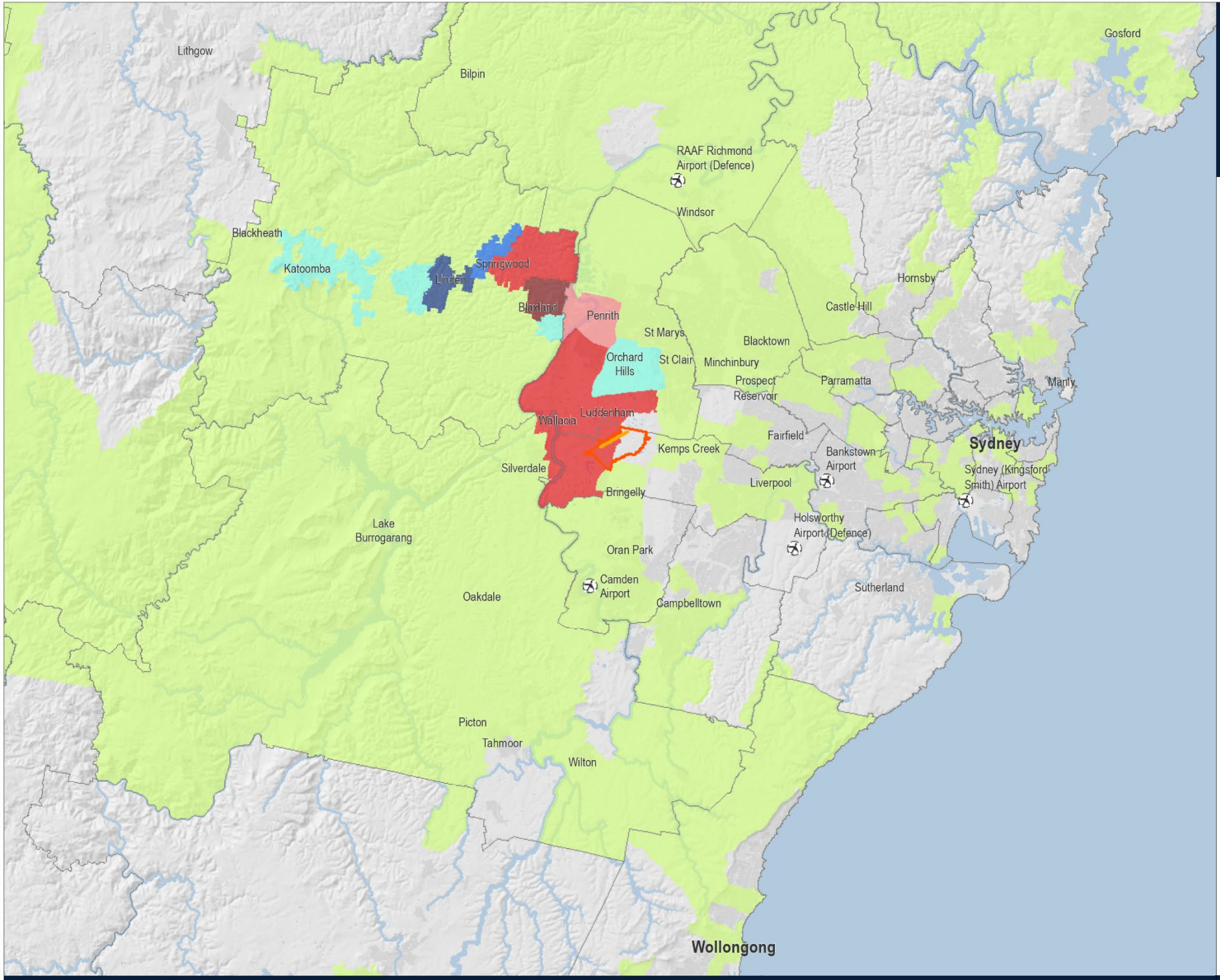


Figure 19.1

Origin of submission in relation to human health impacts

Legend

- WSI Runway
- Western Sydney International (Nancy-Bird Walton) Airport land boundary
- Local Government Area

Number of submissions by postcode

- 1 - 50
- 51 - 100
- 101 - 150
- 151 - 200
- 201 - 250
- 251 - 300
- 301 - 350
- 351 - 400
- 401 - 450
- 451 - 500
- 501 - 550
- More than 550

0 5 10 km

Coordinate system: GDA 1994 NSW Lambert

Scale ratio correct when printed at A4

1:600,000 Date: 20/06/2024

19.1.2 Key issue breakdown

A breakdown of the sub-issues within this key issue and the percentage of total submissions that raised each of these sub-issues is outlined in Table 19.1.

Table 19.1 Breakdown of sub-issues in relation to human health impacts

Sub-issue	Number of submissions raised the sub-issue	Percentage of submissions that raised the sub-issue
Impact assessment approach	76	1%
Health impacts – noise	2,535	30%
Health impacts – air	303	4%
Health impacts – hazard and risk	301	4%
Health impacts – general	1,508	18%
Management and mitigation	313	4%

Each sub-issue was raised more often by the Western City District (Blue Mountains) community followed by the Western City District (excluding Blue Mountains) community, except for issues concerning health impacts in connection to hazard and risks (such as water supply). For this sub-issue, the majority of submissions originated from the Western City District (excluding Blue Mountains) (54 per cent) followed by Western City District (Blue Mountains) (25 per cent). For other Sydney Basin districts, each district typically accounted for around 5 per cent or less within each sub-issue.

Submissions from other intrastate or interstate locations also typically represented 5 per cent of less of submissions for each sub-issue, and up to 15 per cent of submissions in each sub-issue did not provide a location.

19.2 Impact assessment approach

19.2.1 Noise – General

19.2.1.1 Issue raised

Raised by

Community, Camden Council, Residents Against WSA Inc (RAWSA), The Parks – Sydney's Parkland Council, Westen Sydney Regional Organisation of Councils (WSROC), Wallacia Progress Association

Issue

Submissions stated that Draft EIS had not adequately assessed both the short- and long-term health implications of persistent noise exposure. Submissions stated that this inadequacy was a reflection of the impact assessment approach taken for aircraft noise, including the lack of consideration of the health effects of peak noise levels.

Submissions expressed the view that the health impact assessment had:

- used or relied on the use of Australian Noise Exposure Concept (ANEC) contours to assess impacts, which is not an appropriate metric to consider in a health impact assessment
- not considered population growth when considering the number of people impacted by noise and adverse health effects.

Submissions raised concerns that the impacts of noise pollution on physical health have not been appropriately considered, nor has sufficient attention been paid to impacts on sensitive and vulnerable residents including children. These impacts included hearing impairments, annoyance, cardiovascular conditions, cognitive impairment in children, interference with speech and other daily activities.

Submissions also referred to the statement in the Draft EIS that there is weaker evidence on the effects of aircraft noise on mental health. These submissions argued that mental health risks have been presented as 'annoyance', which downplays the potential impacts of the project to mental health including stress, anxiety and depression.

19.2.1.2 Response

General

The human health assessment has focused on community health impacts resulting from changes in noise due to the operation of the project. Section 20.3.1 of the Draft EIS and Chapter 6 of Technical paper 12: Human health (Technical paper 12) detailed the approach undertaken to assess the impacts of aircraft noise on community health.

The human health assessment has identified and assessed a range of health effects where there is robust evidence that aircraft noise results in adverse health outcomes – specifically noise annoyance, sleep disturbance, cardiovascular effects and cognitive impairment. The assessment relied on robust, internationally recognised exposure-response relationships determined from a range of community or epidemiological studies specific to populations exposed to aircraft noise. This includes both individual short term peak noise events and long-term exposure to aircraft noise events. As a result, the health impact assessment has adequately assessed the health effects of short and long-term exposures to aircraft noise.

The health effects evaluated include those that are subjective such as annoyance and to some extent sleep disturbance, as well as physiological responses to noise exposure including sleep disturbance, cognitive impairment (for children), and more significantly cardiovascular effects. The relationship between noise annoyance, sleep disturbance and cognitive/emotional responses to noise, how these impact on stress and how these stress reactions (such as anxiety and heightened physiological responses) result in measurable cardiovascular effects is discussed in detail in Section 6.3.4 of Technical paper 12, with the relevant references provided. Assessing all these health effects means the assessment addresses the precursor stressors and the key physiological outcome.

Further detail on the approach applied to the assessment of sleep disturbance is provided in Section 19.2.2 of this Submissions Report.

ANEC and N60

The exposure-response relationships have been used to determine impacts in the community surrounding the site. The assessment of health impacts has not relied on the ANEC or the 'N-above' contours to assess the impacts on community health (refer to Section 6.2.2.2 of Technical paper 12). This is because these noise contours, such as the N60 contour, have not been derived using current health studies and relationships.

Consideration of the ANEC contours in the health impact assessment was included to determine if the ANEC contours encompassed locations where significant health impacts were identified. The ANEC is used by planning authorities when considering land use planning controls to manage noise exposure to future populations, and has been used to inform the NIPA policy. This comparison has identified that there are a number of locations where sleep disturbance is of potential significance that lie outside of the ANEC contours for 2055. The implications of these exceedances in the context of the assessment is provided in Sections 6.5.7 and 6.6 of Technical paper 12.

Population size and growth

The quantification of health impacts relevant to aircraft noise has utilised a number of threshold levels and exposure-response relationships as summarised in Table 6.2 of Technical paper 12. These thresholds and relationships rely on the modelled noise levels. The assessment of cardiovascular effects is the only place where the population size is considered, when the number of cases attributed to aircraft noise is calculated. The assessment presented has a number of conservative assumptions (including people being at the same location, every day for a lifetime).

Where the population is larger, the number of cases of ischaemic heart disease (IHD) would be higher, however changes in the incidence would not be significant in most of the areas evaluated even if the population increased by 100 per cent. In the case of Silverdale, which has the highest number of cases attributed to aircraft noise (refer to Table 6.7 of Technical paper 12), the increase as a result of population growth would be greater but would not change the conclusions. Further, the State Environmental Planning Policy (Precincts – Western Parkland City) 2021 (Western Parkland City SEPP) limits significant population growth near WSI where noise levels are higher by preventing most noise sensitive developments that are within the long term ANEC/ANEF 20 (such as residential development), and subjects developments to meet the indoor design sound levels in AS 2021:2015 (if development is permitted).

Variability within the population

The studies that have informed the exposure-response relationships applied in the assessment considered a large number of individuals (particularly where the relationships are based on studies that have pooled data from lots of individual studies). As a result, these studies include outcomes from all individuals, incorporating variability in noise sensitivity within these populations. As the assessment of health relates to impacts at a community level, this approach is appropriate. It is not possible to assess specific individuals in terms of existing health or sensitivities. While these individuals would be expected to be encompassed within the underlying epidemiological studies, it is not possible to know if more sensitive individuals may be present and the outcomes that may be relevant for that individual.

Mental health and wellbeing

The Draft EIS provided a summary of the publicly available evidence that aircraft noise causes the effects evaluated (mental health, wellbeing and other quality of life outcomes) and if an exposure-response relationship can be established (refer to Section 6.3.7 of Technical report 12). The summary is based on the most recent published reviews of the available studies.

The absence of clear conclusions on these health effects is due to a lack of robust, technically reliable studies on the effects of aircraft noise on mental health, wellbeing and other quality of life outcomes. For example, the studies have been too small to show a statistically significant outcome; the study is subject to bias and confounders making the interpretation of outcomes difficult, the studies that are available show either an effect or no effect (no consistent outcome); or no exposure-response relationship could be determined.

19.2.2 Noise – Sleep disturbance

19.2.2.1 Issue raised

Raised by

Community, Blue Mountains City Council, Camden Council, RAWSA, The Parks – Sydney's Parkland Council, WSROC, Wallacia Progress Association

Issue

Submissions criticised the impact assessment approach to sleep disturbance, in particular that the assessment applied a definition of 'night' that was inconsistent with standard practice. Submissions queried how the L_{night} (11 pm – 7 am) was calculated given the noise assessment has used a different definition. Submissions stated that this definition of 'night' in the assessment approach underestimates the disturbances caused by frequent aircraft movements at night.

Submissions appended a review of the health impact assessment, which generally stated that the Draft EIS clearly and commendably documents disturbance using the measure of % highly sleep disturbed (%HSD) but recommended that an event-based threshold like N60 should be applied to more clearly identify residential areas that have severe impacts.

19.2.2.2 Response

The assessment of sleep disturbance requires the use of established exposure-response relationships. These studies (as discussed in Section 6.3.3 of Technical paper 12) relate to the assessment of sleep disturbance that occurs during an approximate 8 hour night-time period. The 8 hour L_{night} is used in the assessment of sleep disturbance as a percentage of highly sleep disturbed (%HSD). L_{night} represents the average noise level over the night-time period and more commonly covers the period of 10 pm to 6 am or 11 pm to 7 am.

The Draft EIS relates to the night-time aircraft movement period, 11 pm to 5:30 am. This time period for night-time noise is defined by the curfew period for Sydney (Kingsford Smith) Airport. By aligning with Sydney (Kingsford Smith) Airport, the assessment has focused on the WSI night time flight paths, which are not operated during the day periods when both airports are open. As a result, the L_{night} period evaluated in Draft EIS spans 6.5 hours (i.e., less than the 8 hour night-time period as adopted), as L_{night} in the studies that underpin the exposure-response relationship used to assess %HSD.

To determine if the 8 hour period would change the assessment of sleep disturbance as presented in the Draft EIS, the calculations of %HSD were repeated on the basis of estimated L_{night} for the periods 10 pm to 6 am and 11 pm to 7 am for the 3 operating scenarios (No preference, Prefer Runway 05 and Prefer Runway 23) presented in the Draft EIS for 2055.

The assessment of %HSD in the Draft EIS considered where the calculation of %HSD was different to existing conditions at locations within local study area and could be of significance in terms of sleep disturbance. The locations were defined to Australian Bureau of Statistics' (ABS) Suburb and Localities (SALs) and relied on available, relevant background noise levels.

The review found that there are some receivers where there are slight increases in L_{night} and some areas where there are decreases in L_{night} as the aircraft movements relevant to the shoulder periods (earlier than 11 pm or after 5:30 am) are different to the night-time period. When compared to the Draft EIS assessment, the review found:

- the SALs where the change in %HSD is of potential significance did not change (that is, new areas were not identified for further consideration)
- for SALs where the change in %HSD is of potential significance, the outcomes and conclusions as presented in the Draft EIS remain unchanged, specifically:
  - for Greendale, Mulgoa and Luddenham, the average and the range of %HSD remains unchanged from that presented in the Draft EIS for all scenarios
  - for Wallacia, the average and range of %HSD for L_{night} (10 pm to 6 am) in one scenario (No preference) would increase but the %HSD would be no higher than existing conditions as presented in the Draft EIS. The %HSD for all other scenarios is similar or lower than the levels presented in the Draft EIS
  - for Kemps Creek, the average and range of %HSD would increase but would be no higher than that presented in the Draft EIS for existing conditions, irrespective of the assessed hours. However, the average and range of receivers in areas where the highest %HSD is estimated remains unchanged from that identified in the Draft EIS
  - for Cobbitty, an increase in one scenario (No preference) for L_{night} (10 pm to 6 am) was identified. However the resulting %HSD would be the same as existing conditions and is not significant. The %HSD for all other scenarios is similar or lower than the levels presented in the Draft EIS
  - for Silverdale, the average and the range of %HSD remains essentially unchanged from the Draft EIS but are slightly higher for L_{night} (10 pm to 6 am). However, the increase in average %HSD is driven by the receiver with the highest %HSD. This receiver is located within the 2055 ANEC 20 contour, where land use restrictions to limit noise sensitive development applies
  - for Badgerys Creek, there would be an increase in the %HSD under all scenarios. However, this assessment is based on one receiver located within the 2055 ANEC contour.

Further detail of this analysis is provided in Appendix B of this Submissions Report.

The ANEC/ANEF is presented in the Draft EIS. This is used in weighting cumulative impacts of overflights between 7 pm and 7 am. This metric is used to define what land uses can occur near an airport and indicates those that may not be suitable for residential or other noise sensitive development. This is a longer night-time period than what is evaluated by the Lnight and provides for further management of land uses to minimise the impacts of noise.

The assessment of sleep disturbance has relied on robust exposure-response relationships that have been critically reviewed by the WHO and in the literature at the time the assessment was conducted (i.e. available to 2021). It is noted that studies have been published after the completion of this assessment. This includes the study by Smith et al (2022) and Schubert et al (2023).

The study by Smith et al (2022) combined the data from the studies included in the WHO (2018) review as well as additional studies conducted since completion of the WHO review. The review considered the quality of evidence in these studies and indicated that at lower levels of exposure the sleep disturbance curves are consistent with those from the WHO, however the paper indicates there is a greater risk of sleep disturbance from high levels of aircraft noise. The paper concludes that the WHO exposure-response relationships do not require change.

The paper by Schubert et al (2023) presents the outcomes of one study from the population in Leipzig in Germany. The outcomes of the study for aircraft noise suggest a higher level of risk to sleep disturbance, particularly those that are highly sleep disturbed (HSD), from aircraft noise than the WHO review. A number of limitations are noted in relation to this study, in particular the Leipzig Airport was considered a "high-rate-change airport" at the time of the study (so does not reflect normal operations of the airport), the airport includes operation of large military aircraft (including Antonov type aircraft built in the 1950s-1960s (not relevant to the WSI)) and the number of subjects exposed to higher levels of aircraft noise was small which creates uncertainty in the exposure-response relationships. The shape of the exposure-response curves established in this study for %HSD is unusual and perhaps reflects the study limitations. It is therefore not appropriate to adopt the exposure-response relationships from this one study for the assessment of potential impacts of the WSI project on community sleep disturbance.

Individual studies will continue to be published on effects of aircraft noise in in the community. While informative in relation to the potential variability in responses that may occur, any individual study must be subject to appropriate review to determine reliability for quantitative assessment (as is undertaken in the detailed WHO (2018) and the review by Smith et al (2022)) which addresses issues such as bias, confounding factors and study limitations. The data from Schubert et al (2023) could be further considered, along with all other studies on aircraft noise and sleep disturbance in an updated detailed review and meta-analysis, when conducted by key agencies such as the WHO. This approach then incorporates the weight of evidence from all these studies in providing guidance and defining quantitative exposure-response relationships. On this basis, it is not considered appropriate to change the exposure-response relationships adopted for the WSI assessment of sleep disturbance, or to include consideration of individual studies which have specific limitations.

19.2.3 Air quality

19.2.3.1 Issue raised

Raised by

Community, Wollondilly Shire Council, Social Justice Committee – Holy Spirit Catholic Church St Clair

Issue

Submissions made comment on the adequacy of the assessment for health-related impacts associated with the change in air quality, specifically the assessment:

- was not based on the high levels of air pollution found in the regional study area, and only considered the local study area
- did not consider prolonged exposure to air emissions
- did not consider changes over time, such as population growth and associated increased use in vehicle emissions in the region.

Submissions stated that the location of air quality monitoring in areas with higher baseline data has obscured the impact to health, such as respiratory conditions and cancer.

Submissions commented on the lack of adequate consideration of the health effects of consuming water and produce that has been contaminated due to the operation of aircraft. Submissions noted that there were contradictions regarding the classification of tank water as potable water, leading to misleading and confusing analyses of human health.

19.2.3.2 Response

The human health impact assessment considered the hazards associated with the modelled air pollutants as well as the concentrations in air – or exposure concentration. While the assessment has evaluated short-term or acute changes in air concentrations, most of the focus of the assessment relates to chronic or long-term exposures to changes in air concentrations. In addition, for the assessment of exposure to particulates and nitrogen dioxide (NO_2) the assessment of health impacts has assessed the potential for short-term responses to changes in air quality to occur over the whole year – i.e. as a chronic calculation (refer to Appendix B of the Technical paper 12 for further detail). The calculations undertaken for quantifying health impacts has therefore relied on modelled air concentrations that represent an annual average – as predicted for the 2033 and 2055 operational scenarios. The assessment then presents an assessment that makes conservative assumptions, namely:

- for assessing impacts from changes in particulates and NO_2, all members of the community remain at the same location 24-hours per day for 365 days per year, for a lifetime
- the assessment of impacts from changes in volatile organic compounds (VOCs) has considered the maximum concentration predicted anywhere and assumed that all members of the community remain at the same location 24-hours per day for 365 days per year, for a lifetime.

Further detail on the assessment approach is provided in Section 20.3.1 of the Draft EIS and Chapter 5 of Technical paper 12. The assessment has relied on Technical paper 2: Air quality (Technical paper 2) to provide modelled changes in the concentrations of these pollutants throughout the study area.

The assessment of health impacts for many of the pollutants evaluated, such as VOCs, carbon monoxide (CO) and sulfur dioxide (SO_2), do not rely on the population size. This is because the guidelines adopted are thresholds which are used to compare with the cumulative concentration in an airshed (a geographical area rather than a population based area). For these pollutants, the cumulative concentrations are well below the relevant guidelines and hence any change in background (other unknown sources) from population growth would not change the outcome of the assessment.

The assessment of health impacts of the cumulative impact for particulates and NO_2 (background plus the project) also does not rely on the population size as these utilise a threshold standard relevant to an airshed. However, the population size is considered in the calculation of incremental impacts, specifically the number of cases, when considering particulates and NO_2. The calculations presented have relied on existing population data as specific data on population size and distribution (age groups) is not known for 2033 and 2055. The calculated number of cases for changes in particulates and NO_2 is very low and even if the population doubled, the calculations would remain very low and there would be no change in the conclusions in relation to health impact.

Background air quality was considered in Technical paper 2 and Section 11.2.1 of this Submissions Report provides a response to submissions that raised concerns about the ambient (or background) air quality data used in the assessment. The background air quality data has only been considered for the assessment of cumulative impacts, where predicted concentrations as project plus the background are compared against ambient air quality standards or criteria as presented in the National Environment Protection Measure (Ambient Air Quality) (NEPM Ambient Air Quality) (NEPC 2021a) and *Approved Methods for the Modelling and Assessment of Air Pollutants in New South Wales* (the Approved Methods) (NSW EPA, 2022), respectively. The background data does not change the observation/outcome that the contribution of the project to background or the ambient air quality standard and criteria is very small. In addition, the assessment of health impacts has considered the change in air quality or the incremental change in concentrations as a result of the project. Both the assessment of cumulative impacts and incremental impacts inform the conclusions. Hence any uncertainty in relation to background air quality does not impact on or change the conclusions of the assessment of impacts on human health.

While the assessment of health impacts has noted that NSW Health recommends rainwater tanks in urban areas (which includes the local and regional study area) are not used for potable water supply, the assessment has quantified the potential concentration that could be present in a rainwater tank as a result of deposition onto a roof, and accumulation into a tank. The calculation assumes:

- the VOCs absorb to particulates and deposit to the ground (with the calculation based on the maximum deposition rate in any residential area)
- the chemicals do not degrade (this is conservative)
- there is no first-flush device on the rainwater tank
- the chemicals accumulate in the rainwater tank and the tank holds all water collected over a year.

The calculated concentrations in the rainwater tank are then compared with drinking water guidelines. These are national guidelines that are protective of the use of water for all potable purposes, every day for a lifetime.
The calculated concentrations in the rainwater tank are very low and well below the drinking water guideline (at least 100 times lower).

The pollutants evaluated in relation to aircraft emissions are not persistent or bioaccumulative and would not be taken up into plants or any other produce grown in any of the areas evaluated.

19.2.4 Other

19.2.4.1 Issue raised

Raised by

Community, RAWSA, Wollondilly Shire Council

Issue

Submissions stated that the heath assessment is not consistent with contemporary research, nor does it consider international research and case studies.

Submissions stated that the 2016 EIS had considered potential health effects of sensitive groups which were excluded from the Draft EIS, impacting the accuracy of the assessment.

Submissions requested consideration of health impacts associated with:

- increased light exposure from aircraft
- increased temperatures due to climate change from continued operation of aircraft.

19.2.4.2 Response

The assessment of impacts on human health has considered all available data and studies relevant to the pollutants evaluated. A summary of the current research and information is included in Appendix A of Technical paper 12. This includes reference to a large number of contemporary studies and reviews, noting that the assessment presented has relied on robust studies, in particular international reviews of studies that can demonstrate a causal link between exposure and health effects.

Susceptible populations are identified, discussed and evaluated in the health assessment. For noise, this has been discussed in Sections 19.2.1 and 19.2.2 of this Submissions Report. For air quality, the assessment of health impacts from changes in particulates and nitrogen dioxide (NO_2) concentrations utilised the most robust and relevant exposure-response relationships, which include and focus on sensitive age groups such as the elderly (people aged 65 years and older and children aged 1-14 years). In addition, the toxicity reference values adopted for the assessment of VOCs are protective of adverse health effects for all members of the population including sensitive populations. This approach and the populations considered are consistent with that presented in the 2016 EIS.

The scope of the health impact assessment did not include an assessment of lights from aircraft. Aircraft lighting is discussed in Technical paper 7: Landscape and visual amenity (Technical paper 7).

The assessment of health impacts associated with climate change is beyond the scope of the health impact assessment. The policy response to increased health risks due to climate change are focused on the reduction of carbon emissions and supporting resilience and adaptation in relevant sectors, such as public health, on a local, state and national level. Greenhouse gas emissions and climate change in the context of the project have been addressed in Technical paper 3: Greenhouse gas emissions (Technical paper 3). That assessment identifies the contribution of greenhouse gas emissions from the project and identifies the sector-wide measures required to reduce emissions from aircraft use. Further discussion on these matters is provided in Chapter 11 (Air quality and greenhouse gas) of this Submissions Report.

19.3 Health impacts – Noise

19.3.1 General

19.3.1.1 Issue raised

Raised by

Community, Stephan Bali MP – Member for Blacktown (NSW), The Hills Shire Council, The Trustees of Linden Observatory, Wallacia Progress Association, WSROC

Issue

Submissions expressed concerns that persistent noise disturbance would result in or exacerbate both mental and physical illnesses, placing a strain on overall community wellbeing. Submission state that the prioritisation of economic gain over human health is unacceptable. Submissions referred to WHO Guidelines for Community Noise which states that "residents should not be exposed to aircraft noise events above 45 decibels during the day and above 40 decibels overnight".

Submissions expressed the view that the project would result in increased chronic stress, which can lead to poor physical health such as cardiovascular issues, aggression, obesity, diabetes, digestive issues and headaches. In connection to these concerns, submissions also referenced the WHO, which stated that aircraft traffic is a key environmental stressor for people. In support of these concerns, many submissions identified the potential risk of conditions including coronary heart disease because of continued noise exposure above 60 decibels during the day and 55 decibels at night.

Submissions also expressed concern that frequent noise disturbances would impact hearing or would exacerbate auditory sensitivities and existing hearing impairments.

Submissions expressed concern that aircraft noise from the project would impact vulnerable residents such as those already experiencing poor mental health. Submissions also stated that:

- increased stress levels can lead to irritability and tiredness which can have adverse impacts on ability to manage emotions, social behaviour and quality of life
- the project would lead to people spending more time indoors in isolation to avoid aircraft noise, which would have a negative effect on mental health
- continuous changes in operational noise would lead to anticipation anxiety
- impacts of the serenity of low-noise environments, such as the Blue Mountains, would result in impacts to individuals experiencing poor mental health, given its source of recovery and relaxation.

19.3.1.2 Response

The assessment has identified and assessed a range of health effects where there is robust evidence that aircraft noise results in adverse health outcomes (as discussed in Sections 19.2.1 and 19.2.2 of this Submissions Report). The full assessment is provided in Chapter 6 of Technical paper 12 and summarised in Section 20.5.2 of the Draft EIS.

The health effects evaluated include those that are subjective such as annoyance and to some extent sleep disturbance, as well as physiological responses to noise exposures that include sleep disturbance, cognitive impairment (for children) and more significantly cardiovascular effects. The relationship between noise annoyance, sleep disturbance and cognitive/emotional responses to noise and how these impact on stress, and how these stress reactions (such as anxiety and heightened physiological responses to stress) result in measurable cardiovascular effects is discussed in detail in Section 6.3.4 of Technical paper 12, with the relevant references provided. Assessing all these health effects means the assessment addresses the precursor stressors and the key physiological outcome.

The assessment of health effects of aircraft noise has drawn on and utilised the WHO evaluations, including specific threshold for when health effects occur and exposure-response relationships relevant to the health effects evaluated. This is the approach detailed by the WHO for the assessment of health impacts from aircraft noise. This is discussed in detail in Sections 19.2.1 and 19.2.2.

The assessment has identified that there is the potential for noise from the project to result in significant increases in sleep disturbance, noise annoyance and to a lesser extent, cognitive impairment for children. These impacts are identified at a number of locations located close to the runway as well as beneath the approaches and take off routes from the runway. There are no significant impacts identified in locations at greater distances to the runway, such as the suburbs within the Blue Mountains.

Most of the impacts on community health that are considered to be significant are located within the existing or predicted ANEC 20 contours where existing and potentially future land use planning controls are in place to prevent future noise sensitive development, which includes new residential development, and construction of new childcare centres and schools. By 2055 there are some additional locations outside of the modelled ANEC 20 contours where impacts on community health may be of significance. Changes in noise as a result of operations between 2033 and 2055 would be expected to be gradual, hence the significance of the impacts may be influenced by community adjustment to the presence of aircraft noise in the environment. These changes, however, may remain of significance to some members of the community. For existing residential properties located in the existing ANEC 20 contours, there is the potential for the community to experience increased and significant levels of annoyance and sleep disturbance.

There are a range of measures outlined to address noise impacts, which include land use planning controls, the NIPA, noise abatement procedures and community engagement. These measures should be implemented to minimise the potential impacts on community health as a result of aircraft noise.

As stated in Section 19.2.1.2, the health impact assessment considers impacts at a community level, and it is not possible to assess specific individuals in terms of existing health or sensitivities. While these individuals would be expected to be encompassed within the underlying epidemiological studies, it is not possible to know if more sensitive individuals may be present and the outcomes that may be relevant for that individual.

As detailed in Section 6.5.2.1 of Technical paper 12, predicted noise levels have been compared against WHO thresholds relevant to hearing impairment and concluded that aircraft noise would not be expected to result in hearing impairment in any of the areas surrounding WSI.

With respect to mental health, the concerns expressed in submissions is noted. As discussed in Section 19.2.1.2, there is insufficient evidence to date that supports the exposure-response relationship between aircraft noise and mental health effects.

19.3.2 Sleep disturbance

19.3.2.1 Issue raised

Raised by

Community, Blue Mountains City Council, Mulgoa Valley Landcare Group, Social Justice Committee – Holy Spirit Catholic Church St Clair, Susan Templeman MP – Member for Macquarie (Federal), The Hills Shire Council, The Parks – Sydney's Parkland Council, WSROC, Varuna – the National Writers House, Wallacia Progress Association

Issue

Submissions expressed significant concern for residents' health due to impacts on sleep by aircraft noise, including changes in sleep structure, delayed sleep, earlier awakenings, fewer deep sleeps and more time spent in superficial sleep stages. Submissions commented on the effects of poor sleep, including increased risk of chronic diseases, poor appetite and metabolism, stunted growth, cognitive impairment, depression, stress, increased risk taking behaviour and risk of accidents. Submissions also noted that poor sleep would lead to the use of sleep medications which would have their own set of adverse health impacts.

In raising these concerns, submissions stated that:

- the Draft EIS identified that some residents would be highly affected by sleep disturbance (14 per cent in 2055) and that some residents would have no or little respite (0 to one per cent) based on the respite charts
- the importance of respite at important times (such as evening and early morning) should be acknowledged in the finalised EIS
- some communities would be disadvantaged as a result of certain runway modes of operation (such as RRO which would impact communities in the south west, including The Oaks, Silverdale and Cobbitty), and that respite and equity needs to be considered.

These concerns included impacts to vulnerable residents, particularly children, young families and elderly residents but also included carers, hospital patients at Nepean hospital and people that require sleep to safely perform their occupation, such as transportation drivers, heavy machinery operators and medical professionals.

Submissions referred to the WHO guidelines for community noise (WHO, 2018) when expressing concern about the potential impacts to sleep disturbance, with submissions stating that the guidelines recommend:

- a noise exposure of 30 dB(A) or less in houses at night to ensure good quality of sleep
- a maximum noise level of 52 dB $L_{Amax\ (external\ level)}$ to trigger the requirement to consider potential impacts on sleep disturbance. In this respect, the submission identified that the Draft EIS does not specifically state the number of events that exceed this trigger.

Submissions suggested that noise levels exceeding 60 dB $L_{Amax\ (external)}$ (45 dB $L_{Amax\ (internal)}$) should ideally not occur more than 10–15 times per night when assessing dwellings with partially open windows.

The submissions stated that the Draft EIS indicated that a large number of the population would experience external noise levels that are sufficient to result in internal noise levels corresponding to sleep disturbance thresholds, indicating that a large number of people may need to close windows to maintain an acceptable internal amenity. The extent of this impact would depend on ambient noise levels, which could prompt people to sleep with windows closed irrespective of the project.

Submissions expressed concern that the assessment is misleading as it assumes that residents would eventually adjust to disturbed sleep patterns and noise with no acknowledgement of the harm caused in the process of doing so.

Submissions criticised that the 24-hour operations and absence of any limitations on aircraft movement at WSI is not consistent with the commitments made in the 2014 National Mental Health Commission to foster healthy communities.

19.3.2.2 Response

As discussed in Section 19.2.2, there is the potential for noise from the project to result in sleep disturbance. These impacts are identified at a number of locations located close to the runway as well as beneath the approaches and take off routes from the runway. The impacts on health as a result of sleep disturbance as supported by robust studies has been described in the Draft EIS and this impact is reflected in the assessment outcomes. The concerns regarding respite for some communities is noted, however, the single runway geometry limits the potential for respite for communities close to WSI. The WSI operational framework would consist of a range of mechanisms to manage aircraft noise, including the NIPA for those located closer to the Airport Site, and the implementation of noise abatement procedures.

The health impact assessment presented in the Draft EIS and Technical paper 12 applied the thresholds identified by WHO (2018) – specifically the assessment considered the following WHO thresholds to determine if further assessment of %HSD within a population is required:

- L_{night} levels to determine if the threshold of 40 dB(A) (external) is exceeded in the 2033 and 2055 assessment years
- L_{max} levels at night to determine if the threshold of 52 dB(A) (external) is exceeded in 2033 and 2055 assessment years. This is the equivalent of 42 dB(A) L_{max} (indoors with windows open). The WHO guidelines do not include advice on the number of exceedances of this value.

The thresholds are based on indoor noise thresholds where people sleep, with an adjustment factor for outdoor noise levels. This is important as the noise modelling undertaken for the Draft EIS only provides outdoor noise levels. As exceedances of these thresholds were identified in 2033 (L_{night} only) and 2055 (L_{night} and L_{max}), further assessment was undertaken to calculate the %HSD within a population.

In relation to the threshold for night-time noise to address sleep disturbance, the following is noted:

- WHO (1999) provides a threshold for protection of sleep disturbance of 30 dB(A) (as L_{Aeq}) for indoor environments. This guidance also states that noise levels outdoors, one metre (m) from the building façade should not exceed 45 dB(A) as L_{Aeq} so that people can sleep in their bedroom with the windows open. This assumes a noise reduction of 15 dB(A) from outside to inside with windows open
- WHO (2018) provided a more specific assessment of sleep disturbance from aircraft noise, where the guidelines strongly recommended that levels of night time noise should be reduced to be below 40 dB(A) as L_{night} to protect against sleep disturbance. This guideline relates to an outdoor noise level and has been adopted in Technical paper 12 (refer to Section 6.3.8). Further, the WHO (2018) guidelines indicate: *"the experts concluded that a L_{night} value of 40 dB should be the target of the NNG (for all sources) to protect the public, including the most vulnerable groups such as children, chronically ill and elderly people"*
- The calculation of impacts from sleep disturbance, using the adopted exposure-response relationship relevant to assessing the %HSD has been undertaken for all locations where the outdoor night time noise as L_{night} is 35 dB(A) and higher
- Technical paper 12 has also adopted the guideline of 52 dB(A) as L_{max} to address awakenings – this is derived from the WHO (2018) evaluation.

The assessment of health impacts from sleep disturbance has relied on robust studies and health outcomes that have been shown to be caused by aircraft noise. This is based on detailed reviews of studies by the WHO, where a large range of factors have been considered in ensuring the quantitative relationship is robust and addresses the health effects. The thresholds adopted are protective of vulnerable groups (as noted above), and the studies that inform the development of the exposure-response functions include a wide range of individuals, including sensitive groups.

There is currently no robust evidence that aircraft noise causes increased risk taking behaviours. Without robust evidence, it is not appropriate to include any consideration of such effects.

19.3.3 Cognitive development

19.3.3.1 Issue raised

Raised by

Community, Melisssa McIntosh MP – Member for Lindsay (Federal), The Hills Shire Council

Issue

Submissions expressed concern for the effects of constant aircraft noise on cognitive development, particularly in children. Submissions noted that sleep disturbance is consistently linked to poor concentration in schools which leads to poorer reading and memory and overall comprehension delays. Submission raised concerns that students affected by noise during the day at school would perform poorer on standardised achievement tests compared with children who are not exposed to aircraft noise. Submissions also noted that constant noise would limit recreational time spend outdoors which also has an impact of childhood development.

Submissions expressed the view that children impacted by aircraft noise already face disadvantages in terms of access to quality education and that cognitive delays would further impact these children. Submissions also expressed concern for students at schools that cater for disability such as Fernhill School, Halinda School and Kurrumbee School given many of these students experience sensory sensitivities including hearing sensitivities.

19.3.3.2 Response

The assessment of impacts of aircraft noise in cognitive impairment for children as presented in the Draft EIS is based on the use of an exposure-response relationship established by the WHO following review of the available literature. It is important that any assessment of such impacts uses a quantitative approach that is based on a robust and detailed review of the reliability of the available studies, which is what the WHO evaluation (and relevant supporting papers as referenced) has done. The discussion included in Section 6.3.5 of Technical paper 12 notes the link between sleep disturbance and noise annoyance and cognitive impairment. Figure 6.9 of Technical paper 12 shows the causal links relevant to assessing cognitive impairment in children, which incorporates a wide range of factors, not just noise at home or in the classroom. Most of the studies that are used to underpin the relationship between aircraft noise and cognitive impairment utilise methods that take into account confounding factors that include sociodemographic factors. The studies do not, however, make adjustments for the variability in cognitive performance in children and hence do not preclude children with disability. These individuals remain in the pool of individuals included in these studies. It is noted that for aircraft noise, the individuals included in these studies are those who live in the vicinity of operational airports, which include a range of demographics.

The purpose of precluding confounding factors (which include socioeconomic factors) is to ensure that the association and relationship observed relates to the influence of aircraft noise alone – i.e., the changes in cognitive impairment only relate to changes in aircraft noise. This is an important when assessing any new sources of aircraft noise on cognitive performance. The relationships established, however, relate to all individuals.

It is important that the proposed planning protections to prevent noise sensitive development (including residential and schools) in the area surrounding the site are implemented to minimise the potential impact of aircraft noise on cognitive development.

19.4 Health impacts – Air

19.4.1 General

19.4.1.1 Issue raised

Raised by

Community, Camden Council, Stephen Bali MP – Member for Blacktown (NSW), Susan Templeman MP – Member for Macquarie (Federal)

Issue

Submissions stated that air quality emissions from the project would result in health impacts and/or would exacerbate existing conditions, particularly in vulnerable populations in Western Sydney. This included breathing and respiratory conditions such as asthma and bronchitis, cancer, cardiovascular disease, strokes, headaches, eye irritation and early mortality. These concerns related to particulate matter, VOCs and other air emissions that all have the potential to result in health impacts. Submissions also noted that Western Sydney residents already experience higher rates of respiratory conditions when compared to the Sydney Basin, and that the project would further widen this gap.

Submissions were particularly concerned with the expectation that air quality and associated health issues at locations close to the Airport Site are not relevant given these areas will be or have been rezoned. Submissions criticised this logic given locations such as Luddenham Village have already been rezoned to agribusiness and other zonings despite residents still occupying the area.

Many submissions also commented on the impact to air quality within houses as residents would be required to leave windows closed to avoid noise disturbance. Submissions stated that lack of airflow through houses would lead to the build-up of mould and mildew causing long term health problems.

Submissions expressed concern that the unique topography of the region and meteorological conditions would not allow for the dispersal of air pollution and as such, worsen the health effects for residents in the area.

19.4.1.2 Response

The assessment of health impacts has considered the existing health of the communities assessed. It has also addressed all relevant health effects from exposure to changes in air quality.

The health impact assessment did not identify any risk issues of concern in relation to impacts on community health (refer to Chapter 5 of Technical paper 12 for further detail). In particular, the impacts on community health as a result of exposure to ultra-fine particulates ($PM_{2.5}$) and NO_2 are considered to be low. The assessment does acknowledge that locations closest to the WSI, such as receivers at Luddenham, are exposed to higher air emissions of NO_2 and $PM_{2.5}$ from the project compared to other receivers. However, the increase in the incidence of health cases attributed to the project would be low in relation to the health statistics for the study area. As stated in Technical paper 12, this assessment has adopted some overly conservative assumptions within the assessment (including that the population is exposed to the maximum increase in NO_2 24-hours a day for 365 days per year, for a lifetime). The assessment does not discount the presence of sensitive receivers on the basis of the current or future land use zones. Rather, the land use restrictions have been identified in the assessment to acknowledge that controls are in place to limit further residential growth in these areas.

The assessment of health impacts from noise is not undertaken on the basis that windows are always closed. Much of the assessment has considered noise thresholds that are based on windows being open. Closing windows can occur for a range of reasons. Addressing noise issues may be one reason, however maintaining temperature during hot or cold temperatures is another, as is addressing issues such as bushfire smoke. It is not known how individual homes are ventilated and if closing windows would result in indoor air quality issues or mould. Such individual aspects cannot be addressed, but it is reasonable for all residents to be aware of indoor air quality issues.

Concerns about the air quality modelling that has been applied in Technical paper 12 has been responded to in Sections 11.2 and 11.3 of this Submissions Report. This includes responses to how topography and meteorological conditions have been accounted for in the air quality impact assessment.

19.5 Health impacts – Hazards and risks

19.5.1 Risk to water supplies

19.5.1.1 Issue raised

Raised by

Community, Friends of Fernhill and Mulgoa Valley Incorporated, Luddenham Progress Association Inc, Melisssa McIntosh MP – Member for Lindsay (Federal), Social Justice Committee – Holy Spirit Catholic Church St Clair, Susan Templeman MP – Member for Macquarie (Federal), The Hon Angus Taylor MP – Member for Hume (Federal), Trish Doyle MP – Member for the Blue Mountains (NSW), Wollondilly Shire Council

Issue

Submissions stated that the aircraft emissions would impact or pose a risk to Sydney's water supply or tank water, particularly when aircraft fly at low altitudes over Sydney's drinking water catchment, Warragamba Dam or over people's properties. As a result, submissions expressed concern that the consumption of water contaminated by aircraft emissions would result in long term health impacts noting that:

- tank water systems often do not contain filters
- consumption of contaminated water could cause a range of health impacts, including gastrointestinal irritation or burns, increased heart rate, nausea, headaches, increased asthma attacks, reduced lung function, cough and wheezing, inflammation of airways, eased risk of kidney and neurological harm, autoimmune disorders and cancer.

Pollutants of primary concern included particulates, carbon dioxide, nitrogen dioxide and lead.

Submissions expressed similar concern for the contamination of crops produced in the area and the adverse health impacts if this produce was consumed frequently.

19.5.1.2 Response

The concerns held by the community concerning water quality is acknowledged. However, the assessment found that the concentrations that may be present in drinking water supplies as a result of the project are negligible and potential impacts on community health are negligible. The predicted concentrations in drinking water are so low that they could never be measured (i.e. below the analytical limit of reporting that can be achieved by laboratories).

The assessment compared the calculated water concentrations to the Australian Drinking Water Guidelines, which are protective of all adverse health effects for all members of the community for potable use of the water every day for a lifetime. The assessment did not assume that water filters would be present. Further detail is provided in Section 5.5.7 of Technical paper 12.

Where crops may be irrigated with tank water, any water that complies with the Australian Drinking Water Guidelines would not result in impacts on crop health or human health from consumption. It is also important to note that the chemicals evaluated for this project are not persistent and do not bioaccumulate into soil or crops. Hence there would be no impacts on soil or crops grown in the area around the site.

Avgas is the only remaining aviation fuel that contains lead and is used by older general aviation piston engine aircraft (not jet aircraft). This type of aircraft would not use WSI and therefore lead emissions have not been considered in this assessment.

The risk of fuel jettisoning and/or crash risk at critical infrastructure (such as key water reservoirs) is addressed in Sections 12.4.3 of this Submissions Report.

19.5.2 Other health related hazards and risks

19.5.2.1 Issue raised

Raised by

Community

Issue

Submissions also expressed concern for radiation hazards due to the operation of low flying aircraft along the WSI flight paths.

19.5.2.2 Response

In relation to the operation of aircraft, exposure to radiation during air travel for crew and passengers is a known risk. The Australian Radiation Protection and Nuclear Safety Agency (ARPANSA) provides information on these exposures and risks for crew and passengers. Aircraft are not a source of radiation and hence there is no source of radiation relevant to the community from the operation of aircraft on the flight paths.

19.6 Other health impacts

19.6.1 General

19.6.1.1 Issue raised

Raised by

Community, Blue Mountains City Council, Burwood Council, Camden Council, Greater Blue Mountains Area World Heritage Institute, Wallacia Progress Association, Wollondilly Shire Council

Issue

Submissions expressed general concern that residents mental and physical health would be degraded as a result of the overall project. Submissions stated that impacts to lifestyle (including outdoor recreation), enjoyment of areas (including the Greater Blue Mountains Area) or to the values of an area (such as spirituality, wilderness immersion or general environment) would have adverse impacts to overall wellbeing and would cause anxiety.

Submissions raised concern that stress associated with uncertainty of future impacts to residents would exacerbate mental health risk, particularly anxiety. Submissions also commented on the social disturbance caused by WSI and its impact on community mental health and wellbeing. Submissions stated that the certain communities are more vulnerable to poor mental health and impacts from the project, with reference to recent major bushfires and flooding.

Submissions made comments on the prioritisation of health and wellbeing at a community level over the economic benefits of the airport. Submissions also expressed the view that the impact health would put undue strain on the local healthcare system, particularly Nepean Hospital.

19.6.1.2 Response

Section 19.2.1.2 of this Submissions Report provides a response to the impact assessment approach concerning mental health and wellbeing impacts on the context of aircraft noise. There is no evidence to date that supports that aircraft noise causes these types of effects and such effects could be quantified.

Broader concerns about the impacts to mental health and wellbeing due to changes to the enjoyment of outdoor environments have been addressed in Section 17.4 of this Submissions Report. Discussion concerning economic impacts on the health system is discussed in Section 18.2.2 of this Submissions Report.

19.7 Mitigation and management

19.7.1 General

19.7.1.1 Issue raised

Raised by

Community, Blue Mountains City Council, Camden Council, The Parks – Sydney's Parkland Councils, WSROC

Issue

Submissions criticised the lack of mitigation and management measures concerning impacts to community health, including mental health impacts, or stated that the measures identified in the Draft EIS are inadequate as they rely on post-implementation reviews and studies, rather than proactive measures prior to operation.

Submissions also expressed concern that the mitigation measures suggested in the Draft EIS relied on residents changing their own behaviour in response to aircraft noise and air emissions from the project. Submissions stated that this approach would not contribute to any reduction in the severity of acute health effects of the project and that decisions regarding mitigation measures, such as ongoing monitoring and evaluation of impacts, follow the precautionary principle.

Submission often suggested that a curfew, changes in flight paths or distribution in movements and hourly limits on movements is required to mitigate the health effects of aircraft noise, particularly sleep disturbance. Submissions stated that the final noise abatement procedures must include provision of respite to 'share' noise impacts in response to health impacts.

Submissions also commented on the draft NIPA. These issues have been captured in Section 10.7 of this Submissions Report.

Many submissions requested that air and noise monitoring is conducted and is used to inform future management of the flight paths to mitigate health-related impacts. Submissions also requested the inclusion of:

- requirements to monitor respiratory presentations and admissions to health clinics, including severity
- a health monitoring program based on baseline data rather than noise averages that are misleading.

Submissions stated that the Australian Government would need to liaise with NSW Government to ensure sufficient allocation of health support or educational services in the region to address mental health impacts or impacts resulting from aircraft noise.

Submissions requested the provision of free town water to residences that rely on tank water, and/or that areas that do not have access to water infrastructure should be rezoned to compatible land uses.

19.7.1.2 Response

NSW Health collects and reviews a wide range of health data, that include respiratory and cardiovascular health, and mental health (available at https://www.healthstats.nsw.gov.au/home). These are data that have been used in the assessment of health impacts, and are also data that NSW Health evaluate.

The assessment of health impacts forms the project has not identified any measurable impacts on community health, or tank water quality. This assessment included a range of conservative assumptions in relation to how people in the community may be exposed to impacts from the operation of aircraft. Where there are no impacts to community health, there is no requirement to trigger any additional mitigation or management measures. The impacts recommended for monitoring have been shown to not be measurable and/or attributed directly to the adoption of WSI flight paths.

Further discussion is provided in Sections 10.6 to 10.8 of this Submissions Report on the mitigation and management of aircraft noise, and the NIPA.

Chapter 20 Facilitated impacts

This chapter provides a response to the issues raised in submissions specific to Chapter 21 (Facilitated impacts) of the Draft EIS.

Issues raised in submissions included a range of concerns associated with the proposed facilitated changes. For the general aviation stakeholders, issues were primarily focused on the economic and social implications of these changes, and requests for mitigation measures. For other submissions, issues focused on the environmental, social and economic impacts of facilitated changes, including aircraft noise, social, economic, health and biodiversity impacts.

The WSI airspace and flight paths have been designed to reserve the minimum airspace possible while continuing to adhere to the design principles of safety, efficiency and minimisation of environmental impacts. Controlled airspace (CTA) volumes have been minimised to the greatest extent possible while safely containing aircraft operations. Although care has been taken to minimise impact to general aviation activities such as flight training and gliding operations in the vicinity of WSI, the Australian Government understands that implementation of WSI airspace will have an impact.

The implementation of the facilitated changes would represent a change for some communities, where aircraft would fly over different areas, at higher frequencies, or over existing areas on a narrower path. Aircraft using these adjusted or new procedures would vary. However, in most instances, these areas are already subject to aircraft overflight and noise impacts.

Importantly, avoiding changes to Sydney (Kingsford Smith) Airport's existing noise sharing arrangements is one of the 12 Airspace design principles, set out in the Airport Plan for WSI, which have been used to guide the development of WSI's preliminary flight paths. The proposed facilitated changes will not affect the existing noise sharing arrangements for Sydney (Kingsford Smith) Airport, which are also referred to as the Long Term Operating Plan. The Long Term Operating Plan sets how the different runway modes at Sydney (Kingsford Smith) Airport are used to share noise impacts. All runway modes will continue to be available following the opening of WSI. There are no changes to how these runway modes are selected and operated.

20.1 Submission overview

20.1.1 Number and origin of submissions

A total of 672 submissions raised matters concerning facilitated impacts. The majority of these submissions originated from the Sydney Basin and surrounds as shown in Figure 20.1.

Submissions from the Eastern City District of Sydney represent around 66 per cent of the submissions within this category. The remainder originated from the districts within the Sydney Basin, intrastate or interstate locations. These each typically represented 5 per cent or less.

Around 19 per cent of submissions in this category did not supply a location.

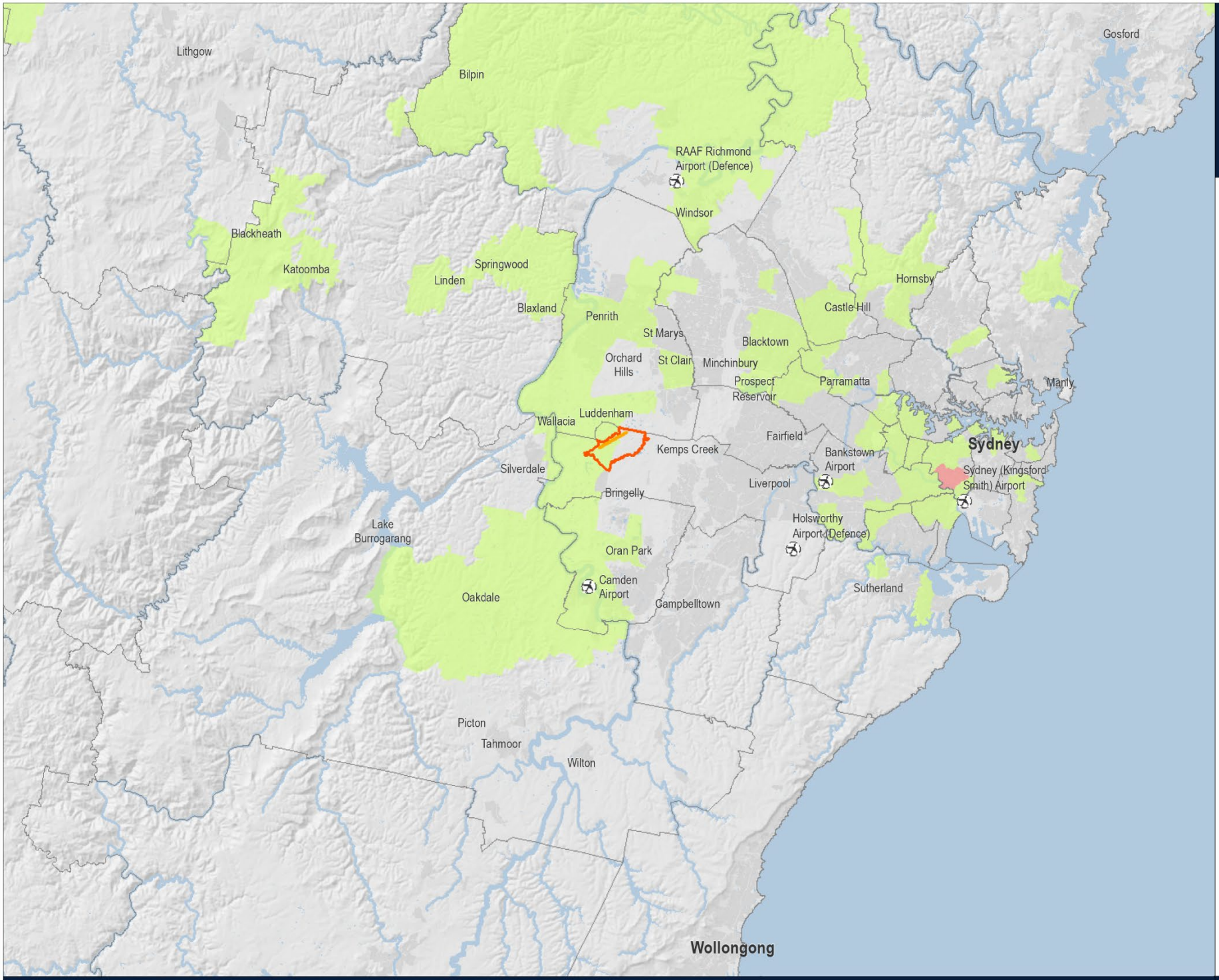


Figure 20.1

Origin of submission in relation to facilitated impacts

Legend

- WSI Runway
- Western Sydney International (Nancy-Bird Walton) Airport land boundary
- Local Government Area

Number of submissions by postcode

- 1 - 50
- 51 - 100
- 101 - 150
- 151 - 200
- 201 - 250
- 251 - 300
- 301 - 350
- 351 - 400
- 401 - 450
- 451 - 500
- 501 - 550
- More than 550

0 5 10 km

Coordinate system: GDA 1994 NSW Lambert

Scale ratio correct when printed at A4

1:600,000 Date: 20/06/2024

20.1.2 Key issue breakdown

A breakdown of the sub-issues within this key issue and the percentage of total submissions that raised each of these sub-issues is outlined in Table 20.1.

Table 20.1 Breakdown of sub-issues raised by submitters – Facilitated impacts

Sub-issue	Number of submissions that raised the sub-issue	Percentage of submissions that raised the sub-issue
Impact assessment approach	80	1%
Aircraft noise impacts	519	6%
Social and economic	200	2%
Air quality	42	<1%
Health impacts	218	3%
Biodiversity	129	2%
Other issues	119	1%
Mitigation and management	106	1%

Each sub-issue was raised more often by the Eastern City District community. This district typically represented more than 50 per cent of submissions within each sub-issue, with the exception of 2 sub-issues (biodiversity and other issues). However, this district still represented at least 40 per cent of the submissions within these sub-issues.

Submissions that did not provide a location represented the second largest group of submitters in each sub-issue. Depending on the sub-issue, this submission group represented around 9 per cent (mitigation and management) to up to 45 per cent (other issues) of submissions.

For other Sydney Basin districts, each district typically accounted for around 5 per cent or less within each sub-issue. The exception was for social and economic matters, where 9 per cent of submissions originated from the South District.

Submissions from other intrastate or interstate locations also typically represented 5 per cent or less of submissions, and only featured in sub-issues relating to biodiversity, other issues, and mitigation and management.

20.2 Impact assessment approach

20.2.1 General

20.2.1.1 Issue raised

Raised by

Community, Bayside Council, Blacktown City Council, Blue Mountains City Council, Camden Council, Canterbury-Bankstown Council, Homebush Residents Group, Inner West Council, Julian Leeser MP – Member for Berowra (Federal), Susan Templeman MP – Member for Macquarie (Federal), Sydney Flight Paths Action Group, The Hills Shire Council, The Parks – Sydney's Parkland Councils, Western Sydney Regional Organisations of Councils (WSROC)

Issue

Submissions criticised or expressed concern about the impact assessment approach for the facilitated changes, and that the facilitated changes should be subject to a separate impact and approvals process.

Submissions requested that the finalised EIS be updated to provide a more detailed analysis of these changes and to a similar level to the assessments presented for WSI. This included:

- presentation and assessment of alternatives
- aircraft noise modelling
- assessment of relevant environmental, social and economic impacts arising from the facilitated changes (including biodiversity, human health, heritage and land use planning)
- assessment of cumulative impacts arising from the facilitated changes with other non-aircraft related activities (such as urban development, other infrastructure projects, increased road congestion and traffic noise).

Submissions expressed particular concern about the adequacy of the noise assessment, specifically the assessment:

- was limited to high-level data in relation to the number of residents who would be affected where N-above contours were generated, and did not provide the same metrics as presented for WSI flight paths
- provided insufficient information on the change in noise as a result of a particular facilitated change. This included changes to Instrument Flight Rules (IFR) and Visual Flight Rules (VFR) aircraft
- did not consider noise from total aircraft activity from the applicable airport or all aircraft activity (including WSI)
- did not provide updated Australian Noise Exposure Forecast (ANEF) modelling for Sydney (Kingsford Smith) Airport
- did not assess impacts at educational facilities, or provide detail on the severity or frequency of impact.

Submissions also questioned how meteorological conditions and topography had been accounted for in the assessment.

Submissions indicated the information provided was very technical and difficult to understand for the average person and should be produced in a form that is readily accessible to the community. This was a particular concern for communities that would be newly overflown by changes to Bankstown Airport, and concern that this lack of understanding would generate more complaints once the changes are operational.

20.2.1.2 Response

In accordance with the EIS Guidelines (EPBC 2022/9143), the finalised EIS identifies and addresses facilitated impacts on operations at Sydney (Kingsford Smith) Airport, other aerodromes and aviation activities in the region as a direct result of arrival and departure paths into and out of WSI. These changes are described in detail in Chapters 8 and 21 of the finalised EIS and Technical paper 13: Facilitated changes (Technical paper 13).

All changes other than flying training areas will be confirmed as part of the WSI airspace change proposal (refer to Chapter 6 (Project development and alternatives) of the finalised EIS). In terms of the flying training areas, the final proposed detail and ultimate procedures will not be confirmed until completion of a separate airspace change proposal, depending on the extent of the change.

The impact assessment approach applied to the facilitated changes in the Draft EIS reflected the potential significance of the change alongside the availability of data for current and future aircraft movements and development of the final design solution (in the case of the flight training areas). The methodology was guided by Airservices Australia policies relating to airspace change proposals and involved:

- categorising the changes into an assessment level and type
- detailing the current operating conditions of the relevant flight paths in the Sydney Basin
- preparing targeted assessments for each of the proposed changes in accordance with the selected approach, using qualitative and quantitative descriptors of potential impact. This considered noise, visual and carbon emissions impacts (as appropriate) and Matters of National Environmental Significance (MNES).

Where impacts were considered to be potentially significant and where sufficient data was available to support the production of N-above contours, a quantitative noise analysis was completed. A qualitative noise analysis of the changes has occurred where:

- minor changes or adjustments are required to Sydney (Kingsford Smith) Airport, where the proposed altitude restrictions are proposed to mandate separation assurance but would not change current operations, or where current level of radar vectoring would continue and the use of the procedure would have a low level of usage (less than one per cent), or
- there were uncertainties in current or future IFR or VFR movements (such as movement numbers, aircraft mix, variability in altitude, or individual operator's preferred mode of operations once the changes are in place). In particular, the changes to VFR flight training areas and transit routes through the Sydney Basin as described in the Draft EIS are based on a high-level understanding of the procedures and processes that can be expected to operate after the opening of WSI. The final proposed detail and the ultimate procedures will not be confirmed until completion of a separate change proposal. Further discussion is provided in Chapter 2 of Appendix I of Technical paper 13.

For changes subject to a qualitative noise assessment, Noise-Power-Distance (NPD) curves have been generated using the internationally recognised aircraft noise and emissions calculation program – Aviation Environmental Design Tool (AEDT), developed by the United States Federal Aviation Administration (US FAA).

The ANEF computation is based on forecasts of traffic movements on an average day. Allocations of the forecast movements to runways and flight paths are on an average basis and consider the existing and forecast air traffic control procedures at WSI which nominate preferred runways and preferred flight paths for noise abatement purposes. The following factors of aircraft noise are considered in calculating the ANEF:

- the intensity, duration, tonal content and spectrum of audible frequencies of the noise of aircraft takeoffs, landings and reverse thrust after landing (the noise generated on WSI from ground running of aircraft engines or taxiing movements is not included for practical reasons)
- the forecast frequency of aircraft types and movements on the various flight paths
- the average daily distribution of aircraft takeoffs and landing movements in both daytime (7 am to 7 pm) and night time (7 pm to 7 am) hours; and
- the topography of the area surrounding the airport.

All these factors remain unchanged, except for the forecast movements on various flight paths. However, this is a small portion of movements.

Because of the logarithmic nature of the noise exposure calculation, the fact that most inputs are unchanged would lead to non-material changes to the ANEF contours once some movements have been relocated from one track to another.

20.3 Aircraft noise impacts

20.3.1 Sydney (Kingsford Smith) Airport

20.3.1.1 Issue

Raised by

Community, Bayside Council, Blue Mountains City Council, City of Parramatta Council, Cooks River Valley Association, Homebush Residents Group, Inner West Council, Inner West Residents and Mums Group, Julian Leeser MP – Member for Berowra (Federal), Sally Sitou MP – Member for Reid (Federal), Sydney Flight Paths Action Group, The Parks – Sydney's Parkland Councils, WSROC

Issue

Submissions generally objected or had concerns with any level or increase of level of aircraft noise or the predicted aircraft noise impacts, and that certain areas or suburbs should not be exposed to any or further aircraft noise (including natural areas and/or green space).

Submissions objecting to the proposed changes to Runway 25 and Runway 34L stated that the changes were not justified and aircraft movements should not be concentrated over inner Sydney suburbs located within the Inner West, Bayside, Canterbury-Bankstown, Burwood and Strathfield LGAs.

Other submissions were concerned with the increase in aircraft noise for communities in the outer suburbs impacted by the changes, for example, Dural for Runway 34L departure east; Bella Vista for Runway 25 departure east and north. Submissions commented that aircraft noise from the changed flight paths has the potential to adversely impact the communities of the Blue Mountains.

The submissions argued that the proposed changes are inconsistent with the 'noise sharing' principle that applies to Sydney (Kingsford Smith) Airport, that it would impact respite, and are contrary to the 1997 departure flight spread plan/1997 Ministerial Direction, under subsection 16(1) of the *Air Services Act 1996*, that established the Long Term Operating Plan (LTOP).

Further objections to Sydney (Kingsford Smith) changes included:

- overflown communities are already exposed to high levels of aircraft noise, and that these impacts would increase as a result of the narrowing of flight path corridors
- there would be a disproportionate impact on residents as a result of changes to Runway 34L. These suburbs experience considerable aircraft noise due to existing flight paths from Runway 34L west and south departures (approximately 80 aircraft movements per day on a busy weekday). With the addition of Runway 34L eastbound departures, around 30 aircraft movements per day on a busy weekday would represent a nearly 40 per cent increase in aircraft noise, and accompanying noise levels over 70 dB(A). Submissions stated that this was unfair and unreasonable
- the consolidation of 3 existing flight paths into one for Runway 25 changes presents a disproportionate, new and unacceptable impact on Bardwell Valley, Bardwell Park, Bexley North and surrounding suburbs
- the changes would impact on important green space, including Cooks River and its parklands and surrounds such as Bardwell Valley Parklands, Turrella Reserve and the Wolli Creek Regional Park
- there would be increased noise levels at night for certain communities and concern that this may occur during Sydney (Kingsford Smith) Airport curfew hours
- some communities would be affected by an increase in aircraft noise from both facilitated changes and new flight paths from WSI
- noise would increase where new turns are introduced
- that certain suburbs impacted by the changes are not eligible for any government schemes to mitigate noise impacts.

20.3.1.2 Response

The proposed facilitated changes are required to safely introduce the flight paths for single runway operations at WSI into the Sydney Basin airspace. Changes to Sydney (Kingsford Smith) Airport flight paths have been minimised and only occur where existing flight paths coincide with the airspace that would be required for WSI (principally in the west and north-west of the Sydney Basin), and where the separation standards between aircraft using both airports cannot be maintained. The ability to disperse flights across a wider area beyond what has been proposed is not possible due to safety and the available airspace. However, the current practice of radar vectoring of aircraft on certain adjusted SIDs would continue to occur when it is safe to do so. Further detail on the justification and need for the proposed changes is provided in Section 8.2.1.2 of this Submissions Report.

Avoiding changes to Sydney (Kingsford Smith) Airport's existing noise sharing arrangements is one of the 12 Airspace design principles set out in the Airport Plan for WSI, which have been used to guide the development of WSI's preliminary flight paths. The proposed facilitated changes will not affect the existing noise sharing for Sydney (Kingsford Smith) Airport, which are also referred to as the Long Term Operating Plan. The Long Term Operating Plan sets how the different runway modes at Sydney (Kingsford Smith) Airport are used to share noise impacts, and all runway modes will continue to be available following the opening of WSI. There are no changes to how these runway modes are selected and operated.

The noise modelling presented in the Draft EIS should be considered a 'worst case' scenario, as it has applied the flight movements on the busiest day in 2019. In reality, an average or typical day of operations would have a reduced number of flights, and the use of the procedures would continue to be subject to the Long Term Operating Plan and meteorological conditions. However, it is acknowledged that the implementation of these changes would represent a change in aircraft noise for some communities.

Changes to the Runway 25 SIDs (jets) for Sydney (Kingsford Smith) Airport would result in a considerable increase in area (square kilometres), dwellings, and population within the outer Number-above contours (N60 and N70). The change in impact is attributed to the early initial turn off at 1,500 ft (457 m), the re-position of the western and north-western departure flight paths, and the narrowing of the existing flight path. This has created an extension to the N60 and N70 contours. However, Runway 25 departures represent only around 4 per cent of annual operations at Sydney (Kingsford Smith) Airport and these procedures would be infrequently used. Further, aircraft on northern and eastern flight paths would continue to be radar vectored to the existing SHORE waypoint, which is consistent with current practice. The area of radar vectoring would be increased over the north-eastern suburbs to account for the adjusted flight paths (refer to Figure 21.10 of the Draft EIS). It is expected that more than half of these flights would be radar vectored which would provide a dispersion of aircraft over the north-eastern suburbs. Figures 21.11 to 21.13 of the Draft EIS present the N60 contours for the proposed changes to Runway 25 SIDs. A full set of figures is provided in Chapter 7, Appendix A of Technical paper 13.

Changes to Runway 34L KADOM SID (jet) and RICHMOND SID (jet) have been designed to predominately fly over parts of the north-western suburbs that are already overflown by the SID. However, it is acknowledged that this would result in a change in the geographical extents of the N60 and N70 contours for the areas overflow by the adjusted KADOM SID, noting that:

- for western departures, the change involves a reduction in the width but an extension in the length of the contours, resulting in a slight reduction in the area, dwelling and population numbers for when this procedure is in use
- for northern and eastern departures, a change reflects the displacement of the departures from the current RICHMOND SID, with the contours extending to the south-west. However, in practice, not all aircraft would fly the SID procedure as radar vectoring would continue to occur. This would disperse aircraft (and aircraft noise).

For the Runway 34L RICHMOND SID, there would be marginal changes in the N60 and N70 contour extents when compared to the current procedure, resulting in very minor increases in the area, dwelling and population counts. Further along the SID as distance increases from Sydney (Kingsford Smith) Airport, the noise contours would be generally similar.

Figures 21.16, 21.17 and 21.19 of the Draft EIS present the N60 contours for the proposed changes for the Runway 34L SIDs. A full set of figures is provided in Chapter 7 of Appendix B and C of Technical paper 13.

The proposed SID for Sydney (Kingsford Smith) Airport non-jet departures is expected to be used by around 20 of the 30 non-jet aircraft per day departing for western and north-western destinations in 2030. Non-jet aircraft currently fly on a widely dispersed set of radar vectored flight paths to a westerly or north westerly destination. A number of outer suburbs of the Sydney Basin that would currently experience overflight of non-jet departures would experience a concentration of non-jet flights due to this proposed procedure. However areas subject to 60 dB(A) or more aircraft noise levels would not change.

The proposed changes would not alter the curfew for Sydney (Kingsford Smith) Airport or the restrictions for when aircraft can operate during the curfew or the curfew shoulder period.

It is acknowledged that Wolli Creek Regional Park and Bardwell Valley Parklands would be directly overflown by the proposed facilitated changes. While these recreational areas identified in submissions would experience some change due to an increase in movements along SIDs (and resulting aircraft noise), these areas are already overflown by aircraft arriving or departing Sydney (Kingsford Smith) Airport and are already subject to aircraft noise.

A response to concerns about cumulative impacts is addressed in Chapter 21 (Cumulative impacts) of this Submissions Report.

The adjusted procedures would require turns at different locations and altitudes. This has been accounted for in the assessment of noise, where N60 and N70 contour have been produced.

As required under the *Airports Act 1996* (Cth), Sydney (Kingsford Smith) Airport is currently renewing its Master Plan (2044) that incorporates an Environment Strategy and preparing an ANEF. As is always the case when a new ANEF is prepared, the contours will be different to those in the previous ANEF.

Eligibility for financial and technical assistance for insulation of existing residential properties, or insulation for other sensitive receiver land uses (educational facilities, religious institutions and health care facilities) under the previous scheme for Sydney (Kingsford Smith) Airport occurred in areas within the 30 ANEF contour and 25 ANEF contour as defined in 1997. As discussed in Section 20.2.1, the facilitated changes are not expected to alter the ANEF contours as published in the current Master Plan.

20.3.2 Bankstown Airport

20.3.2.1 Issue

Raised by

Community, Aeria Management Group, Camden Council, City of Parramatta Council

Issue

Submissions expressed concern about the potential noise impacts associated with changes at Bankstown Airport, including changes to IFR and the consolidation of flight paths. Submissions commented on the expected traffic, altitude and expected noise data provided, suggesting that some aircraft using these routes would be heard in people's homes.

One submission was concerned about increased congestion and noise around Bankstown Airport from the proposed changes, including from larger aircraft, noting there are already helicopters and non-jet aircraft movements.

One submission stated that the changes to the airspace, flight paths and regulations due to the introduction of WSI would require aircraft to fly at lower altitudes while transitioning into airspace outside the Bankstown Airport control area, and coupled with increases in aircraft numbers and congestion, would increase noise exposure and impacts for residents and communities beyond the impacted areas. It was stated that it can be anticipated that this would result in an increase in noise complaints and may affect operations and services in the Sydney Basin resulting in significant flow-on economic and employment costs.

20.3.2.2 Response

It is acknowledged that Bankstown Airport is the most affected of all Sydney Basin airports by the proposed introduction of WSI operations. This is reflected by the need to introduce an adjusted SID and new IFR STARs and instrument approaches (RNP) to Bankstown Airport procedures. Around 145 of the average 700 flight movements per day are expected to operate under IFR.

The area overflown by the proposed new SIDs and STARs for Bankstown Airport IFR operations is currently frequently overflown by similar aircraft undertaking both IFR and VFR flights. While there is some uniformity of flight tracks in the current operation, aircraft are still able to operate in a discretionary way, particularly in fine weather conditions. Due to the close proximity of WSI, once operational it is expected that IFR aircraft operating to and from Bankstown Airport would more frequently fly the new IFR procedures than is currently the case.

It is acknowledged that the implications of changes to IFR procedures are an increased frequency and concentration of overflight by aircraft (and as a result, aircraft noise) arriving to Bankstown Airport, particularly in the final approach phase of the arrival. The changes to IFR procedures would also result in new areas close to Bankstown Airport being subjected to overflight by aircraft undertaking IFR operations and flying at relatively low altitudes.

Due to the low movement numbers expected to adopt the proposed future IFR procedures and the high variability in potential noise from the different operating aircraft types, a qualitative analysis was completed. These represent external noise levels, noting that noise experienced at ground level would vary between aircraft, or due to other factors such as pilot technique, different meteorological conditions, and/or lateral distance between the on-ground receiver and the aircraft. Internal noise levels are also dependent on building type and noise insulation but it is generally assumed that indoor noise levels based on a typical building fabric would be 10 dB(A) lower with doors and windows open compared to outdoor sound levels.

A set of noise abatement procedures are in place at Bankstown Airport, which detail the preferred runway and circuit directions, and limitations during the day and night time periods. The airport also has a voluntary Fly Neighbourly Procedures Program. This program assists in managing noise-related airport issues for fixed-wing aircraft and helicopters, as well as on-ground noise sources. These measures would continue to apply.

Jet aircraft currently use Bankstown Airport, representing a low percentage of total movements (1.3 per cent in 2019). The proposed facilitated changes would not influence the aircraft mix operating from this airport. It is acknowledged that the WSI flight paths pass over similar communities, however for those communities closer to Bankstown Airport, WSI aircraft would typically operate at higher altitudes (over 10,000 ft (3 km)) and the WSI N60 and N70 contours do not extend into these areas.

The broader noise concerns due to changes in how general aviation aircraft operate in the Sydney Basin is noted. The changes to IFR and VFR routes beyond the Bankstown Airport control area are currently frequently overflown with similar aircraft. It is acknowledged that a cumulative assessment of these changes has not been completed due to a number of uncertainties and limitations as detailed in Appendix I of Technical paper 13.

20.3.3 General

20.3.3.1 Issue raised

Raised by

Community, Homebush Residents Group

Issue

There was objection to statements in the EIS that the noise changes were ‘minor’ in nature and that additional flights from the changes would overfly already-overflown suburbs. These statements were taken to suggest that impacts would not be significant and/or that this was justification for the changes. Submissions deemed these suggestions to be inconsiderate of the residents of those suburbs.

Submissions expressed concern that homes in areas potentially subject to facilitated changes and associated aircraft noise are not acoustically designed. Homes are designed for passive ventilation and/or are of older housing stock, and that windows need to remain open for air circulation. Submissions also expressed concerns about the impact of air conditioning replacing passive ventilation, from a monetary or environmental perspective.

20.3.3.2 Response

Some changes have been described as being minor in nature when compared to current procedures or how aircraft currently operate. Changes are considered minor relative to the increase in the area, dwellings and population counts within an N60 or N70 contour. The assessment has not discounted the potential noise implications to communities or the consideration of these changes in the Draft EIS.

It is acknowledged that the acoustic insulation of an individual building is dependent on a number of factors, and that the response of individuals to noise varies. The Noise Insulation and Property Acquisition policy (NIPA) does not apply to the facilitated changes.

20.4 Social and economic

20.4.1 Impacts to general aviation stakeholders

20.4.1.1 Issue raised

Raised by

Community, Aeria Management Group, Air Sport Australian Confederation, Air Spurzen Pty Ltd – ACES, Australian Acrobatic Academy, CFI Bathurst Soaring Club, General Aviation Advisory Network, Gliding Australia, Gliding NSW, NSW Small Business Commission, Southern Cross Gliding Club, Sydney Recreation Flying Club, Sydney Gliding

Issue

Impacts to Camden and Bankstown Airport, and changes to flight training areas

Submissions disagreed with the economic impact assessment presented in the Draft EIS with respect to the impacts to the airport operator, flight training schools and other general aviation operations at Bankstown and Camden airports. Submissions expressed the view that the Draft EIS did not consider the impacts to other aviation-related businesses such as aircraft maintenance and engineering, and did not consider the overall impacts on general aviation operators more broadly, including increased compliance costs, congestion and delays, and flow-on impacts resulting from the closure or relocation of businesses.

Submissions requested further assessment of the economic impact resulting from the proposed airspace changes.

Submissions stated that:

- flight training schools at Bankstown Airport have indicated to the Aeria Management Group that the impacts would likely reduce their operations and impact the ongoing viability of these businesses, potentially leading to the closure of some businesses
- any reduction in flight training and students would lead to significant employment and economic impacts, and would undermine future workforce needs with reference to the growing global demand for pilots and aircraft engineers. This was expressed as being contrary to the Australian Government's commitment in the Aviation Green Paper
- the proposed requirement for flight plan notifications and transponders would increase time and administrative burdens on operators at Bankstown Airport and Camden Airport, in addition to the related equipment installation and maintenance costs
- increased aircraft activity and proposed regulations may create delays in the provision of air traffic control services, noting the general staffing shortfalls have been acknowledged by Airservices Australia.

Aeria Management Group provided its preliminary economic assessment, which estimated the cost to general aviation and related services at Bankstown and Camden Airport would be approximately $76.2 million in 2026, increasing to $102 million per annum by 2055 (based on the Bankstown Airport Master Plan 2019). This would equate to an estimated cost of $2.65 billion by 2055 to general aviation operations and services at Bankstown and Camden airports (without mitigation). This has assumed a reduction of 20 per cent of student numbers at Bankstown Airport, and the flow on impacts to the workforce and skills base in the aviation sector. The estimate from Aeria Management Group did not include additional costs to businesses due to relocation or closure, and therefore it is considered by Aeria Management Group to be a lower-bound estimate.

Impacts to sport aviation and/or gliding

Submissions expressed concern about overall impact to training and safety of gliding, the impact to future growth of the sport in Sydney, the economic viability of gliding clubs and/or the loss of revenue due to reductions in gliding activity or club memberships resulting from the proposed airspace changes. Submissions indicated that glider sport plays an important role for the other aviation sectors and that gliding at Camden and Richmond is a feeder to gliding in the rest of NSW. Submissions also identified impacts to gliding operating from The Oaks Airport and the viability of the Sydney Recreational Flying Club.

Submissions stated that gliding activities from Camden Airport contributes to the local economy, and that the longer wait times for take-off and circuit entry would reduce the number of launches for gliding. This would result in a subsequent decrease in revenue for gliding, Airservices Australia and Aeria Management Group as well as the Camden community given gliding operates from this airport 7 days a week.

Submissions stated that the additional equipment requirements to operate in the proposed airspace would increase the cost per glider, and that this could impact the financial viability of gliding operations. This could also result in the loss of gliding members, further impacting revenue for clubs and Aeria Management Group.

Submissions identified that substantial investment has occurred at Camden Airport for gliding-related infrastructure and that a reduction in membership would jeopardise the return on this investment.

20.4.1.2 Response

The WSI airspace and flight paths have been designed to reserve the minimum airspace possible while continuing to adhere to the design principles of safety, efficiency and minimisation of environmental impacts. Controlled airspace (CTA) volumes have been minimised to the greatest extent possible while safely containing aircraft operations.

Although care has been taken to minimise impact to general aviation activities, such as flight training and gliding operations in the vicinity of WSI, the Australian Government understands that implementation of WSI airspace will have an impact.

The Draft EIS has identified possible training areas for use by the local general aviation community. These possible training areas have been the subject of consultation by Aeria Management Group, the owners of Bankstown and Camden Airports, who have committed to working with the local general aviation community to refine the details of these areas and have them promulgated in time for the opening of WSI. The final proposed detail and ultimate procedures will not be confirmed until completion of a separate airspace change proposal, depending on the extent of the change.

Members of the gliding community may apply to CASA to establish airspace for their operations. This can be achieved by following CASA's Office of Airspace Regulation (OAR) airspace change process. However, due to the airspace volume requirements for gliding activities, it is not expected that gliding will continue to be available to the same extent in the same locations as they currently occur.

The costs quantified in the Draft EIS were based on an average marginal increase in costs per training flight provided by Aeria Management Group. Subsequent to the Draft EIS, Aeria engaged URBIS to quantify the marginal costs in 3 areas identified – flight training, aviation supply chain and additional safety compliance measures. The marginal cost was quantified at $76.2m in the first full year of WSI operation and increasing generally at around one per cent per annum. The revised cost is around 5 times higher than what was provided for the Draft EIS. These findings have not been verified as the URBIS study commissioned by the Aeria Management Group was not provided to enable analysis or audit. The introduction of the proposed flight training areas, including the Bankstown Airport Southeast VFR Corridor (previously known as the Engadine Corridor transit route), may contribute to mitigating the additional costs associated with the facilitated changes.

20.4.2 Impacts to community

20.4.2.1 Issue raised

Raised by

Community, Blue Mountains City Council, Canterbury-Bankstown Council, Inner West Council

Issue

Submissions raised concern that increased aircraft noise from changes would impact the social values of the areas overflown (including quality of life, liveability and enjoyment, community cohesion, and quality of urban surroundings) and would disrupt daily and social activities, including the ability to have uninterrupted conversations and working from home. There was concern aircraft noise would impact urban renewal in areas impacted by the facilitated changes as well as impacts to the enjoyment or value of outdoor public spaces.

Submissions expressed concern or objected to the facilitated changes due to the predicted aircraft noise levels and/or the impacts to amenity, liveability and lifestyle of the areas overflown. Submissions stated that the facilitated changes need to be balanced with the well-being and safety of residents.

It was suggested that more than half of the suburbs that are impacted by the facilitated changes within the Canterbury-Bankstown LGA are among the most socio-economically disadvantaged suburbs in Australia. Another submission was concerned with the impact of aircraft noise on vulnerable groups (specifically, the impact on disability housing). It was also suggested that compensation should be provided to address social impacts, particularly where the changes would result in increased disadvantage for vulnerable groups. Other submissions stated that:

- the facilitated changes would impact property values, and/or buyer interest in these areas. Reduction in property values would have financial implications on individuals
- residents made decisions to purchase within an area based on existing flight paths and/or to avoid previous experience with aircraft traffic, and that being now impacted by changes to aircraft traffic is unfair
- increases in flights would interrupt Central Business District (CBD) and/or business activities (due to aircraft noise), including noise sensitive business activities (such as health-related businesses) and street-based businesses (such as cafes)
- increased aircraft noise would result in costs to the Australian Government, individuals or schools due to the need for additional acoustic treatment of properties.

20.4.2.2 Response

The concerns expressed in submissions concerning the potential social impacts due to increased frequency of aircraft movements (and therefore noise) are acknowledged. However, the proposed new or adjusted procedures are within areas that are already overflown by aircraft. The exception is at Bankstown Airport, where changes to Bankstown Airport flight paths may result in some areas being overflown that have not been previously overflown.

Changes to flight paths have been minimised, and only occur where separation standards between aircraft using both airports cannot be maintained. The ability to disperse flights across a wider area beyond what has been proposed is not possible due to safety and the available airspace.

For communities overflown by Sydney (Kingsford Smith) Airport operations, it is important to note that:

- the noise modelling presented in the Draft EIS is considered a ‘worst case’ scenario, as it has applied the flight movements on the busiest day in 2019. In reality, an average or typical day of operations would have a reduced number of flights, and the use of the procedures would continue to be subject to the Long Term Operating Plan and meteorological conditions

- the current practice of radar vectoring of aircraft on certain adjusted SIDs would continue to occur when it is safe to do so, which would provide dispersion of impact for some communities
- the existing noise sharing for Sydney (Kingsford Smith) Airport would not be impacted in terms of how the different runway modes at Sydney (Kingsford Smith) Airport would be used to share noise impacts.

Current IFR and VFR operations and flying activity out of Bankstown and Camden Airports are discretionary and dispersed over areas of the Sydney Basin, in particular in the vicinity of Bankstown Airport. The proposed facilitated changes would result in changes to the location of flight training areas and how VFR and IFR aircraft transit within the Sydney Basin, in addition to the IFR aircraft procedures for aircraft operating from Bankstown Airport. The potential for social impacts arising from these changes would be highly dependent on the current and future level of overflight and aircraft noise. It is acknowledged that an assessment of current noise has not been completed due to a number of uncertainties and limitations as detailed in Technical paper 13. This limitation is acknowledged in the Draft EIS.

Urban renewal within the vicinity of Sydney (Kingsford Smith) Airport suggests that aircraft noise changes as a result of the proposed facilitated changes are unlikely to inhibit urban renewal initiatives. A discussion of previous studies into the impact of aircraft noise on property prices is provided in Section 5.4 of Technical paper 11: Economic (Technical paper 11). This discussion found that an impact on property prices would be greater where properties are within the ANEC/ANEF contours, which captures areas close to the airport. Importantly, studies for Sydney (Kingsford Smith) Airport have found that there is:

- no statistically significant relationship between noise exposure and housing prices in Sydney
- the analysis of property prices for Sydney (Kingsford Smith) Airport since 1991 have found no appreciable difference in growth rate between median prices in suburbs subject to the 20 ANEI or more and those in similar areas not exposed to aircraft noise.

The areas close to the Sydney (Kingsford Smith) Airport and Bankstown Airport are subject to land use controls to manage aircraft noise exposure within ANEF contours, including the incorporation of noise control features in proposed developments such as residential, education, health and commercial uses. These controls would continue to apply.

20.5 Air quality

20.5.1 General

20.5.1.1 Issue raised

Raised by

Community, Sydney Flight Paths Action Group

Issue

Submissions expressed concern that the facilitated changes would result in air quality impacts to overflown residential areas, green spaces and waterways. For Sydney (Kingsford Smith) Airport flight path changes, this included air quality concerns due to the concentration and disproportionate impact of multiple flight paths over an area in conjunction with other sources within the local area (such as motor vehicles and freight trains, and construction activities).

20.5.1.2 Response

In terms of air quality, the facilitated changes are generally small and occur at altitudes where there would be no significant effect on the ground level concentrations of aircraft emissions. As a result, the facilitated changes would not lead to any discernible change in air quality in areas overflown by the adjusted flight paths.

20.6 Health impacts

20.6.1 General

20.6.1.1 Issue raised

Raised by

Community, Inner West Residents and Mums Group, Sydney Flight Paths Action Group

Issue

Submissions expressed concern that the facilitated changes would impact or further impact the physical health, mental health, cognitive development and/or general wellbeing of individuals, or communities overflown due to the increase in aircraft noise (including sleep disturbance) and air emissions.

Concerns included (but were not limited to) impacts to learning and children's cognitive skills, impacts to hearing, increased risk for people with existing health conditions, impacts to people with sensory sensitivities or mood disorders, increase in sleep disturbance (such as shift workers), increase in stress, cancer risk, respiratory issues and cardiovascular issues.

These concerns were often attributed to the increase in the number of flights over a particular location, and/or the number of events above 70 dB(A) as well as the cumulative noise and air impacts (including from motorways). Submissions raised concern about the impact to public health more broadly, especially considering the high population of these areas overflown by the adjusted Sydney (Kingsford Smith) Airport flight paths.

Submissions expressed concern that the project would result in increased sleep disturbance for residents overflown by changed flight paths for Sydney (Kingsford Smith) Airport (including quality of sleep and sleep patterns). Submissions stated that they were already experiencing sleep disruption from existing Sydney (Kingsford Smith) Airport flights, for example, in the hours just prior to and immediately after the Sydney (Kingsford Smith) Airport nightly curfew. There were concerns that these negative impacts to sleep would worsen under the changes, even during the nightly curfew.

Submissions referenced international guidelines and studies relating to health impacts, or identified the number of schools, religious institutions, hospitals or the high number of people living in the areas impacted by the proposed Sydney (Kingsford Smith) Airport flight path changes.

Concern was also expressed that residences are not prepared nor supported to accommodate this amount of aircraft noise and/or this would require people to keep windows and doors closed, further leading to physical and mental health impacts.

20.6.1.2 Response

Health effects associated with aircraft noise that can be quantified relate to annoyance, cardiovascular effects, cognitive impairment and sleep disturbance. These health effects are typically associated with averaged noise levels over a specific period (such as day, evening, night) and also account for existing or background noise levels. For WSI, these health issues are typically associated with areas close to the runway of an airport, and under the initial flight paths for arriving and departing aircraft. The areas close to the Sydney (Kingsford Smith) Airport and Bankstown Airport are subject to land use controls that are in place to manage aircraft noise exposure within ANEF contours, including the incorporation of noise control features in proposed developments, including schools.

For the Sydney (Kingsford Smith) Airport, the facilitated changes have been designed to replicate the existing flight paths as closely as possible for the initial climb (up to 1,500 ft or 800 ft (457 m or 244 m), depending on the procedure), as well as broadly following common segments within the Sydney Basin, where possible. It is acknowledged that for some communities, this means a change in N70 or N60 contours, and/or a change in the frequency of overflight.

The results of the N60 and N70 contours or the NPD curves cannot be used to assess health effects of the proposed facilitated changes as they represent either a number of the maximum noise events (L_{Amax}) that exceed 60 dB(A) or 70 dB(A) over a busy day, or present predicted noise from an aircraft at a particular altitude. Further, the assessment has considered the procedure or aircraft noise in isolation, and does not account for the influence of other flight paths associated with that airport, or background noise. The limitation of this assessment is acknowledged in the Draft EIS.

The proposed facilitated changes would not affect the existing noise sharing for Sydney (Kingsford Smith) Airport, and would not alter the curfew for Sydney (Kingsford Smith) Airport or the restrictions for when aircraft can operate during the curfew or the curfew shoulder period.

It is acknowledged that the acoustic insulation of an individual building is dependent on a number of factors, and that the response of individuals to noise varies. The NIPA does not apply to the facilitated changes.

Section 19.2.1 of this Submissions Report provides a response to the impact assessment approach concerning mental health, wellbeing and quality of life impacts (such as depression and anxiety) on the context of WSI aircraft noise. There is no evidence to date that supports that aircraft noise causes these types of impacts and that such impacts could be quantified.

20.7 Biodiversity

20.7.1 General

20.7.1.1 Issue raised

Raised by

Community, Bayside Council, Sydney Flight Paths Action Group

Issue

Submissions raised concern about the impact the Sydney (Kingsford Smith) Airport flight path changes could have on native fauna and habitats, or the cumulative impact of these changes on biodiversity given the impacts from other noise sources (road, rail etc).

The submissions were predominately focused on the impacts to Turrella Reserve and Wolli Creek Regional Park, and the impacts to the nationally important Grey-headed Flying-fox camp located within the regional park due to increased wildlife strike and aircraft noise. Submissions stated that alternatives to the design, or provision of additional assessment or mitigation measures is required.

20.7.1.2 Response

It is acknowledged that remaining areas of vegetation and reserves within the urban areas surrounding Sydney (Kingsford Smith) Airport would be overflown by the adjusted flight paths. This includes the Wolli Creek Regional Park, which contains the nationally important Grey-headed Flying-fox camp at Turrella. However, most of these habitats have been heavily modified and fragmented, and are already subject to aircraft overflight from Sydney (Kingsford Smith) Airport in one of the most urbanised parts of Australia.

With respect to the Wolli Creek Regional Park and Turrella Reserve:

- changes to Runway 25 departures would see an increase in the total number of movements that pass over the western-most part of the Wolli Creek Regional Park (west of Hartill-Law Avenue, Bardwell Park/Earlwood). However, Runway 25 is only used around 4 per cent of the year. The adjusted flight paths would not directly pass over Turrella Reserve
- flights departing Runway 34L do not pass over the Wolli Creek Regional Park or Turrella Reserve
- Wolli Creek Regional Park and Turrella Reserve (in part or in full) are within existing and proposed N60 and N70 contours for certain flight paths associated with Runway 25 and Runway 34L departures.

The *National Flying-fox monitoring viewer* (DCCEEW, 2022) positions the camp to the east of Hartill-Law Avenue, Bardwell Park/Earlwood but this online viewer only provides a centre point of the camp. The camp is currently overflown by arrivals to and departures from Sydney (Kingsford Smith) Airport. While the majority of the current aircraft activity typically occurs at 5,000 ft (1.5 km) or more, aircraft do fly between 1,000 to 3,000 ft (300 m to 914 m) in areas above Earlwood, Bardwell Park and Turrella.

In civil aviation, around 93 per cent of wildlife strike that leads to mortality or injury of fauna species occurs at or below 3,500 ft (1.1 km) AGL (Dolbeer 2011), with 96 per cent of flying-fox strikes recorded at or below 1,000 ft (300 m) AGL (Parsons, Blair et al. 2008). Flying-foxes (which also includes species reported as fruit bat and bat) were reported as being the most struck fauna species group at Australian airports between 2008 and 2017 (1,240 strikes nationally) (Australian Transport Safety Bureau 2019).

Around 75 flying-foxes (including an estimated 13 Grey-headed Flying-foxes) over the past 5 years have been struck by aircraft arriving and departing Sydney (Kingsford Smith) Airport (Technical paper 5: Wildlife strike risks (Technical paper 5)). This is estimated at around 2 to 3 Grey-headed Flying-fox individuals per year. It is acknowledged there is a high potential that the strike data for Sydney (Kingsford Smith) Airport could have some Grey-headed Flying-fox recorded as an unidentified flying-fox. However, the strike rate would remain relatively low compared to the overall population of flying-foxes in the areas surrounding this airport.

The typical altitudes of aircraft on the adjusted flight paths for Sydney (Kingsford Smith) Airport would be similar to current operations. In particular, the initial climbs of the adjusted flight paths following departure from Runway 25 and Runway 34L have been designed to replicate existing operations until reaching 1,500 ft (457 m). While the facilitated changes would alter the spatial distribution of aircraft departing from Sydney (Kingsford Smith) Airport, it would not be to a level that would substantially change the current wildlife strike risks associated with this airport or subsequent risk to native fauna populations (including the Grey-headed Flying-fox).

Literature suggests that fauna species that are susceptible to disturbance from noise will become habituated to the change over time or would be displaced (refer to Technical paper 8: Biodiversity (Technical paper 8) for further detail). The biodiversity values within the areas overflown by the adjusted flight paths are already subject to aircraft noise and other urban noise sources, and it is likely that species that occur in these areas have become habituated to anthropogenic noise including that generated by aircraft. The Grey-headed Flying-fox species in particular has shown tolerance to urban environments and has shown resistance to aircraft noise based on their presence in proximity to Sydney (Kingsford Smith) Airport and Bankstown Airport. While the frequency of aircraft noise events would increase in some locations, the facilitated changes are unlikely to change the maximum noise level of aircraft noise in areas closest to the Airport Site and are unlikely to have a substantial or different impact on the Grey-headed Flying-fox camp or on other native species or habitats when compared to the existing situation. On this basis, mitigation and management measures are not considered necessary.

20.8 Other issues

20.8.1 Hazards and risk

20.8.1.1 Issue raised

Raised by

Community, Camden Council, Southern Cross Gliding Club, Sydney Recreational Flying Club, Gliding Australia

Issue

A submission commented on the potential increase in aircraft crash risk from the added airspace complexity or present crash risks at different locations due to increased aircraft activity. Submissions were concerned that the facilitated changes would create additional safety risks due to the increase in flights over densely populated areas – especially in the event of an emergency – and that ensuring the safety of residents should take first priority in the decision-making process.

It was questioned why air traffic movements from unlicensed airports were excluded from consideration, given the potential safety risks from aircraft associated with these airports.

Submissions expressed concern about the potential increase in wildlife strike from Sydney (Kingsford Smith) Airport changes and the subsequent significant risk to aircraft safety (for biodiversity impacts see Section 20.7).

Other submissions were concerned that the facilitated changes could conflict with emergency helicopter movements at Sydney hospitals.

20.8.1.2 Response

Aircraft crash risk

The proposed facilitated changes have been designed to achieve 'Safety by Design' and are subject to a safety regulatory and management framework in which the safety of air navigation is regarded as the most important consideration.

Safety was the overriding priority of the airspace design process, both in terms of safety of ground-based activities, minimisation of potential flight path conflicts between existing and proposed flight paths and with respect to minimising air traffic control workload interactions ('Safety by Design'). In the assessment and development of the flight path designs (including facilitated changes), the design principles' key performance criteria of safety; environment; capacity; and efficiency were consistently applied.

Third-party risks associated with the facilitated changes can be expected to be more concentrated in areas closer to the end of each runway, or along flight paths during the initial stages of take-off and the later stages of approach and landing. These risks are predominately influenced by the characteristics of a technical fault or other exceptional occurrences that have the potential to lead to ground collisions. While the re-design of SIDs and STARs might lead to some redistribution of the areas subject to risks, those changes can be expected to not lead to a significant change in risk levels overall.

It is acknowledged that a number of safety concerns have been raised with respect to general aviation activities, such as changes to flying training areas, impacts to gliding, VFR routes and consideration of unlicensed airports. These matters have been responded to in Section 8.5 of this Submissions Report.

Wildlife strike

While there are instances where wildlife strike has presented a significant threat to aircraft, the historical accident record shows that such events are very rare. The Australian Transport Safety Bureau (ATSB) accident and incident database received 22,526 wildlife related occurrences for civil aircraft operations between 2003 and 2022. None of these occurrences resulted in human fatalities or injury (refer to Section 13.5.7 of the Draft EIS and Section 8.5 of Technical paper 4: Hazards and risk (Technical paper 4) for further detail).

Most of the reported incidents involved bird strikes and resulted in minor or no aircraft damage and no injuries. Bird strike hazards that have potential implications for third party safety are concentrated at and in the immediate vicinity of an airport with 75 per cent of incidents occurring during take-off or landing and 22.5 per cent during the initial climb and approach. For collisions with flying-foxes, 96 per cent occur at or below 1,000 ft (300 m) above ground level (AGL), with the majority below 500 ft (152 m) (Parsons et al., 2008) which indicates that areas within flight paths and at airports have the greatest strike risk from flying-foxes.

The adjusted flight paths for Sydney (Kingsford Smith) Airport occur in areas already overflown by arriving and departing aircraft from this airport, and the typical altitudes of aircraft on the adjusted flight paths for Sydney (Kingsford Smith) Airport would be similar to current operations. This includes the initial stages of take-off. As such, while the facilitated changes would alter the spatial distribution and/or frequency of aircraft departing from Sydney (Kingsford Smith) Airport on some flight paths, the potential wildlife strike risk associated with this airport would remain largely unaffected.

Helicopter operations in the Sydney Basin

How emergency aircraft operate in the Sydney Basin would not change as a result of the facilitated changes. Emergency aircraft (including helicopters) when in controlled airspace would be subject to air traffic control and are given priority as per standard aeronautical procedures.

20.8.2 Sustainability

20.8.2.1 Issue raised

Raised by

Community

Issue

Submissions expressed concern the changes to Sydney (Kingsford Smith) Airport flight paths would not contribute to sustainability outcomes within the locality, for example, it would not contribute to overall biodiversity outcomes, reduction of urban heat, improved air quality or other environmental opportunities.

20.8.2.2 Response

Sustainability initiatives that are relevant to the proposed facilitated changes relate to achieving reductions in air and noise emissions from aircraft. The changes to Sydney (Kingsford Smith) Airport would not noticeably change CO_2e emissions from aircraft operating from this airport or the concentration of aircraft emissions at ground level.

Broader initiatives to reduce air and noise emissions from aircraft using Sydney (Kingsford Smith) Airport will be realised through aircraft technological advancements. With respect to climate change, there are several commitments, legislation, policies and sectorial initiatives that are driving reductions in greenhouse gas emissions from the aviation sector globally or within Australia. Further information on these initiatives, which would also apply to aircraft operating from Sydney (Kingsford Smith) Airport, is provided in Section 11.5.2.2 of this Submissions Report.

20.8.3 Land use

20.8.3.1 Issue raised

Raised by

City of Parramatta Council

Issue

Clarification was requested if the facilitated changes would impact building heights within the Parramatta local government area. It was stated that building heights in the Parramatta CBD are based on airspace protection levels for both Bankstown and Sydney (Kingsford Smith) Airport.

20.8.3.2 Response

This matter is subject to the next stage of the design process. Relevant stakeholders will be consulted in due course, as appropriate.

20.8.4 Visual impacts

20.8.4.1 Issue raised

Raised by

Blue Mountains City Council

Issue

Blue Mountains City Council expressed concern that the facilitated changes, particularly proposed transit routes, could result in further adverse impacts on the Blue Mountains due to the visual intrusion of aircraft on modified flight paths.

20.8.4.2 Response

Jet aircraft and turbo-prop aircraft presently pass over the Blue Mountains. The altitude of the aircraft on current flight paths varies but departing aircraft from Sydney (Kingsford Smith) Airport would generally be within the altitude range of 10,000 ft (3 km) to 25,000 ft (7.62 km), and turbo-prop aircraft would be generally 7,000 ft to 15,000 ft (2.1 km to 4.6 km). IFR and VFR aircraft operating from Bankstown and Camden airports are typically at lower altitudes when passing over the Blue Mountains.

Most alterations of Sydney (Kingsford Smith) Airport flight paths would not result in any discernible change to the general location of aircraft when passing over the residential areas of the Greater Blue Mountains Area (GBMA). Where adjusted flight paths pass over different areas within the Blue Mountains or occur along a more confined corridor (in the case of Runway 25 KADOM SID, Runway 34L KADOM SID, or non-jet SIDs), aircraft would still be visible but may not be necessarily in the same location or may be seen more frequently. However, the aircraft would be 10,000 ft (3 km) or higher when passing over these areas.

STARs for IFR aircraft operating from Bankstown Airport and Camden Airport would position aircraft on a nominal approach path and would require aircraft to be below set altitudes over the GBMA (starting at around 9,000 ft (2.7 km) and decreasing to 5,000 ft (1.5 km)). The STARs do not pass over any residential areas in the Blue Mountains. Consistent with current practice, aircraft on the STAR may still be radar vectored and so their position may vary. While aircraft would be visible, these areas are currently overflown by a mix of aircraft types and any visual amenity changes would be minimal.

Finally, proposed transit routes would fly over parts of the Blue Mountains including the GBMA. Aircraft below 10,000 ft (3 km) (non-pressurised piston engine aircraft) would be visible, however these routes would be infrequently used and are currently overflown by similar aircraft.

20.9 Mitigation and management

20.9.1 General

20.9.1.1 Issue raised

Raised by

Community, Bayside Council, Inner West Council, City of Parramatta Council, Canterbury Bankstown Council

Issue

Submissions expressed the need for alternative solutions to be explored to mitigate facilitated impacts, such as use of existing flight paths, to maintain the equity of the airspace, or maintain 'noise sharing'. Submissions stated that the facilitated changes should be finalised in consultation with the community.

Submissions were concerned no potential measures were put forward to mitigate the impacts of the facilitated changes. Submissions requested:

- compensation due to increased aircraft activity, the creation of a voluntary acquisition program, or the provision of noise insulation for residences, schools and commercial properties. It was also suggested that noise insulation eligibility should consider where impacts arise from the facilitated changes and WSI flight paths
- movement caps
- changes to avoid the concentration of flights and more evenly distribute noise impacts
- provision of continuous descent approaches within the design of flight paths at Sydney (Kingsford Smith) Airport.

It was also requested that the Australian Government work with local and state authorities to ensure residents and communities around the Camden and Bankstown Airports are informed about the noise impacts associated with the facilitated changes to airspace and flight paths, that the community is educated on how to make complaints, and that Airservices Australia be resourced to respond to noise complaints. It was also requested that the implications of these changes (including increased noise exposure) be taken into account when assessing future planning documents or proposals for these airports.

It was suggested that the finalised EIS should include monitoring measures. Examples included noise studies of aircraft noise before and after the implementation of the changes, or permanent monitoring stations. Submissions requested noise monitors be installed in specific locations.

20.9.1.2 Response

The WSI airspace and flight paths have been designed to reserve the minimum airspace possible while continuing to adhere to the design principles of safety, efficiency and minimisation of environmental impacts. Changes to existing flight paths have been minimised, however, changes are required to safely introduce the flight paths for single runway operations at WSI into the Sydney Basin airspace.

Feedback from the community in response to the Draft EIS has been considered as part of preparing the finalised EIS. All changes other than flying training areas will be confirmed as part of the WSI airspace change proposal (refer to Chapter 6 (Project development and alternatives) of the Draft EIS). In terms of flying training areas, the final proposed detail and ultimate procedures will not be confirmed until completion of a separate airspace change proposal, depending on the extent of the change.

As stated in Section 20.3.1, the proposed facilitated changes will not affect how runway modes are selected and operated, and will not change the existing noise sharing arrangements or movement caps for Sydney (Kingsford Smith) Airport. A broader review into procedures of Sydney (Kingsford Smith) Airport is beyond the scope of the Draft EIS, including implementation of continuous descent approaches.

The areas close to the Sydney (Kingsford Smith) Airport and Bankstown Airport are subject to land use controls that are in place to manage aircraft noise exposure within ANEF contours, including the incorporation of noise control features in proposed developments, including schools. No additional mitigation or acquisition is envisioned based on the potential impacts of the facilitated changes.

Complaints or enquiries about aircraft operations would be managed via Airservices Australia's Noise Complaints and Information Service (NCIS). Airservices Australia uses complaints and enquiries made to the NCIS to identify areas of concern and possible operational improvements. The provision of services by Airservices Australia or consideration of future master plans for other airports is beyond the scope of the EIS.

The existing noise and flight path monitoring system (NFPMS) operated by Airservices Australia would continue to monitor noise from Sydney (Kingsford Smith) Airport.

20.9.2 General aviation

20.9.2.1 Issue raised

Raised by

Community, Aeria Management Group, Air Spurzen Pty Ltd – ACES, Australian Aerobatic Academy, General Aviation Advisory Network, NSW Small Business Commission

Issue

It was requested that the Australian Government provide a commitment to mitigate the economic impacts of WSI on the Camden and Bankstown Airport, and general aviation businesses with a clear timeframe for implementation. In making this request, the following mitigation measures were identified:

- payment of fair, adequate and flexible compensation to impacted aviation businesses at Bankstown Airport and Camden Airport. It was stated that fair compensation, or another agreed form of financial support (such as relocation assistance), should be paid to affected businesses at Bankstown and Camden airports
- provision of funding or investment incentives to expand general aviation operations at Camden Airport, including flight training operations
- delivery of the Bankstown Airport Southeast VFR Corridor (previously known as the Engadine Corridor transit route) from Bankstown Airport to reduce safety risks and the economic and operational impacts on flight training schools (see Chapter 8 (Facilitated changes) of the EIS)
- provision of efficient and fit-for-purpose air traffic control services and control tower operational hours
- adjustment to the airspace design to lessen the restrictions on VFR aircraft and adjustments to proposed VFR lanes or the flight training area.

20.9.2.2 Response

Although care has been taken to minimise impact to general aviation activities, such as flight training, the Australian Government understands that implementation of WSI airspace will have an impact.

The possible flying training areas have been the subject of consultation with Aeria Management Group, the owners of Bankstown and Camden Airports, who have committed to working with the local general aviation community to refine the details of these areas and have them promulgated in time for the opening of WSI. The final proposed detail and ultimate procedures will not be confirmed until completion of a separate airspace change proposal, depending on the extent of the change.

The proposed Bankstown Airport Southeast VFR Corridor (previously known as the Engadine Corridor transit route) is a parallel project and is beyond the scope of the Draft EIS. As identified in the industry briefing paper, CASA is analysing whether this corridor is feasible. If feasible, it would be expected to be operational prior to the opening of WSI in late 2026.

The introduction of the proposed flight training areas, including the Bankstown Airport Southeast VFR Corridor (previously known as the Engadine Corridor transit route), may contribute to mitigate the additional costs associated with the facilitated changes.

The provision of air traffic control services is a matter for Airservices Australia as the air navigation service provider (ANSP) and not within the scope of the Draft EIS. Clearances to VFR aircraft are expected to be provided, dependent on traffic disposition and air traffic control workload.

Chapter 21 Cumulative impacts

This chapter provides a response to the issues raised in submissions specific to Chapter 22 (Cumulative impacts) of the Draft EIS.

Overall, submissions raised concerns regarding the cumulative impact assessment approach and the project's cumulative impact on noise, air quality, biodiversity and visual amenity. Concerns were also raised in submissions on mitigation measures to address cumulative noise impacts.

Approved, committed or strategic projects captured for the cumulative assessment are projects that are of sufficient scale to contribute materially to cumulative impacts at a regional level with similar or overlapping spatial or temporal characteristics. A qualitative noise assessment was presented in the Draft EIS as there are many factors that make it difficult to quantitatively assess the cumulative impact of aircraft noise from WSI in conjunction with other airspace operations.

The cumulative noise impact of introducing noise associated with the preliminary flight paths is not considered high. The cumulative effects of noise impacts would more likely manifest as a greater number of noticeable events over a given period of time. The application of WSI's flight path design principles along with the necessary separation between flight paths would inherently reduce potential cumulative impacts. The Noise Insulation and Property Acquisition policy (NIPA) addresses the impact of aircraft overflight noise from direct operations at WSI and does not reflect the impacts of cumulative noise impacts from flights from other airports, or noise from other sources such as road traffic. There is no intention to change this.

Cumulative air quality impacts are not considered to be significant. Cumulative greenhouse gas impacts are also not considered to be significant, and there would only be a small increase in the total economy wide greenhouse gas emissions for NSW and Australia.

Potential cumulative impacts on biodiversity would be exacerbated by the significant projects and development in the vicinity of WSI, the broader Western Sydney area (including growth areas) and other developments within the Sydney Basin Bioregion. No direct vegetation removal associated with the project will occur.

The current light pollution from neighbouring business parks is not expected to be exacerbated by the light spill from aircraft travelling along the preliminary flight paths.

21.1 Submission overview

21.1.1 Number and origin of submissions

A total of 271 submissions raised matters concerning cumulative impacts. The majority of these submissions originated from the Sydney Basin and surrounds as shown in Figure 21.1.

Of the 271 submissions that raised issues concerning cumulative impacts, most submissions originated from the Western City District (Blue Mountains) (39 per cent) following by Western City District (excluding Blue Mountains) (16 per cent), Eastern City District (12 per cent) and South District (8 per cent). Around 14 per cent of submissions did not provide a location. The remainder originated from elsewhere within the Sydney Basin, interstate or intrastate locations.

In addition to the submissions received during the Draft EIS exhibition period, the International Union for Conservation of Nature (IUCN) submitted a technical review of the Draft EIS to the Australian Department of Climate Change, Energy, the Environment and Water. The matters raised in this technical review have been captured within this chapter.

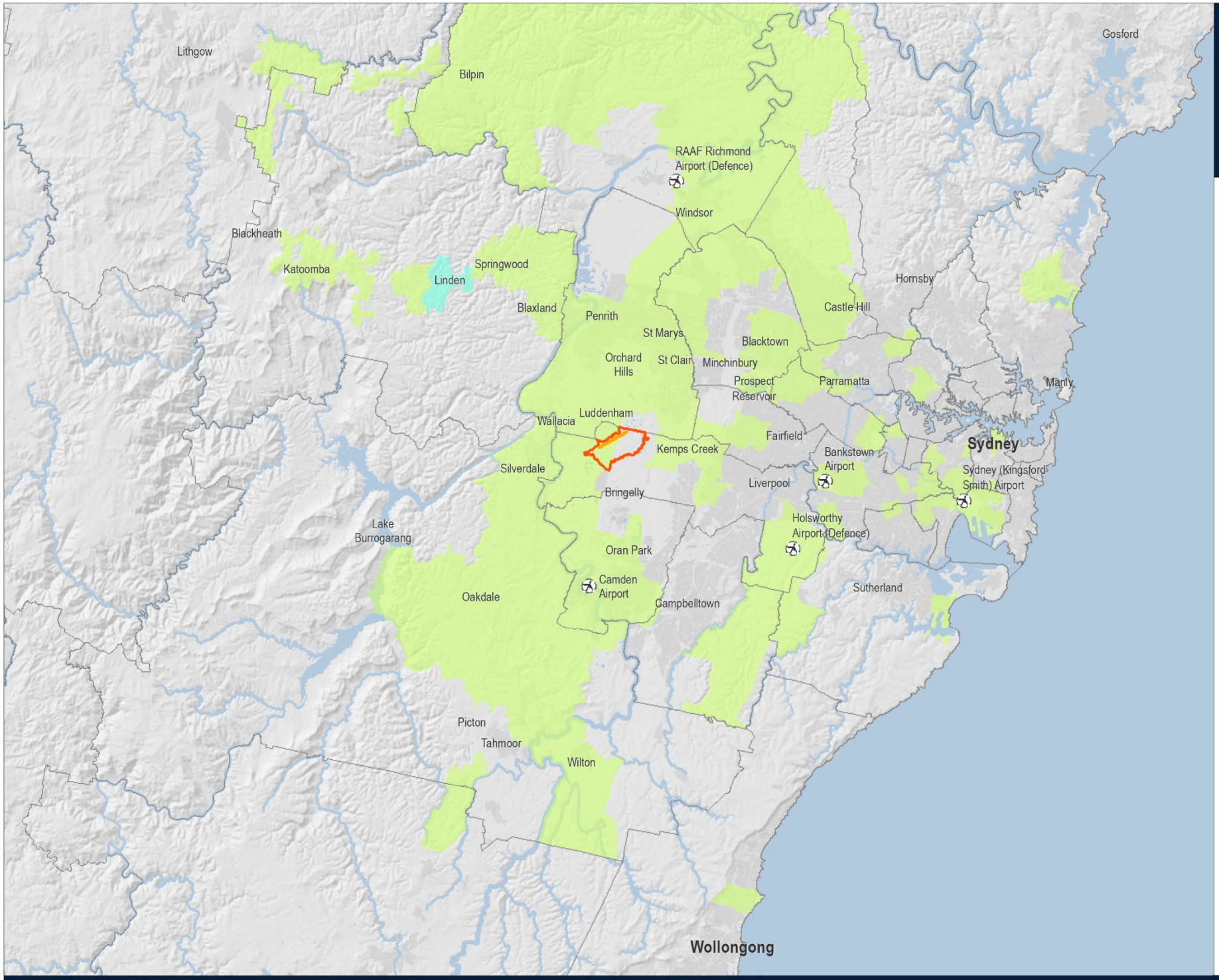


Figure 21.1

Origin of submission in relation to cumulative impacts

Legend

- WSI Runway
- Western Sydney International (Nancy-Bird Walton) Airport land boundary
- Local Government

Number of submissions by postcode

- 1 - 50
- 51 - 100
- 101 - 150
- 151 - 200
- 201 - 250
- 251 - 300
- 301 - 350
- 351 - 400
- 401 - 450
- 451 - 500
- 501 - 550
- More than 550

0 5 10 km

Coordinate system: GDA 1994 NSW Lambert

Scale ratio correct when printed at A4

1:600,000 Date: 20/06/2024

21.1.2 Key issue breakdown

A breakdown of the sub-issues within this key issue and the percentage of total submissions that raised each of these sub-issues is outlined in Table 21.1.

Table 21.1 Breakdown of sub-issues in relation to cumulative impacts

Sub-issue	Number of submissions that raised the sub-issue	Percentage of submissions that raised the sub-issue
Impact assessment approach	134	2%
Operational cumulative impacts	141	2%
Management and mitigation	2	<1%

The cumulative impact assessment approach was raised more often by the Western City District (Blue Mountains) (58 per cent) followed by the Central City District (12 per cent) and Western City District (excluding Blue Mountains) (10 per cent). Other Sydney Basin districts, intrastate or interstate locations accounted for less than 5 per cent each. Around 10 per cent did not provide a location.

Operational cumulative impacts was raised more often by the Western City District (excluding Blue Mountains) (23 per cent) followed by the Western City District (Blue Mountains) (20 per cent). For other Sydney Basin districts, each district typically accounted for around 13 per cent or less. Two (2) submissions originated from other intrastate or interstate locations (such as NSW), and around 18 per cent did not provide a location.

The issues concerning management and mitigation of cumulative impacts were raised by stakeholders within the Central City District and Eastern City District.

21.2 Impact assessment approach

21.2.1 General

21.2.1.1 Issue raised

Raised by

Community, Wollondilly Shire Council, Blue Mountains City Council, The Hills Shire Council, Susan Templeman MP – Member for Macquarie (Federal), Blue Mountains Union and Community

Issue

Submissions stated that the cumulative impacts resulting from the operation of WSI have not been adequately assessed in the Draft EIS. Submissions state that there is no evidence or discussion of long-term planning initiatives across the region or how key infrastructure development has been considered in the environmental assessment.

Submissions stated that the cumulative impact assessment has not considered all relevant effects or impacts of multiple actions on the environment as a collective, but instead has reviewed each of these matters in isolation. Other submissions state that there is a lack of balance between economic and technical considerations with environmental considerations.

Submissions also stated that the separation of the WSI into stages has limited the cumulative impact assessment as the whole project is not considered holistically. Submissions raised concerns that the Draft EIS does not consider areas impacted by the preliminary flight paths, facilitated changes and existing flight paths.

21.2.1.2 Response

The cumulative assessment has captured approved, committed or strategic projects that are of sufficient scale to contribute materially to cumulative impacts at a regional level and have similar or overlapping spatial or temporal characteristics. The assessment:

- identified and addressed cumulative impacts as per the EIS Guidelines
- adopted an approach for the methodology based on the NSW *Cumulative Impact Assessment Guidelines for State Significant Projects* (NSW DPE, 2022c), which is explained further in Section 22.2 of the Draft EIS.

Key infrastructure developments are included in Table 22.1 of the Draft EIS, including details on the projects and the potential interaction with the project.

Strategic development and policy documents were reviewed to identify projects which met the screening criteria. Long-term planning initiatives have been identified throughout Table 22.1 of the Draft EIS (such as airport master plans, structure plans, the Aerotropolis Precinct Plan, draft Greater Penrith to Eastern Creek Strategic Framework, Greater Macarthur 2040 plan etc). Long-term planning initiatives have also been discussed in the impact assessment section where relevant. For example, the assessment of cumulative land use planning impacts in Section 22.4.5 of the Draft EIS included discussion on the Western City District Plan.

The assessment of cumulative impacts in the Draft EIS has considered each of the aspects requiring assessment in the EIS Guidelines and these have been considered equally. Cumulative impacts can be caused by the compounding effects of a single project or multiple projects in an area, and by the accumulation of effects from past, current and future activities as they arise. All potential impacts were considered in the assessment.

The Western Sydney Airport Stage 1 Development was considered in the cumulative impact assessment, and the facilitated changes (where relevant). The 2016 EIS had considered the potential impacts of a 'proof of concept' flight paths for WSI alongside the Stage 1 Development. The Draft EIS has subsequently reconsidered these impacts based on the preliminary flight path design.

The introduction of a second parallel runway at WSI in the longer term would require a comprehensive review of all aviation operations in the Sydney Basin, and as such, there is insufficient information at this point in time to reasonably consider the cumulative impacts on the environment. A proposal to construct and operate a second runway would require separate approvals under the Airports Act, along with further environmental assessment and community consultation before implementation.

21.2.2 Cumulative noise assessment

21.2.2.1 Issue raised

Raised by

Community, Blue Mountains City Council, Camden Council, City of Parramatta Council, IUCN, Penrith City Council, The Parks – Sydney's Parkland Councils, Sydney Airport Corp Ltd, Western Sydney Regional Organisation of Councils (WSROC)

Issue

Submissions referred to the Draft EIS which states cumulative noise impacts will be insignificant. They question this assertion given cumulative noise impacts have not been measured. Specifically, submissions stated that the cumulative impacts from all aviation activity in the Sydney Basin, particularly Sydney (Kingsford Smith) Airport and WSI were not considered as this had not been subject to modelling (including facilitated changes). Submissions recommended that existing flight paths and altitude is identified in the finalised EIS.

Submissions referred to the Draft EIS which stated cumulative impacts from flight path corridors from both WSI and other airports within the Sydney Basin would occur at the location where they cross each other. These submissions stated that cumulative noise impacts do not only occur when flight paths cross but also when they run parallel to one another. Submissions requested that the finalised EIS increase assessment to include a greater affected community, such as schools and Western Parkland City.

Submissions noted that there were several omissions from the cumulative impacts assessment as it did not consider the noise impacts of other sources of noise disturbance. These disturbances include the North-South Freight Rail corridor, maintenance facilities for domestic rail, Sydney (Kingsford Smith) Airport flight paths, future freight rail movements, and the M9 motorway. These submissions suggested that the finalised EIS include a cumulative noise assessment on all projects now and into the future, especially those currently considered out of scope. Submissions requested the finalised EIS include assessments of future increased road traffic noise as a cumulative impact within the assessment.

Submissions also stated that there was no assessment of cumulative effects of individual noise events regarding the Greater Blue Mountains Area (GBMA).

Submissions stated that the omission of cumulative noise predictions has made it difficult to understand the likely impacts of the project and that the Draft EIS is inadequate as a result.

21.2.2.2 Response

There is the potential for a greater number of noticeable events over a given period of time where flight activity from different airports in the Sydney Basin occur in proximity to one another. The Draft EIS provided a qualitative assessment of these impacts and the cumulative impact of introducing noise associated with the preliminary flight paths is not considered high for the reasons as discussed further in Section 21.3.1.2 of this Submissions Report.

It is acknowledged that a quantitative noise assessment was not presented in the Draft EIS. There are many factors that make it difficult to quantitatively assess the cumulative impact of aircraft noise from WSI in conjunction with other airspace operations, including:

- whether the effects from the different sources (other Sydney Basin airports and ongoing development and urbanisation of Western Sydney) would be likely to occur at the same time, or the same time of day
- the duration of any combined effects
- whether one effect dominates or whether effects might be additive
- whether the effects on individual noise sensitive receivers are likely to be on the same façade (if a residential dwelling or building) or location of the property.

It was acknowledged in the Draft EIS that the areas surrounding WSI are already impacted by aircraft overflight noise and that these operations were perceptible based on the ambient noise monitoring described in Section 4.5 of Technical paper 1: Aircraft noise (Technical paper 1). The cumulative impact of aircraft noise at locations where there are intersecting or parallel flight paths is widespread, and at these locations, cumulative noise impacts from over flights are likely to be most significant.

The consideration of cumulative aircraft noise impacts occurred within the study area for the aircraft noise assessment, being areas within 45 nautical miles (nm) (around 83 km) from WSI.

An example of the existing flight paths within the Sydney Basin for a one-week period in 2019 is shown in Figure 4.2 of the Draft EIS. Given the extent of this activity, it is not feasible to identify the altitude of all aircraft activity in the Sydney Basin, particularly those operating under VFR.

Approved, committed or strategic projects captured for the cumulative assessment are projects that are of sufficient scale to contribute materially to cumulative impacts at a regional level with similar or overlapping spatial or temporal characteristics. These projects or developments are depicted in Figure 22.2 of the Draft EIS. This included the aviation, rail and road projects such as the Outer Sydney Orbital (also sometimes referred to as the M9 motorway). A qualitative assessment of the facilitated changes with the preliminary flight paths is also presented in Section 22.4.2 of the Draft EIS.

21.2.3 Cumulative air quality assessment

21.2.3.1 Issue raised

Raised by

Community

Issue

Submissions stated that the assessment is inadequate due to omissions, inconsistencies, and selective use of data in Technical paper 3: Greenhouse gas emissions (Technical paper 3). Submissions questioned the absence of information on cumulative air quality impacts of all other developments. Submissions stated that potential impacts in the cumulative air quality assessment are underestimated for both Western Sydney residents and the GBMA. Submissions stated that it is unclear whether the cumulative impact of certain weather events in Sydny's west has been taken into account in the assessment.

21.2.3.2 Response

The air quality assessment accounted for background air quality levels, including emissions from other existing sources in the region. The justification for the background air quality monitoring data used in the local air quality assessment is provided in Section 11.2.2 of this Submissions Report.

For the regional air quality assessment, the background air quality has been modelled for all sources to account for emission sources within and beyond the model domain. This includes anthropogenic sources and natural biogenic emissions. This includes all emissions sources in the NSW EPA Air Emissions Inventory for the Sydney Basin, the global emission database EDGAR, biogenic emissions based on the MEGAN biogenic model, and marine aerosol (sea salt) and soil dust emissions as provided in the CMAQ model.

Future approved, committed or strategic projects or developments have been qualitatively considered in the Draft EIS, and these impacts are not considered to be significant. This is further discussed in Section 21.3.2 of this Submissions Report.

The models selected for the local and regional assessments explicitly account for the influence of the weather and topographical features and surface land use (e.g. vegetation, urban areas etc.) which may influence the meteorological conditions variously across the entire modelling domain. This is further discussed in Section 11.2.1 of this Submissions Report.

21.2.4 Cumulative biodiversity assessment

21.2.4.1 Issue raised

Raised by

Mulgoa Valley Landcare Group

Issue

Submissions stated that the Draft EIS failed to consider the cumulative impacts on biodiversity from the project, facilitated changes, the Stage 1 Development and the associated development of the Western Sydney Aerotropolis. Submissions questioned how the preliminary flight paths can be considered separately from the cumulative impacts of regional development with respect to the region's biodiversity values.

21.2.4.2 Response

The potential cumulative impacts on biodiversity associated with the project and other planned and potential projects within the vicinity of WSI was assessed in the Draft EIS, as well as impacts on a broader, regional scale. The projects identified for further consideration in the cumulative assessment included the Stage 1 Development, the facilitated changes and the Western Sydney Aerotropolis. This assessment acknowledged that the project is likely to contribute to the cumulative impacts on biodiversity. This is further discussed in Section 21.3.3 of this Submissions Report. Further detail is provided in Chapter 8 of Technical paper 8: Biodiversity (Technical paper 8).

21.2.5 Cumulative visual amenity assessment

21.2.5.1 Issue raised

Raised by

Camden Council

Issue

Submissions raised concern that that the Draft EIS has not included all relevant projects within the cumulative analysis of visual and amenity impacts. Submissions requested projects such as South-West Rail Link Extension (Leppington and the Aerotropolis)/New Cumberland Rail Line) be included in the list of projects contributing toward cumulative impacts and quantify how the project in conjunction with the Stage 1 Development would impact the landscape and visual amenity.

21.2.5.2 Response

Cumulative landscape character and visual amenity impact assessment considered the potential impacts associated with the project in conjunction with other known and proposed developments. This included the Stage 1 Development as well as the uncommitted Sydney Metro expansions to the northwest and the southwest. The latter, which includes an extension to Leppington/Glenfield, is subject to a business case. It is acknowledged that prior to the Sydney Metro expansion announcement, corridors for a north-west and south-west rail links were identified by Transport for NSW. The finalised EIS has been amended to make the status of these related projects clearer.

21.3 Operational cumulative impacts

21.3.1 Cumulative noise impacts

21.3.1.1 Issue raised

Raised by

Community, Blue Mountains City Council, The Hills Shire Council, The Parks – Sydney's Parkland Councils, Sydney Flight Paths Action Group, WSROC

Issue

Submissions expressed concern over the cumulative noise and vibration impacts of WSI aircraft operation, particularly given the preliminary flight paths are positioned at a much lower altitude than those that they can already hear. Submissions often referred to the cumulative noise impacts that would occur due to flights associated with Sydney (Kingsford Smith) Airport, but also expressed concern about cumulative effects of aircraft from Bankstown Airport, Camden Airport, the RAAF Base Richmond, and emergency service aircraft.

Submissions also raised concern that the current noise disturbance from local construction and development, rail operation, road traffic (residential, commuter and freight), heavy trucking activities associated with Port Botany, and the Eastern Creek Speedway would be worsened by the preliminary flight paths. Submission stated that these cumulative noise impacts would impact general amenity and access to public space, worsening challenges faced by residents in maintaining a healthy lifestyle and peaceful living environment, as well as schools and classroom learning.

21.3.1.2 Response

The Sydney Basin already encompasses an extensive network of flight paths used by aircraft operating at Sydney (Kingsford Smith) Airport, Bankstown and Camden Airports, RAAF Base Richmond, as well as aircraft transiting from outside the area. Aircraft are audible and noticeable at communities and properties across the Sydney Basin. Noise from aircraft would be experienced at varying levels. Aircraft overflight noise for some of these operations was perceptible based on the ambient noise monitoring described in Section 4.5 of Technical paper 1.

With respect to cumulative noise, it is important to note that a 60 dB(A) event in an area already experiencing 70 dB(A) would not result in an arithmetic addition of exposure. Rather, the resulting addition of sound waves reaching the human ear will be less than 71 dB(A) and the difference not discernible to the human ear.

Aircraft using the preliminary flight paths to arrive and depart from WSI may be noticeable (audible and/or visible) up to 45 nm (around 83 km) from WSI and beyond. These aircraft are expected to operate up to 20,000 ft (6 km) and higher depending on the flight path in use, type of aircraft and its origin-destination, weather, pilot technique and other factors. While the measured volume of an aircraft noise event may be relatively low, there are many factors which will influence the degree of noticeability and possible annoyance to any individual. It is known that the reaction of any specific individual to a defined noise event can be very different and not necessarily dependent on the actual volume as measured on a sound level meter.

Aircraft operating from WSI concurrently with aircraft from other Sydney Basin airports have the potential to increase overall noise exposure of communities being directly overflown by the preliminary flight paths, immediately peripheral to and further surrounding WSI, and underneath or along the other flight paths in use. Overall noise exposure in a geographic area as large as the Sydney Basin does not necessarily translate into a quantifiable cumulative increase in impact. WSI will introduce additional aircraft into an already complex and heavily trafficked Sydney Basin airspace environment. In 2033, this additional traffic is projected to represent around 9 per cent of total projected Sydney Basin air traffic movements (estimated to be over 890,000 movements inclusive of the expected 81,000 movements projected at WSI in 2033).

It is also important to note that:

- Sydney (Kingsford Smith), Bankstown and Camden Airports are all approaching their Master Plan update cycles which will likely contain a response to single runway operations at WSI from 2026 as well as post-COVID-19 activity forecasts
- flying training areas – the final proposed detail and ultimate procedures will not be confirmed until completion of a separate airspace change proposal, depending on the extent of the change
- the application of radar vectoring on some WSI flights and other Sydney Basin airport procedures may result in a noise sharing outcome that cannot be quantifiably presented
- varying meteorological influences across the Sydney Basin would result in different combinations of runway direction usage for the 5 major airport operations. Conditions in Western Sydney may be distinctly different to coastal conditions which would define Sydney (Kingsford Smith) Airport preferred runway nomination.

The cumulative impact of aircraft noise at locations where there are multiple flight paths is widespread. The application of WSI's flight path design principles along with the necessary separation between flight paths would inherently reduce potential cumulative impacts. Additionally, the proportion of the preliminary flight paths relative to existing flight paths, and the existing and proposed complex of flight paths within the Sydney Basin, the cumulative impact of introducing noise associated with the preliminary flight paths is not considered high.

A cumulative increase in background noise from the ongoing urbanisation and development of Western Sydney is anticipated to reduce the relative noise impacts associated with aircraft using the preliminary flight paths in locations subject to urbanisation and development. Future infrastructure projects in Western Sydney, such as future rail or road projects, would be subject to separate environmental impact assessments and sector-specific requirements to mitigate noise contributions.

The Draft EIS acknowledged that incremental increases in noise may result in exacerbated effects to wellbeing, changes to the way people enjoy social infrastructure and their own properties. The implementation of project specific mitigation measures would avoid, to the greatest extent possible, cumulative impacts with surrounding developments and other airspace users and reduce the potential cumulative impacts to acceptable levels. Potential cumulative social impacts resulting from the project are discussed in Section 22.4.9 (Social and economic) of the Draft EIS.

The assessment of vibration generated by aircraft is based on an assessment of the 90 dB(A) threshold. The occurrences of 90 dB(A) events are generally contained within Airport Site and as such any potential for cumulative vibration impacts is unlikely.

21.3.2 Cumulative air quality impacts

21.3.2.1 Issue raised

Raised by

Community, Camden Council

Issue

Submissions expressed concern that the Sydney Basin already has poor air quality with high concentration of pollutants due to other aircraft operation, vehicle emissions, and rail operations, including freight and coal rail. These submissions stated that this poor air quality would be exacerbated by the operation of aircraft at WSI and/or due to the proposed facilitated changes. These concerns were also associated with impacts to health as a result of air quality impacts.

Submissions also stated that the greenhouse gas emissions from the preliminary flight paths compounded by regional development would contribute to adverse climate change impacts.

21.3.2.2 Response

Air quality

In Australia, the National Environment Protection (Ambient Air Quality) Measure (Ambient Air Quality NEPM) (NEPC 2021a) establishes a common national standard for 6 key air pollutants (carbon monoxide, ozone, nitrogen dioxide, sulfur dioxide, lead and particles) to protect human health and wellbeing from the adverse effects of air pollution. The NSW EPA impact assessment criteria as set out in the *Approved Methods for the Modelling and Assessment of Air Pollutants in New South Wales* (the Approved Methods) (NSW EPA, 2022) are consistent with the National NEPM standards, and have been applied in the Draft EIS.

The ambient air quality levels that are monitored at various locations surrounding the WSI indicate that air quality in the area is generally good and pollutant concentrations in the ambient air are typically below the relevant New South Wales (NSW) Environment Protection Authority (EPA) goals except for annual average particulate matter (PM) less than 2.5 micrometres in diameter ($PM_{2.5}$) levels and ozone. Historically, adverse air quality conditions arise from time to time due to extraordinary events such as dust storms and bushfires and periods of summer time elevated ozone.

Combustion emissions and particulates from vehicles on roads, freight rail and aircraft, are the key pollutants associated with operation that could lead to a cumulative impact. Contributions from existing aircraft, rail and vehicle emissions in the Sydney Basin would already be accounted for in the ambient air quality data. Any contributions from future infrastructure projects would be expected to be localised and associated with on-ground sources. This was demonstrated in the 2016 EIS which included air dispersion of traffic on the surrounding roadways. This source was identified as a significant contributor of emissions compared to WSI and the main contributor to the predicted levels at receivers located near existing or proposed roads.

The modelling completed for the project took into account the maximum concentration of relevant pollutants from air quality monitoring stations, as well as the predicted contributions from the Stage 1 Development. This determined that the predicted contribution from the project with the Stage 1 Development and existing or background air quality levels was below the regulatory criteria for 2033. In 2055, there are few exceedances of the short term (1-hour) criterion for nitrogen dioxide (a combustion pollutant and ozone precursor) however, the annual average levels are below the relevant criterion. On a regional level, contributions of ozone as a result of the project make no significant difference to a 'no project' scenario in both 2033 and 2055.

As the assessment has concluded that the project's impact on the concentrations of all other assessed pollutants would be negligible and unlikely to be discernible or measurable within the existing background concentration, the cumulative air quality impacts are not considered to be significant. Further, contributions from motor vehicles and aircraft will continue to reduce over time, given the improvements in combustion technology and fuel efficiency.

As existing aircraft operations and infrastructure occur throughout most of the Sydney Basin, including areas above the GBMA, the cumulative contributions of impacts from the project in addition to the impacts that are expected from other projects in areas adjacent to the GBMA are considered to be minimal to negligible.

Greenhouse gas emissions

All anthropogenic (human-induced) activity and development (existing and new) produce greenhouse gas emissions, and it is acknowledged that the growth and development in the vicinity of WSI would produce greenhouse gas emissions. Climate change is also identified as a threat to the GBMA due to its potential to alter the frequency and intensity of fires and for increased temperatures to impact upon biodiversity and ecosystem function (UNESCO 2022b).

Reductions to greenhouse gas emissions to lessen climate change would be required across all sectors. The project has been designed to reduce fuel burn through the provision of an efficient airspace system with supporting air traffic management procedures such as Continuous Climb Operations (CCO) and Continuous Descent Operations (CDO). However, additional measures will be required to manage contributions from the project or from the transport sector more broadly. This is further discussed in Section 11.2.4.2 of this Submissions Report.

21.3.3 Cumulative biodiversity impacts

21.3.3.1 Issue raised

Raised by

Community, Camden Council

Issue

Submissions expressed concern that the urban development in the area is already impacting wildlife, and that the project would contribute to habitat removal or disturbance. Submissions requested that if the assessment cannot forecast the cumulative or cascading impacts on native flora and fauna, and plant communities, then the precautionary principle should apply and mitigation measures identified.

21.3.3.2 Response

The ongoing development of the region would lead to additional cumulative impacts and would increase pressures on biodiversity in the region. However, these are yet unplanned and undefined and are therefore not quantifiable. The assessment has concluded that the project is likely to contribute to cumulative impacts on biodiversity within the locality as it would incrementally increase wildlife strike or result in indirect impacts (such as noise, air and light) within the region. It would not contribute to habitat removal.

Mitigation measures in the control of the Department of Infrastructure, Regional Development, Communications, and the Arts (DITRDCA) and WSI have been identified in the Draft EIS around wildlife strike risk management. In response to increased development pressure within Western Sydney and the need to safeguard protected matters in the region more broadly, Australian and NSW Governments have collaborated on the Western Sydney strategic assessment. Under the Western Sydney strategic assessment, the NSW Government is seeking approval for development in nominated growth areas and transport corridors. This should lead to better conservation outcomes and less 'ad hoc' and unregulated cumulative impacts.

Based on the assessment undertaken, it was considered that there were no obvious significant uncertainties around the values present, or the likely direct and indirect impacts of the existing airspace, particularly to the extent that adoption of the precautionary principle would mean that uncertainties should delay the project or that the project should not receive approval from a biodiversity impact uncertainty perspective.

For further information on the cumulative biodiversity impacts refer to Chapter 8 of Technical paper 8.

21.3.4 Cumulative visual amenity impacts

21.3.4.1 Issue raised

Raised by

Community

Issue

Submissions raised concerns that the current light pollution from neighbouring business parks would be exacerbated by the light spill from aircraft travelling along the preliminary flight paths in addition to the facilitated changes to Sydney (Kingsford Smith) Airport flight paths at night.

21.3.4.2 Response

The business park and commercial area surrounding WSI are generally brightly lit and/or would be brightly lit in time as the Aerotropolis, including the new city centre of Bradfield, develops. These areas have been assigned as "areas of high district brightness" (A4). This area included bright street lighting, moving light sources from traffic, and lighting from dwellings and buildings. Future development in the area would generally contribute further to the general sky glow over these areas.

Views to the lighting on aircraft moving across the skies over Western Sydney would be experienced in views across a large portion of this urban area. However, this lighting would not contrast substantially with the surrounding landscape at night due to the existing brightly lit setting. The assessment has concluded that there would be a low magnitude of change in 2033 and 2055. At this location, the contribution of adjusted flight paths for Sydney (Kingsford Smith) Airport would be lower, given aircraft on these flight paths would be at higher altitudes than aircraft on the preliminary flight paths and already pass over these areas at similar altitudes.

21.3.5 Other cumulative impacts

21.3.5.1 Issue raised

Raised by

Community

Issue

Submissions expressed concerns over continued disruption or impacts to their property due to the project compounding issues that have arisen due to other decisions such as developments that diminished access to their property or parcels of land that have not been rezoned to industrial.

21.3.5.2 Response

The project would not result in any physical impacts to property or change access to properties. Any such cumulative traffic, transport and access impacts associated with the Stage 1 Development were assessed as part of the 2016 EIS. That assessment found that the additional vehicle movements associated with the operation (and construction) of WSI are unlikely to affect the operation of the surrounding road network significantly. Substantial road improvement works are planned as part of the Western Sydney Infrastructure Plan and other planned developments in Western Sydney (DITRDCA, 2018). As noted in the 2016 EIS, these are expected to provide sufficient capacity to cater for the expected passenger and employee traffic demand associated with the Stage 1 Development. Local issues concerning disruption to access should be raised with the relevant developer or planning authority.

It is acknowledged that the areas surrounding WSI will transform over the coming decades. This transformation is being led by the NSW Government, who is responsible for strategic land use planning within NSW.

21.4 Mitigation and management

21.4.1 Mitigation of cumulative noise impacts

21.4.1.1 Issue raised

Raised by

Community, Blacktown City Council

Issue

Submissions queried what mitigation and management measures are proposed to address cumulative noise impacts. Submissions stated that noise attenuation should not be limited to properties impacted by WSI but also be applied to properties affected by both WSI and Sydney (Kingsford Smith) Airports as a cumulative impact.

21.4.1.2 Response

The NIPA addresses the impact of aircraft overflight noise from direct operations at WSI and does not reflect the impacts of cumulative noise impacts from flights from other airports, or noise from other sources such as road traffic. There is no intention to change this.

Chapter 22 Matters of National Environmental Significance

This chapter provides a response to the issues raised in submissions specific to Chapter 23 (Matters of National Environmental Significance) of the Draft EIS.

Overall, submissions raised concerns regarding both the impact assessment approach to consideration of impacts on the Greater Blue Mountains Area (GBMA), the potential impacts of the project on the future status of the World Heritage listing for the GBMA as well as general concern about the project's impact on biodiversity values and impact to its Outstanding Universal Value.

The assessment of Matters of National Environmental Significance (MNES) undertaken for the project focused on the direct and indirect impacts the GBMA as a result of the project. The assessment considered these impacts both in terms of the impact to the overall status of the World Heritage area as well as the specific impacts on threatened and listed communities and species which occur in the GBMA.

The assessment concluded that the project is not likely to result in the loss of any elements necessary for the GBMA to express its Outstanding Universal Value, including potential impacts to the size, condition, ability to maintain connectivity or provide protection to its geological, geomorphology and water systems. The flight paths would not change the size or boundary of the GBMA and would not impact on any features and processes that convey the GBMA's Outstanding Universal Value (including its integrity).

The final assessment of the proposed flight paths concluded that given the nature of the project, the proposed flight paths are expected to result in minimal direct impacts on the World Heritage or National Heritage value of the area, including the criterion which relate to the Outstanding Universal Value of the site and contribute to its World Heritage status. It is not anticipated that the implementation of the proposed flight paths associated with WSI would result in the loss of the existing World Heritage status of the GBMA.

Further assessment of the potential impacts of the project on the GBMA, and other Matters of National Environmental Significance are provided in Chapter 23 (Matters of National Environmental Significance) of the finalised EIS.

22.1 Submission overview

22.1.1 Number and origin of submissions

A total of 1,416 submissions raised issues about the project's impact on Matters of National Environmental Significance, in particular the Sydney Basin and surrounds. The majority of these submissions originated from the Sydney Basin as shown in Figure 22.1. Around 12 per cent of submissions did not provide a post code.

Of the 1,416 submissions, around 70 per cent of submissions that raised Matters of National Environmental Significance impacts originated from the Western City District (Blue Mountains), followed by the Central City District with 6 per cent.

Submissions from elsewhere in NSW or other interstate locations typically represented less than 5 per cent of submissions.

In addition to the submissions received during the Draft EIS exhibition period, the International Union for Conservation of Nature (IUCN) submitted a technical review of the Draft EIS to the Australian Department of Climate Change, Energy, the Environment and Water. The matters raised in this technical review have been captured within this chapter.

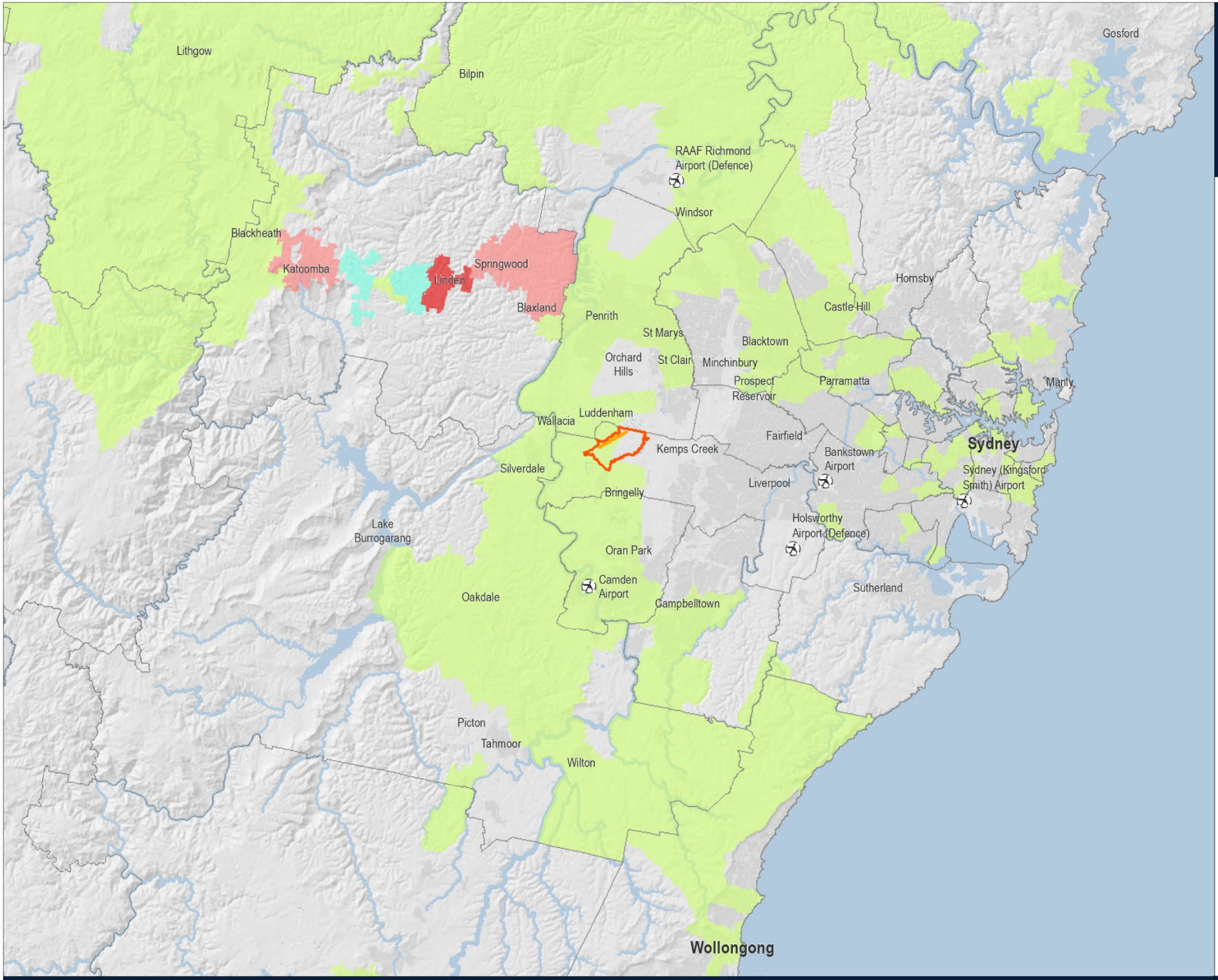


Figure 22.1

Origin of submission in relation to impacts to Matters of National Environmental Significance

Legend

- WSI Runway
- Western Sydney International (Nancy-Bird Walton) Airport land boundary
- Local Government Area

Number of submissions by postcode

- 1 - 50
- 51 - 100
- 101 - 150
- 151 - 200
- 201 - 250
- 251 - 300
- 301 - 350
- 351 - 400
- 401 - 450
- 451 - 500
- 501 - 550
- More than 550

0 5 10 km

Coordinate system: GDA 1994 NSW Lambert

Scale ratio correct when printed at A4

1:600,000 Date: 20/06/2024

22.1.2 Key issue breakdown

A breakdown of the sub-issues within this key issue and the percentage of total submissions that raised each of these sub-issues is outlined in Table 22.1.

Table 22.1 Breakdown of sub-issues in relation to impacts to Matters of National Environmental Significance

Sub-issue	Number of submissions that raised the sub-issue	Percentage of submissions that raised the sub-issue
Impact assessment approach	122	1%
Greater Blue Mountains Area status	514	6%
Impact to Greater Blue Mountains Area	962	11%
Biodiversity impacts on MNES	323	4%
Aboriginal heritage	31	<1%
Management and mitigation	235	3%

Similar to the overall number of submissions, the Western City District (Blue Mountains) was also the key area where specific submissions topics were raised including impacts to the GBMA (77 per cent of all submissions that raised this sub-issue); impacts to the status of the World Heritage status (81 per cent of all submissions that raised this sub-issue) respondent; impacts to biodiversity (76 per cent of all submissions that raised this sub-issue); impact assessment approach (75 per cent of all submissions that raised this sub-issue) and impacts to Aboriginal heritage (67 per cent of all submissions that raised this sub-issue).

22.2 Impact assessment approach

22.2.1 Assessment approach to impacts on the GBMA

22.2.1.1 Issue raised

Raised by

Community, Australian International Council of Monuments and Sites, Blue Mountains City Council, IUCN, The Parks – Sydney Parkland Councils, Trish Doyle MP – Member for the Blue Mountains (NSW)

Issue

General

Submissions expressed concern regarding the approach undertaken to assess potential impacts on the GBMA, a World Heritage Area. A series of submissions noted that the Draft EIS lacked inclusion of a 'wilderness assessment' regarding the project and that the effect of emissions on the natural environment from aircraft flying over the GBMA has not been considered. Specifically, submissions stated that the assessment of world heritage impacts in the Draft EIS was superficial and did not follow, or was inconsistent with, the *Guidance and Toolkit for Impact Assessment in a World Heritage Context* (UNESCO, 2022a). Submissions cite this document as the accepted approach and standard for impact assessment for World Heritage properties by the World Heritage Committee.

It was argued in submissions that the Draft EIS did not adequately address World heritage or National heritage considerations, processes and requirements. Additionally, it was stated that the Draft EIS did not properly articulate the cultural heritage values of the affected area, nor therefore the potential impact of the project on the Outstanding Universal Value of the GBMA (including the conditions of integrity).

Concerns raised in regard to the method undertaken included:

- failure to adequately address the Outstanding Universal Value of the GBMA
- misuse of the term wilderness, as contained in the *Wilderness Act 1987*, where it was contended that this term was only used to describe areas of declared wilderness (such as the Yengo, Wollemi, Grose, Kanangra-Boyd and Nattai Wilderness areas)
- lack of consideration of effects on elements such as hiking and general use of the GBMA
- failure to consider all potential impacts such as fuel jettisoning, noise and visual impacts, and impacts to MNES matters.

It was argued that the Draft EIS had not sufficiently considered the GBMA as an environmentally sensitive area and that the project would result in irreversible harm to the existing ecosystem.

It was requested that the Draft EIS be updated to more comprehensively assess potential impacts on the Outstanding Universal Value of the GBMA.

Definition of significant

It was also noted in submissions that the Draft EIS had not appropriately defined the criteria for what was considered a 'significant' impact.

22.2.1.2 Response

General

The EIS includes a comprehensive study to consider the potential impacts of the project on the GBMA. The assessment of impacts on World Heritage was undertaken in consideration of the requirements outlined in the *Guidance and Toolkit for impact assessments in a World Heritage Context* (UNESCO, 2022a). The key focus of the assessment was to consider the potential impacts of the project on the Outstanding Universal Value of the GBMA and the associated attributes of the site identified within the Statement of Outstanding Universal Value, including integrity.

In line with the toolkit (UNESCO, 2022a), the assessment of impact on the GBMA involved the following key steps:

- identification of the World Heritage and National Heritage values of the GMBA, as outlined in the Statement of Outstanding Universal Value
- identification of the other values that complement and interact with the World Heritage and National Heritage values of the GMBA
- collation and summarising of baseline environmental information applicable to the Outstanding Universal Value of the site and other key values that contribute to the GBMA
- identification and assessment of the potential impacts that may arise as a result of the proposed flight paths, both in terms of potential impacts to the Outstanding Universal Value of the GBMA (including its conditions of integrity). Impacts to the other values of the GBMA were also considered
- identification of recommended mitigation measures to minimise identified impacts (where considered feasible and reasonable).

The assessment provided a detailed consideration of the potential impacts of the project on the Outstanding Universal Value of the GBMA. Overall, the assessment concluded that the proposed flight paths would not result in the loss of any elements necessary for the GMBA to continue to maintain its Outstanding Universal Value, including potential impacts to the size, condition, ability to maintain connectivity or provide protection to its geological, geomorphology and water systems. The proposed flight paths would not change the size or boundary of the GBMA and would not impact on any features and processes that convey the Greater Blue Mountains Area's Outstanding Universal Value.

Protection of wilderness was one of the main reasons for the establishment of many of the national parks within the GBMA. The GBMA contains some of the largest forested wilderness areas in eastern mainland Australia. For the purpose of the GBMA assessment presented in the finalised EIS, the consideration of 'wilderness' is considered consistent with the *Greater Blue Mountains World Heritage Area Strategic Plan* (NSW DECC, 2009) and is considered to be consistent with the *Wilderness Act 1987*. The Greater Blue Mountains national park system includes 5 wilderness declared areas under the Wilderness Act (Wollemi, Kanangra-Boyd, Nattai, Yengo and Grose). These areas are located primarily in the northern section of the Greater Blue Mountains national park. The Blue Mountains wilderness areas also protect 3 of only 6 streams declared as 'Wild Rivers' in NSW under the NP&W Act: the Colo, Grose and Kowmung. The wilderness qualities of the GBMA also have many cultural values, providing not only opportunities for solitude and self-reliant recreation, but also aesthetic, spiritual and intrinsic value which were considered throughout the assessment.

The effect of the proposed flight paths on activities such as hiking and general use of the GBMA were considered as part of the assessment of 'other values' of the GBMA. These activities were summarised in Section 5.4.2 of Technical paper 14: Greater Blue Mountains World Heritage Area (Technical paper 14), specifically through consideration of values including:

- recreation and tourism
- social and economic
- scenic and aesthetic.

Potential impacts such as fuel jettisoning (including potential impacts on biodiversity), noise and visual impacts and impacts to MNES matters were each considered in Section 5.3.2 of Technical paper 14 as part of the broader consideration of potential indirect impacts of the project on MNES. These issues are also further discussed in subsequent sections of this chapter of the Submissions Report.

Definition of significant

Various levels of significance assessment have been applied throughout the finalised EIS depending on the entity or aspect being considered and the relevant legislation (i.e. state or commonwealth threatened species, MNES etc). The EPBC Act Guidelines 1.1 state that an action is likely to have a significant impact on the World Heritage values of a declared World Heritage Area if there is a real chance or possibility that it will cause:

- one or more of the World Heritage values to be lost
- one or more of the World Heritage values to be degraded or damaged, or
- one or more of the World Heritage values to be notably altered, modified, obscured or diminished.

Chapter 3 of Technical paper 8: Biodiversity (Technical paper 8) describes the significance criteria used with reference to the EPBC Act *Significant Impact Guidelines 1.1 (MNES) and Significant Impact Guidelines 1.2 (Actions on Commonwealth land)* that were relied upon when assessing impacts on biodiversity. Table 3.1 of Technical paper 8 provides a description of the differing levels of severity of potential impacts used in the assessment (i.e. negligible, minor, moderate, high, major). Further, Section 7.8.6 of Technical paper 8 provides an assessment of potential impacts on biodiversity values contained within the GBMA against the assessment matrix in the *Guidance and Toolkit for impact assessments in a World Heritage Context* (UNESCO, 2022a) (Table 7.6). This is the accepted approach and standard for impact assessment for World Heritage properties by the World Heritage Committee.

Because the evolutionary processes and biodiversity values for which the GBMA is listed would not be directly impacted by the overflight of aircraft, it is not considered that the project would result in any impacts that would be to the extent that a significant impact on the Outstanding Universal Value of the GBMA would occur. Specifically, it is not considered that the project would result in any impacts that would be of a magnitude to impact on the flora and fauna species of the GBMA to an extent that would result in the loss of species or the interruption of evolutionary processes.

22.2.2 Assessment of biodiversity impacts on the GBMA

22.2.2.1 Issue raised

Raised by

Community, Blue Mountains City Council, Fitzgerald Creek Catchment Group, IUCN, The Parks – Sydney Parkland Councils, Western Sydney Regional Organisation of Councils Ltd (WSROC)

Issue

Submissions raised specific concern regarding the assessment approach to biodiversity impacts associated with the GBMA. Areas of particular concern included:

- the desktop nature of the assessment, without physical surveys including not undertaking on-site wildlife surveys
- inadequate data collected of species such as birds, foxes and other wildlife for use in the assessment
- failure to consider the potential for species decline within the GBMA
- failure to consider threatened nocturnal species
- inadequate assessment of impacts resulting from increased noise and emissions on native flora and fauna in the GBMA.

It was requested that species that are endangered and/or vulnerable to aircraft noise, such as bats, frogs and songbird species, are subject to further detailed assessment prior to making a decision on the project. This assessment should be carried out in line with *Guidance and Toolkit for impact assessments in a World Heritage Context* (UNESCO, 2022a), and that the precautionary principle should be applied where data or technologies are insufficient to predict potential impacts.

It was also noted that the assessment did not take into account the proposed future expansion of WSI and the potential additional impacts on biodiversity from this expansion.

22.2.2.2 Response

In line with the EIS Guidelines, the assessment of potential biodiversity impacts presented in the finalised EIS considers the potential direct and indirect impacts the preliminary flight paths for single runway operations consistent with the Stage 1 Development of WSI would have, or is likely to have, on biodiversity values. As part of the assessment, the likelihood of potential impacts to threatened flora and threatened ecological communities was limited to those with the potential to occur within the wildlife buffer (an area identified as being up to 13 km from the Airport site). Outside of the wildlife buffer, impacts to threatened flora and threatened ecological communities were considered to be unlikely due to the altitudes at which aircraft would be flying.

As described in the finalised EIS, no direct impacts on terrestrial fauna or flora within the GBMA are anticipated as a result of the project. It is not considered that additional on-ground studies would have provided an increase in the understanding of potential flora and fauna populations of the GBMA to an extent that would have changed the understanding of potential impacts or alter the already recognised and well documented biodiversity values of the GBMA. Direct impacts on biodiversity values were considered to be limited to potential wildlife strike leading to injury or mortality of fauna species (as discussed in Technical paper 5: Wildlife strike risk (Technical paper 5)). As such, it was considered that relying on the existing baseline biodiversity knowledge of the biodiversity study area was a reasonable, measured and reliable approach.

With respect to the concerns regarding not having undertaken physical surveys, and inadequate data collection of certain species, this is addressed in Section 16.3.4 of the finalised EIS. It is noted that extensive surveys of biodiversity within the vicinity of WSI were undertaken as part of the preparation of the 2016 EIS. It was noted that the current assessment built upon this existing data, surveys and analyses. It was also noted that additional wildlife surveys including monitoring of 8 flying-fox camps were undertaken to inform the wildlife strike risk assessment (Technical paper 5). No other ecological field surveys were considered necessary for the assessment as the biodiversity in the study area has been intensively surveyed over decades due to its occurrence within and adjoining the urban areas of Western Sydney and is well understood. Together with the wildlife strike surveys described in Technical paper 5, the survey effort was considered to provide a sufficient and appropriate level of baseline knowledge to inform the biodiversity assessment, particularly given the aerial nature of the impacts and that only highly mobile aerial fauna species are likely to be impacted directly.

With respect to potential noise and emission concerns, Section 16.3.4 of the finalised EIS notes that there are no thresholds strictly identified for assessing aircraft noise, light, air quality and water quality impacts on biodiversity values and there is limited research of these impacts on individual Australian species likely to be impacted by the project. However, where possible, available guidelines, standards and literature were used to determine an appropriate approach to assessing the extent, concentration and severity of impacts associated with the project.

The biodiversity assessment that supported the assessment of impact on the GBMA included:

- a likelihood of occurrence assessment for EPBC threatened flora, threatened ecological communities, threatened fauna and migratory species to determine 'candidate species' or communities. Likelihood of occurrence assessments for threatened fauna and migratory species were conducted for the biodiversity assessment zone (which encompassed a 10 km buffer around each flight path centreline) and separately for the wildlife buffer (being areas within 13 km of the runway). Candidate species with a moderate or high likelihood of occurrence that could be impacted by the project were carried forward for further assessment. Candidate species are considered appropriate surrogates for NSW listed threatened species and other non-threatened native species which may be sensitive to impacts associated with the project
- significant impact assessments, which were completed for candidate species with reference to the EPBC Act *Significant Impact Guidelines 1.1* (MNES) and *Significant Impact Guidelines 1.2* (Actions on Commonwealth land) and included an assessment of the 'whole of environment' considered all known plant and animal species within the GBMA. The significant impact assessments address an entity's conservation status, population size and area of occupancy, likelihood of the establishment of invasive species and introduction of disease, in addition to species life cycle, habitat and recovery.

The likelihood of occurrence and significant impact assessments are presented in Appendix B and Appendix C of Technical paper 8.

A set of impact severity assessment criteria were also developed taking into consideration the EPBC Act Significant Impact Assessment documents. These standard considerations and impact severity assessment criteria were used to identify and evaluate the scale, intensity, timing, duration and frequency of the project's impacts on biodiversity. The severity criteria were aligned to an impact order of magnitude which acted as a threshold to assist in determining whether the project was likely to have a significant impact on a biodiversity value (whether on matters of national environmental significance (MNES) or the environment as a whole). This is detailed in Table 3.1 of Technical paper 8. This is in addition to the assessment against the assessment matrix in the *Guidance and Toolkit for impact assessments in a World Heritage Context* (UNESCO, 2022a) as presented in Section 7.8.6 of Technical paper 8 (and summarised in Technical paper 14).

The precautionary principle was a key consideration in preparation of the Draft EIS and its supporting technical papers. Technical paper 8 stepped through an assessment process that identified the likely biodiversity values present with the assumption of presumed presence and assessed likely direct and indirect impacts that were possible as a result of the airspace-only nature of the project. Overall, Technical paper 8 is presented a reasoned, measured approach to the assessment of biodiversity values and potential impacts in relation to the novel types of impacts requiring assessment.

Based on the assessment undertaken, it was considered that there were no obvious significant uncertainties around the values present, or the likely direct and indirect impacts of the existing airspace, particularly to the extent that adoption of the precautionary principle would mean that uncertainties should delay the project or that the project should not receive approval from a biodiversity impact uncertainty perspective.

22.2.3 Requests for further assessment

22.2.3.1 Issue raised

Raised by

Community, Blue Mountains City Council, IUCN

Issue

Request for additional environmental assessments

Submissions identified that additional assessment should be conducted with respect to potential impacts on the GBMA including:

- conducting additional on-site ambient noise monitoring from a representative sample of locations within the GBMA and identify an expanded list of the locations of sensitive tourism and recreation areas for modelling to include sites associated with walking tours, sporting events and canoeing/kayaking trails
- undertaking baseline studies and ongoing monitoring of key EPBC Act-listed threatened species in order to understand species behaviour and population changes due to flight path-related impacts
- undertaking baseline and ongoing air quality monitoring, specifically for the GBMA
- preparation of an Ecological Sustainability Impact Assessment.

Additional inquiries and investigations

Additionally, it was requested that:

- a Federal inquiry be established to redesign the Sydney Basin Airspace, minimising inequitable impacts on the GBMA, redesigning to avoid overflight or limit overflights from dusk to dawn, promoting aircraft exposure equity
- an independent inquiry be undertaken into Airservices Australia and the allocation of flight paths over the GBMA
- an expert Environmental Management Committee be established to assess the potential impacts of the project on the GBMA.

22.2.3.2 Response

Request for additional environmental assessments

No additional impact assessments are currently proposed to be undertaken at this stage to further consider potential impacts on the GBMA beyond what has currently been prepared as part of the finalised EIS, including any additional baseline and ongoing air quality monitoring or preparation of an Ecological Sustainability Impact Assessment.

Chapter 24 of the finalised EIS however identifies further proposed monitoring programs that would be undertaken as part of the project (Table 24.2 of the finalised EIS) including:

- mitigation measure M1 that states Airservices Australia will install a system of permanent and temporary noise monitoring terminals at suitable locations around WSI which would be incorporated into the Airservices Australia Noise and Flight Path Monitoring System (NFPMS) network and reporting systems. The system will provide accurate noise monitoring data for reporting, validation and noise model calibration. With an established baseline it could give an evidence base for any future flight path modification or noise abatement initiatives. The final location for monitoring equipment would be determined during detailed design noting that as part of the noise monitoring strategy, the locations of the monitors would need to meet minimum requirements with regards to:
  - aircraft overflights
  - minimum influence from other noise sources

  - minimal reflections from hard surfaces
  - security, work health and safety
  - connectivity with communications networks
  - long term leasing with the landowner(s) of the proposed monitoring sites
- mitigation measure M2 that states a bird and bat strike monitoring program will be conducted to monitor for the presence of wildlife on the WSI site and in vicinity of WSI. The monitoring program will be carried out in liaison with local government in relation to plans for proposed developments within 13 km of WSI that are likely to increase bird and bat strike

Additional inquiries and investigations

The decision to hold an assessment by public inquiry (under Division 7, Section 87) is a matter for the Australian Minister for the Environment and Water (or delegate) when considering a referral. As part of the consideration of the projects assessment pathway as a controlled action, the delegate for the Minister determined that the project would be assessed by an EIS under Division 6 in accordance with Section 87 of the EPBC Act.

The decision to undertake a Federal inquiry to consider redesign of the Sydney Basin airspace is beyond the approvals framework for the project and is a matter for the Australian Minister for the Environment and Water.

The decision to undertake an independent inquiry into Airservices Australia is beyond the approvals framework for the project.

The project is being assessed under the requirements of the EPBC Act. The decision to establish an expert Environmental Management Committee as part of the assessment of the project is a matter for the Australian Minister for the Environment and Water (or delegate) as the approval authority.

22.3 Greater Blue Mountains Area status

22.3.1 Potential loss of Greater Blue Mountains Area status

22.3.1.1 Issue raised

Raised by

Community, Australian International Council of Monuments and Sites, Blue Mountains City Council, Rainforest Conservancy Inc, Susan Templeman MP – Member for Macquarie (NSW), Trish Doyle MP – Member for the Blue Mountains (NSW), Wollondilly Shire Council

Issue

Submissions commented that the World Heritage status of the GBMA was based on its Outstanding Universal Value as an intact natural environment with extraordinary and unique qualities. Submissions questioned how this integrity would not be compromised by the proposed flight paths and associated aircraft movements, particularly as a result of increased noise and visual impact of planes over natural areas. Submissions also referenced the 2016 EIS that stated that WSI would not result in the attributes of World Heritage being lost, degraded or damaged.

Submissions objected to the project, expressing concern about the establishment of new and additional proposed flight paths over the GBMA, stating that there should be no flight paths over the Blue Mountains. It was argued that the project would threaten the integrity of the GBMA, compromise its listing as a UNESCO World Heritage Area and that the flight paths were in contravention to the UNESCO guidelines to protect Blue Mountains World Heritage National Park. Submissions noted that under the (NSW) *Wilderness Act 1987*, authorities have an obligation to ensure wilderness areas are managed so that they remain free from development and disturbance, preserving the unmodified state of the environment.

Submissions were concerned that UNESCO would review the heritage listing of the GBMA as a result of the proposed flight paths and requested a guarantee that the project would not result in the World Heritage listing being removed or rescinded (or added to the 'endangered' list of World Heritage sites).

Submissions stated that safeguarding the GBMA was a legal imperative under the World Heritage Convention and the EPBC Act. It was argued in submission that despite the assessment presented in the Draft EIS, there was a notable concern about potential impacts on the World Heritage Area's integrity and fauna values.

In addition, the potential loss of the World Heritage listing was also identified in submissions as a concern for the Blue Mountain tourism industry, and the economic impacts that may occur should the World Heritage listing be removed.

A number of submissions made reference to the management of the Banff National Park in Canada which prohibits the movement of aircraft over this National Park as a way of minimising the potential impacts to the World Heritage Area. It was argued that a similar model should be implemented for the GBMA.

Submissions noted that the World Heritage status had already been jeopardised by the impacts of the 2019–2020 fire season, and that the proposed flight paths would continue to increase the overall adverse impacts on this area.

22.3.1.2 Response

The assessment of the proposed flight paths with respect to the potential impacts on the existing World Heritage status of the GBMA concluded that given the nature of the project, the proposed flight paths are expected to result in minimal direct impacts on the World Heritage or National Heritage values of the area, including the criterion which relate to the Outstanding Universal Value of the site and contribute to its World Heritage status. Further assessment of the potential impacts on the World Heritage status of the GBMA is provided in Chapter 23 (Matters of National Environmental Significance) of the finalised EIS.

There are no formal requirements that restrict flight paths occurring over World Heritage Areas. As noted in the finalised EIS, the GBMA is currently overflown by flights associated with existing airports within the Sydney Basin. With respect to the comments regarding current management of the Banff National Park in Canada, this location is part of the Canadian Rocky Mountain Parks which was listed as a World Heritage site in 1984. This site consists of the contiguous national parks of Banff, Jasper, Kootenay and Yoho, as well as the Mount Robson, Mount Assiniboine and Hamber provincial parks (UNESCO, 2024). These areas are also currently overflown by flights both transiting the area as well as associated with arrivals and departures from Calgary International Airport to the east of these parks.

Direct impacts would primarily be associated with the potential for wildlife strikes to species that utilise habitats within the GBMA and the potential for localised impacts in the unlikely event of an aircraft crash. It is considered that these potential impacts would result in negligible impacts on the attributes within the GBMA, relevant to both the evolutionary processes or the biological diversity of this area. Additionally, it is not considered that the operation of the proposed flight paths would result in any indirect impacts which may cause the World Heritage value to be lost, degraded or diminished.

Accordingly, it was assessed that the project would not have a significant impact on the attributes identified for each of the relevant World Heritage criterion that affords the site its Outstanding Universal Value that contributes to its World Heritage status.

Submissions noting the potential impacts from the 2019–2020 fire season are noted. DITRCDA is not aware of any potential for the loss of the current World Heritage status as a result of these fires and it is not anticipated that operation of the flight paths would further jeopardise this status.

22.3.2 Assumptions regarding WSI

22.3.2.1 Issue raised

Raised by

Community, Blue Mountains City Council, Wollondilly Shire Council

Issue

Submissions expressed concern that the project implementation of flight paths was in contradiction to the statement made in the integrity part of the UNESCO World Heritage listing that states that 'Since listing, project[s] for a second Sydney airport at Badgerys Creek, adjacent to the GBMA, have been abandoned.' Submissions criticised that the development of WSI, and by extension the proposed flight paths assessed in the Draft EIS, were in contradiction to this statement.

It was requested that an assessment against World Heritage Listing criteria taking into consideration previous concerns with a potential airport expressed by the IUCN be undertaken prior to approval.

22.3.2.2 Response

It is acknowledged that the current statement of Outstanding Universal Value (UNESCO, 2022b) says that since World Heritage listing, projects for a second Sydney airport at Badgerys Creek, adjacent to the Greater Blue Mountains Area, have been abandoned. This statement is no longer current. In 2012, the Joint Study on Aviation Capacity in the Sydney Basin airspace (Department of Infrastructure and Transport, 2012) confirmed a second airport would be required and the location at Badgerys Creek was announced in 2014 by the Australian Government. In 2016, the then Australian Minister for Urban Infrastructure approved development for WSI. This comprised the Stage 1 Development works required for single runway operations including the terminal and landside layout and facilities, and ground infrastructure such as the instrument landing systems and high intensity approach lighting arrays.

22.3.3 UNESCO consultation

22.3.3.1 Issue raised

Raised by

Community, Trish Doyle MP – Member for the Blue Mountains (NSW)

Issue

Submissions commented that the development of the project had provided inadequate notification to UNESCO. Submissions acknowledged that while UNESCO received notification regarding the public exhibition of the Draft EIS, there was no confirmation that a report was being prepared to present to the World Heritage Committee in 2024. It was argued that this was required as the World Heritage Committee requested (in September 2023) that the Australian Government fully assess the potential impacts of the Western Sydney International (Nancy-Bird Walton) Airport on the Outstanding Universal Value of the property and submit a report on the implementation of WSI to the World Heritage Centre by 1 December 2024.

22.3.3.2 Response

The Australian Department of Climate Change, Energy, the Environment and Water (DCCEEW) is responsible for direct engagement with UNESCO and the IUCN, which advises the World Heritage Committee on natural heritage matters. The DCCEEW have set requirements concerning the assessment of the Greater Blue Mountains World Heritage Area within the EIS Guidelines. DCCEEW informed the UNESCO World Heritage Centre (the Secretariat to the World Heritage Committee) of the Draft EIS exhibition on 24 October 2023. The IUCN submitted a technical review of the Draft EIS following the exhibition period. The feedback from the IUCN has been taken into account in this Submissions Report and in the finalisation of the EIS.

22.4 Impact to Greater Blue Mountains Area

22.4.1 General impacts

22.4.1.1 Issue raised

Raised by

Community, Blue Mountains City Council, Blue Mountains Conservation Society, Blue Mountains Unions and Community, Blue Mountains World Heritage Institute, Fitzgerald Creek Catchment Group, Greater Blue Mountains World Heritage advisory committee, Hon Angus Taylor MP – Member for Hume (Federal), Mt Tomah and Berambing Community Association, Rainforest Conservancy Inc, Residents Against WSA Inc (RAWSA), Susan Templeman MP – Member for Macquarie (Federal), The Parks – Sydney's Parkland Councils, Trustees of Linden Observatory, Wollondilly Shire Council

Issue

General impacts

A number of submissions raised concerns about the overall impacts of the flights over the World Heritage listed Blue Mountains National Park. The key issue of submissions related to impacts on the natural landscapes and wildlife habitats of the GBMA.

Submissions also disagreed with the statement(s) in the Draft EIS that the project is not expected to result in unacceptable significant impacts on the GBMA, including the elements which comprise the World Heritage value of the GBMA. It was argued that the proposed flight paths would reduce and erode the enjoyment and wellbeing of the residents that live adjacent to the GBMA and result in impacts to the unique geological, geomorphological and water systems, high quality wilderness and natural bushland, endemic plant communities and habitats, and the connection to Aboriginal cultural values and custodian relationships.

Submissions also suggested there was a lack of consideration of historical heritage including walking tracks in the Draft EIS. Submissions stated that the Draft EIS misrepresents the potential greenhouse gas emissions and states that the operation of flight paths will contribute to climate change, with impacts to the GBMA.

A number of submissions also contended that this would be the first location in the world to allow flight paths over a World Heritage area.

Flight path avoidance

Submissions also stated that flight paths over the GBMA should be avoided in general in order to preserve and protect the wilderness qualities of the area, noting that flight paths over any part of the GMBA would diminish the experience of the Blue Mountains for both residents and tourists.

22.4.1.2 Response

General impacts

It is acknowledged that the Greater Blue Mountains is an area of diverse landscapes comprised of important ecological, geological and cultural significance and is listed as a World and National Heritage place.

The proposed flight paths have been designed, to the greatest extent possible, to avoid and minimise impacts (including impacts to the GBMA), and to respond to issues that have been previously raised by the community and other stakeholders. The continued refinement and finalisation of the flight path design would be further developed to minimise potential impacts on the local and regional environment, including the GBMA.

Given the nature of the project, the proposed flight paths are expected to result in minimal direct impacts on the World Heritage or National Heritage values of the area, including the Outstanding Universal Value which contribute to its World Heritage status. Direct impacts from the project were assessed as being limited primarily to the potential for wildlife strikes to species that utilise habitats within the GBMA and the potential for localised impacts in the unlikely event of an aircraft crash. Overall, these potential direct impacts on vegetation or fauna habitats were considered to be minor, infrequent and rare. Additionally, proposed flight paths would not change the size or boundary of the GBMA and would not significantly impact on any features and processes that convey the GBMA's Outstanding Universal Value, including its:

- geological, geomorphological and water systems
- size, condition (high wilderness quality) and natural bushland, endemic plant communities and habitats
- connection to Aboriginal cultural values and custodial relationships.

Assessment of these elements was discussed in detail in Section 5.4.1 and Section 5.4.2 of Technical paper 14.

Potential indirect impacts on World Heritage and National Heritage values from the operation of the proposed flight paths were assessed with respect to the identified qualities and attributes identified for the GBMA in its Statement of Outstanding Universal Value and the other corresponding values of the area as defined by the GBMA Strategic Plan. The assessment considered a range of potential impacts from the proposed flight paths including noise, visual amenity, air quality and cultural/heritage impacts. The assessment concluded that the operation of the proposed flight paths would not have a significant impact on the World Heritage or other listed values of the GBMA. In particular, the indirect impacts of the flight path operations were not anticipated to result in the existing qualities of the GBMA being degraded, damaged, lost, or substantially altered, modified, obscured or diminished.

Specific responses to submissions raising concerns regarding historical heritage have been discussed in greater detail in Chapter 16 (Heritage) of this Submissions Report. Similarly, submissions raising concerns regarding the misrepresentation of potential greenhouse gas emissions have been discussed in greater detail in Chapter 11 (Air quality and greenhouse gas) of this Submissions Report.

Further discussion regarding specific impacts on biodiversity and Aboriginal heritage are also provided in Chapter 15 (Biodiversity) and Chapter 16 (Heritage) of this Submissions Report respectively.

Flight path avoidance

With respect to the request that flight paths over the GBMA be avoided, given the nature of the project complete avoidance of overflight of the GBMA is not possible. However, the airspace and flight path design process for the preliminary flight paths has resulted in a design that is expected to result in minimal direct impacts on the World Heritage or National Heritage values of the area, including the Outstanding Universal Value which contribute to its World Heritage status.

Further discussion regarding the assessment of impacts associated with the preliminary flight paths on the GBMA is provided in Chapter 23 (Matters of National Environmental Significance) of the finalised EIS and Chapter 6 (Project development and alternatives) of this Submissions Report.

22.4.2 Noise impacts

22.4.2.1 Issue raised

Raised by

Community, Blue Mountains City Council, Fitzgerald Creek Catchment Group, IUCN, Susan Templeman MP – Member for Macquarie (Federal), The Hills Shire Council, The Parks – Sydney Parkland Councils, Trish Doyle MP – Member for the Blue Mountains (NSW), Wollondilly Council, WSROC

Issue

Noise assessment approach

Submissions raised specific concern regarding the assessment approach of noise associated with the GBMA. Areas of particular concern included:

- the desktop nature of the assessment, without physical noise monitoring being undertaken, or quantification of ambient wilderness soundscapes within the wilderness areas of the GBMA
- the aircraft noise assessment did not take into account existing aircraft activity and that further assessment is required to fully assess the impacts on the GBMA to ensure that the project does not put impacts above a threshold that would negatively impact the Outstanding Universal Value of the GBMA, noting that flight movements over the World Heritage Area would increase over time
- not identifying specific aircraft noise criteria for conservation and wilderness areas.

Noise exposure levels and criteria

Submissions raised objection to the project stating that the noise impacts to the GBMA would be significant and disruptive to the existing natural environment. The proposed noise impacts were considered to be inappropriate when considered in the context of a soundscape of a natural World Heritage area.

It was argued that the use of the maximum noise levels (L_{Amax}) 70 dB(A) L_{Amax} and 60 dB(A) as impact thresholds for day and night time operations respectively were inappropriate and did not provide an accurate measure of the intrinsic value of a natural soundscape and inappropriate benchmark for use in a remote bushland or wilderness setting such as the GBMA. Submissions noted that while such criteria may be suitable for more urbanised areas, it failed to properly address the unique acoustic sensitivities of quiet bushland or wilderness settings found within the GBMA. Furthermore, it was argued that the basis and background for the designation of these thresholds was not provided or considered appropriate for the assessment of impact in the GBMA.

Submissions requested that all efforts be made to reduce the impact of noise by aircraft over the GBMA as it would have a negative impact on the amenity of the GBMA, as well as resultant impacts on activities such as tourism and bushwalking. It was also recommended in submissions that the Draft EIS be updated to consider the noise impact from the proposed flight paths on the GMBA and the impacts modelled using a more appropriate noise threshold.

Consideration of terrain

Submissions stated that they believed noise levels had not been correctly estimated due to the effects of the undulating terrain/topography that is present throughout the GBMA. Submissions questioned whether they were based on the heights above the WSI runway level or whether they were based on the variable topography of the GBMA, noting that they did not seem to take into account the altitude over locations within the GBMA such as Katoomba or other significant tourist areas within the Blue Mountains (such as Echo Point), where the aircraft would be closer to the relative ground level, therefore increasing potential noise impacts and therefore impacts on the use of these areas within the GBMA.

Overflight time

It was noted that the Draft EIS did not include any analysis of the amount of time aircraft noise will be audible over areas such as the GBMA.

Review of noise impacts

It was requested that a review of noise impacts on each user group in the GBMA be undertaken for the project.

22.4.2.2 Response

Noise impact approach

There are a variety of acoustic environments within the WSI study area. Aircraft overflying natural areas were considered as part of the overall noise assessment. Ambient noise environments within the study area range from urban areas such as Penrith's CBD to rural areas that are largely removed from human-induced noise and the natural environments of the GBMA. Average background and ambient noise levels were established through a comprehensive on-site field study using noise monitoring terminals conducted between August and October 2022. As part of this monitoring program, noise monitoring terminals were installed in Linden (M25) and Blaxland (M24) to collect existing baseline noise data as representative locations for Blue Mountains communities and the GBMA (refer to Section 4.5 of Technical paper 1: Aircraft noise (Technical paper 1)). The variation in noise at noise monitoring terminals in Linden and Blaxland were used to account for the low ambient noise levels when assessing the difference in maximum and average noise exposure levels. Rating Background Levels for these areas at night were identified as 28 dB(A) and 26 dB(A) respectively.

It is acknowledged that a quantitative noise assessment was not presented in the Draft EIS. There are many factors that make it difficult to quantitatively assess the cumulative impact of aircraft noise from WSI in conjunction with other airspace operations. This is discussed further in Section 21.2.2.2 of this Submissions Report.

The Sydney Basin already includes an extensive network of flight paths used by aircraft operating at Sydney (Kingsford Smith) Airport, Bankstown and Camden Airports, RAAF Base Richmond, as well as aircraft transiting from outside the area. Aircraft are audible and noticeable across the Sydney Basin, and noise from aircraft would be experienced at varying levels. Aircraft overflight noise for some of these operations was perceptible based on the ambient noise monitoring described above.

WSI will introduce additional aircraft into an already complex and heavily trafficked Sydney Basin airspace environment. In 2033, this additional traffic is projected to represent around 9 per cent of total projected Sydney Basin air traffic movements (estimated to be over 890,000 movements inclusive of the expected 81,000 movements projected at WSI in 2033).

Aircraft using the preliminary flight paths to arrive and depart from WSI may be noticeable (audible and/or visible) up to 45 nm (around 83 km) from WSI and beyond. These aircraft are expected to operate up to 20,000 ft (6 km) and higher depending on the flight path in use, type of aircraft and its origin-destination, weather, pilot technique and other factors. While the measured volume of an aircraft noise event may be relatively low, there are many factors which will influence the degree of noticeability.

Aircraft operating from WSI concurrently with aircraft from other Sydney Basin airports have the potential to increase overall noise exposure of areas being directly overflown by the preliminary flight paths, immediately peripheral to and further surrounding WSI, and underneath or along the other flight paths in use. Overall noise exposure in a geographic area as large as the Sydney Basin does not necessarily translate into a quantifiable cumulative increase in impact. A 60 dB(A) event in an area already experiencing 70 dB(A) would not result in an arithmetic addition of exposure. Rather, the resulting addition of sound waves reaching the human ear will be less than 71 dB(A) and the difference not discernible to the human ear.

The application of WSI's flight path design principles along with the necessary separation between flight paths would inherently reduce potential cumulative impacts. Additionally, with the proportion of the preliminary flight paths relative to existing flight paths, and the existing and proposed complex of flight paths within the Sydney Basin, the cumulative impact of introducing noise associated with the preliminary flight paths is not considered high.

Noise exposure levels and criteria

With respect to specific aircraft noise criteria, there are a wide range of noise metrics that have been used to describe aircraft noise impacts. A few are included in national regulatory standards for land use planning such as Australian Standard *AS 2021:2015 Acoustics – Aircraft noise intrusion – building siting and construction* (AS 2021:2015) (Standards Australia 2021), while others have evolved to become national or international accepted best practice in similar airspace and flight path environmental assessments and community information initiatives. No specific aircraft noise criteria for conservation and wilderness areas have currently been developed.

In Australia, assessments of new airport developments use the 70 dB(A) L_{Amax} and 60 dB(A) L_{Amax} noise exposure levels as impact thresholds for day and night time operations respectively. The overflight noise assessment for the project shows that a majority of the broader GBMA is largely outside the area predicted to experience aircraft noise at or above these threshold values. The extent of noise impacts on biodiversity was therefore conservatively limited to the assessment zones that included the wildlife buffer, the N60 24-hour and N70 24-hour contours, and the flight path buffers. The N60 24-hour and N70 24-hour noise contours were used to assess the extent of noise impacts on biodiversity values. These contours take into consideration the proposed number of aircraft movements where a Biodiversity Sensitive Receiver is exposed to noise levels at or above 60 dB(A) and 70 dB(A) within a 10 km zone either side of the flight path centrelines in accordance with the Airservices Australia's *Environmental Management of Changes to Aircraft Operations – National Operating Standard* (National Operating Standard) (NOS) (Airservices Australia 2022a). Areas outside of the N60 24-hour and N70 24-hour contours were considered as likely to remain relatively unaffected (or affected only to a minor degree) by noise associated with the project and would therefore likely result in negligible impacts.

Additionally, while the noise contours within the assessment were illustrated with a 60 dB(A) threshold, Appendix A5 of Technical paper 1 provide a more granular assessment of maximum sound levels, including levels below 60 dB(A) including sound levels down to 50 and 40 dB(A).

Overall, the assessment identified that, while the vast majority of the overall GBMA would not experience significant noise increase, there would be some areas of the GBMA that would experience maximum noise levels of 60 dB(A) and greater. The areas of greatest impact would typically be in the region between the Great Western Highway and Lake Burragorang (Warragamba Dam).

Further discussion regarding noise impacts from the project, including noise impacts to the GBMA, and the criteria and metrics applied to the assessment of impacts on the GMBA and associated soundscape are provided in Chapter 10 (Aircraft noise) of this Submissions Report.

Consideration of terrain

In order to recognise the natural amenity and wilderness values of the GBMA, the noise assessment prepared to support the finalised EIS does consider the topography of the GBMA. This included the height of aircraft above varying ground level as they overpass the GBMA. This method captured the variance in noise across peaks and valleys within the GBMA is presented in Section 8.12 and Section 9.10 of Technical paper 1.

Overflight time

Time-above noise metrics were not used as part of the noise assessment for the finalised EIS. The assessment did however consider frequency metrics , referred to as N-above contours which represents the number of aircraft noise events that exceed a certain dB(A) within a day or a given period of time (refer to in Sections 9.4 and 9.6 of Technical paper 1). Additionally, the assessment of aircraft noise impacts included respite charts and assessment which identified the percentage of days and nights when no aircraft movements are expected on a specific arrival or departure flight path (refer to Sections 9.3 and 9.7 of Technical paper 1).

A detailed assessment of noise impacts from the project on the GBMA was presented in Section 5.3.2.3 of Technical paper 14. Further discussion regarding noise impacts from the project, including noise impacts to the GBMA, are discussed in detail in Chapter 10 (Aircraft noise) of this report.

22.4.3 Visual impacts

22.4.3.1 Issue raised

Raised by

Community, Blue Mountains City Council, Blue Mountains Conservation Society, Blue Mountains World Heritage Institute, Greater Blue Mountains World Heritage Area advisory committee

Issue

Assessment approach

Submissions questioned the descriptions of visual and landscape impacts provided in the Draft EIS , noting that presenting ranges such as 'moderate to high impact' sought to downplay instances of high impact on aspects of the GBMA.

Requests were made in submissions to provide a more detailed, transparent assessment of the potential visual impacts on the values and integrity of the GBMA which includes consideration of additional viewpoints.

Visual impacts

Submissions also expressed opposition to the project based on the potential day and night visual impacts that aircraft would have on the existing landscapes throughout the GBMA. Submissions noted that the GBMA has a number of important and iconic landscapes that would be impacted as a result of increased numbers and lower level aircraft associated with WSI.

Submissions also noted that the effects on the amenity of the GBMA would be substantially reduced due to the increased visual impacts associated with the project.

A number of submissions also discussed the cumulative visual impacts of the project and that these impacts need to be considered in the finalised EIS.

22.4.3.2 Response

Assessment approach

The use of terms such as 'High-Moderate' is not intended to be a range, however is the resultant impact rating according to the matrix of inputs utilised for the impact assessment. For example, a view of very high sensitivity with a low magnitude of change is categorised as a High-Moderate visual impact.

The matrix allows for the identification of Very High, High, High-Moderate, Moderate, Moderate-Low, Low and Negligible visual impacts to account for locations of varying landscape character and visual sensitivity and varying magnitude of change to character and in views. The application of this methodology is presented in Section 15.3 of the finalised EIS.

With respect to submissions requesting greater detail of the potential visual impacts on the values and integrity of the GBMA, the assessment of visual impacts considered a wide range of viewpoints and landscape character areas across the GBMA. These locations were considered to provide a good range of representative locations that may be impacted by the project. Integrity impacts on the GBMA were also considered as part of the impact on World heritage values for the project in Chapter 23 (Matters of National Environmental Significance) of the finalised EIS and the supporting technical assessment (Technical paper 14).

Visual impacts

The assessment included a visual impact assessment of 8 representative viewpoints across the Blue Mountains to indicate the visual impacts of the project. This assessment acknowledged the potential for both high-moderate landscape character impact in 2033 and 2055 on the Blue Mountains iconic features landscape character zone (consisting of the areas comprising features such as the Three Sisters and the Grose Valley) as well as views from Walls Lookout and Echo Point lookout due to the very high sensitivity of these views and the introduction of flights that would be perceptible moving across these views.

Section 15.5.2 of the finalised EIS acknowledges that some viewpoints within the GBMA may experience a noticeable reduction in the visual amenity of specific views due to the increased frequency of planes, however in most cases this is not expected to occur until 2055 when WSI is operating at peak capacity (for single runway operation).

Chapter 15 (Landscape and visual amenity) of the finalised EIS (supplemented by Technical paper 7: Landscape and visual amenity (Technical paper 7) provides a comprehensive assessment of the potential impacts of the project on the GBMA.

The cumulative landscape character and visual amenity impact assessment is discussed in greater detail in Chapter 22 (Cumulative impacts) of the finalised EIS. Concerns regarding the impact assessment of cumulative visual impacts are discussed in Chapter 21 (Cumulative impacts) of this Submissions Report.

22.4.4 Impacts to tourism

22.4.4.1 Issue raised

Raised by

Community, Blue Mountains City Council, Blue Mountains Conservation Society, Greater Blue Mountains World Heritage Area advisory committee

Issue

Submissions noted that the local economy for the Blue Mountains region is highly dependent on the tourism industry, which is dependent on the natural environment and wildlife of the GBMA. Concern was expressed in submissions that the project would result in a range of impacts to both the enjoyment of the area for tourists such as:

- the visual impacts associated with aircraft moving through views including the Three Sisters, the Jamieson Valley and the Kanangra Boyd National Park
- increased levels of aircraft noise and overflights which would have the potential to negatively impact the visitor experience and impact the number of tourists who visit the GBMA.

Concern was also raised in submissions that these impacts would result in overall negative impacts on the tourism economy of the region.

Other submissions discussed the negative impacts to tourism due to an increase in inappropriate recreation and tourism activities that will degrade the World Heritage experience.

22.4.4.2 Response

It is acknowledged that a substantial component of the local economy for the Blue Mountains region is dependent on, or related to, the tourism industry. While most tourists who visit the Greater Blue Mountains are day trippers, it is noted that there are a number who stay overnight and longer.

The finalised EIS considers the potential social and economic impacts of the project on tourism in the GBMA. The finalised EIS notes that:

- in relation to potential noise impacts, tourist accommodation such as hotels, motels and camping grounds may have the potential to be impacted and lead to fewer tourists staying for more than a day, which could have a marked impact on local tourist accommodation. It was also noted that there is only one short stay accommodation venue within the N60 contour within the Blue Mountains, meaning the potential of impacts on this type of accommodation would be minimal. It was acknowledged that the key impact that may affect people visiting the Blue Mountains for a day could be due to aircraft noise while they're undertaking any outdoor pursuits (including overnight tourist activities such as camping)
- in relation to visual amenity and wilderness experience impacts, recreational activities are generally not expected to be substantively impacted by the project. The visual impacts of the project were concluded to range from negligible to moderate-high. Walls Lookout and Echo Point (including views of the Three Sisters and Jamison Valley) would experience a moderate-high visual impact due to the high sensitivity of these views. WSI flights would be perceptible moving across the view even though the altitudes are high. Within the more remote and wilderness areas of the GBMA, there are scattered day use facilities and campgrounds that would largely not be impacted by aircraft flightpaths.

Overall, while it is acknowledged that the experience of some of these recreational activities may be impacted by increased visual or noise intrusion associated with aircraft movements, impacts associated with the project are not considered substantial enough to result in any measurable impacts in terms of tourist visitation numbers to the GBMA or result in degradation of the World Heritage experience for these visitors.

Conversely, the finalised EIS notes that it is expected that due to the location of an international airport closer to the GBMA, that there could be benefits to tourism in the GBMA.

It was noted that WSI could provide a boost to the tourists within the area outweighing the potential impact of the flight paths. As aircraft fly over such a distinct and unique area of Australia, tourists will be able to gain an appreciation over the area and could choose to stay in the area for longer. The flights that will use WSI could bring more people into Western Sydney who may have previously flown into Sydney (Kingsford Smith) Airport and therefore not been close enough to the area for a visit.

Based on consideration of the potential social and economic impacts identified, it is expected that impacts to the visitor economy of the GBMA and livelihoods associated with the GBMA is low. The project is not expected to result in a substantial impact to the social and economic values that contribute directly and indirectly to the tourism economy associated with the GBMA.

22.4.5 Aircraft crashes

22.4.5.1 Issue raised

Raised by

Community

Issue

Submissions expressed concern regarding the potential impacts to the GBMA as a result of an aircraft crash. Impacts of concern from aircraft crashes included:

- impacts to the unique areas of biodiversity within the GBMA, including the potential for extinction of rare and local species, such as from direct impact of a crash and resultant chemical contamination
- direct impacts to heritage items within the GBMA resulting from a crash (such as artifacts and cave paintings that are of significant cultural and archaeological value)
- increased risk of initiating a bushfire within the GBMA (leading to similar impacts as above on biodiversity or heritage items).

22.4.5.2 Response

Operations at WSI and the associated airspace in the Sydney Basin are being introduced within a well-established regulatory and management framework that places the utmost importance on safety, underpinned by key requirements that risks should be 'as low as reasonably practicable' and meet appropriate levels of safety.

Operation of flight paths over the GBMA is considered to present a very low risk of direct impacts resulting from aircraft accidents. As stated in Section 13.5.2 of the finalised EIS, this very low risk is based on an estimate of the crash rate from aircraft during flight over the GBMA ranging between approximately one in 1,700 to one in 2,400 years in 2055. The range in the crash rate risk reflects the likely distribution of traffic movements using the flight paths over the GBMA. It is therefore considered that the risks of potential impacts of crashes to biodiversity, heritage or initiation of a bushfire are considered to be small.

Notwithstanding, in the event that any aircraft is in an emergency situation, that aircraft will be given priority by Air Traffic Control as per standard aeronautical procedures.

Further detail regarding the potential aircraft crash risks associated with the project are discussed in Chapter 13 (Aircraft hazards and risk) of the finalised EIS.

22.4.6 Pollution and fuel impacts

22.4.6.1 Issue raised

Raised by

Community

Issue

Submissions raised concern about the potential impacts of increased pollution caused by aircraft movements on the GBMA, in particular the unique biodiversity within this area. The impacts of aircraft emissions and fuel jettisoning were identified in submissions as having the potential to affects the GBMA.

The impact of fuel vapour/particles was expressed as a concern due to the potential for the:

- impact on rare and endangered species
- potential to increase the risk (or volatility) of bushfires within the GBMA.

Submissions also questioned whether fuel jettisoning would be permitted over the GBMA.

22.4.6.2 Response

As stated in Section 13.5.3 of the finalised EIS, fuel jettisoning (or fuel dumping) would be carried out in accordance with the Aeronautical Information Publication Australia, Part 2 – En Route (AIP ENR), as per mitigation measure HR3 (Airservices Australia, 2022b). Where possible, fuel jettisoning will occur at an altitude of at least 6,000 feet (ft) (approximately 1.8 kilometres) above ground level to ensure total dissipation into the atmosphere prior to contacting the ground, except in the case of emergencies. Fuel jettisoning in accordance with the abovementioned procedures generally results in no impacts at ground level. Most fuel evaporates within the first few hundred metres, and fuel jettisoning occurs only very rarely.

In terms of the potential risks to sensitive receiving environments (such as the GBMA), analysis indicates that fuel jettisoning represents less of a threat than a direct aircraft crash impact. As a fuel jettisoning incident that results in ground level impacts in the vicinity of WSI is estimated to be extremely remote, events with tangible impacts on potentially sensitive receiving environments would be even less likely and therefore would be considered to be exceedingly remote.

Overall, fuel jettisoning is a relatively uncommon non-standard operational requirement and historical records indicate that any such incident would be a very remote event and can be carried out safely and without any impacts at ground level when appropriate procedures are followed. Based on reported fuel jettisoning (within Australian airspace between 2010 and 2020) and estimated movement rates for WSI (as single runway operations approach capacity) it is estimated that there would be on average slightly less than one fuel jettisoning event per annum.

There would be no significant adverse impact associated with fuel jettisoning associated with the project.

Further detail regarding the potential pollution and fuel impacts associated with the project, including to the GBMA, are discussed in Chapter 13 (Aircraft hazards and risk) of the finalised EIS.

22.5 Biodiversity impacts on MNES

22.5.1 Impacts to biodiversity within the GBMA

22.5.1.1 Issue raised

Raised by

Community, Blue Mountains City Council, Blue Mountains Conservation Society, Greater Blue Mountains World Heritage Area advisory committee

Issue

Submissions criticised the project noting that it would have overall detrimental impacts on the GBMA and that the biodiversity values that make up the World Heritage Area would be adversely affected by the implementation of the flight paths.

Submissions also disputed that biodiversity impacts on the GBMA would be 'indirect', noting that the introduction of the flight paths over the GBMA would be permanent and irreversible, having a direct impact on vegetation and fauna species within this area. Some submissions expressed concern regarding biosecurity risks and the associated environmental impacts to the GBMA biodiversity.

Submissions also disagreed that the biodiversity impacts on the GBMA were considered to be insignificant given that the Draft EIS stated that biodiversity impacts, 'cannot be avoided or minimised due to the nature and extent of the project and other flight path requirements'.

Submissions noted that noise would be the primary cause of impacts, resulting in detrimental impacts on fauna species whose habitats are within the GBMA. Specific concerns included:

- disruption to birds and bats who would lose their sense of direction
- wildlife strike due to the operation of aircraft above the GBMA
- disturbance to mating calls for frogs and other nocturnal creatures such as owls
- general changes to foraging and migratory behaviours, and lowering breeding success rates.

22.5.1.2 Response

A full assessment of all potential species that were identified as having the potential to be impacted by the project, including a range of species that were identified as occurring within the GBMA acknowledged that the project would have some minor or negligible impacts on biodiversity. These included potential direct and indirect impacts on biodiversity including:

- direct impacts such as the potential for:
  - wildlife strikes during operation, including possible impact on a range of species (Grey-headed Flying-fox and a number of bird species) which provide contributing attributes to the World and National Heritage values of the GBMA
  - an aircraft crash to result in an impact on flora and fauna. Whilst this is very unlikely, the impact would only affect a localised area and may result in direct impacts on the values and attributes of the GBMA
- other potential indirect impacts as a result of the project on biodiversity including:
  - noise impacts – within the GBMA, impacts were assessed as being likely be intermittent and unlikely to disturb fauna within the GBMA or affect the habitats of fauna. Sensitive species within the GBMA which may be susceptible to alterations in current noise levels were identified to include the Regent Honeyeater and flying-fox populations
  - night-time lighting effects – even though there may be a slight increase in light (resulting from warning and other lighting indicators on aircraft at night), existing biodiversity associated with the GBMA was assessed as being unlikely to be significantly affected and would therefore lighting effects would not impact on the biodiversity attributes and values associated with the GBMA
  - biosecurity – all aircraft using the proposed flight paths to access WSI from overseas would be subject to strict Australian biosecurity requirements that are currently administered for all Australian airports. No direct impacts or indirect threats associated with weed and/or pest species are expected as a result of the implementation of the proposed flight paths associated with WSI. Any breach would be managed in accordance with existing Australian biosecurity requirements.

Each of the identified impacts were identified as being negligible or were considered to be unlikely to significantly modify species behaviours or use of habitats that are locally or regionally available. Specifically:

- the likelihood of substantial or significant noise impacts on biodiversity species was considered to be unlikely. This includes impacting the ability for species to utilise echolocation and undertake communication activities/calling patterns. As the noise changes are unlikely to be substantive this is not considered to be a likely issue of concern. Disruptions to foraging and hunting activities were also considered to be unlikely
- the risk of direct wildlife strikes by aircraft were assessed and determined to be unlikely to be substantial (refer to Section 15.5 of this Submissions Report)
- breeding behaviours (in particular with respect to noted frog species) are unlikely to be significantly or substantially impacted as the noise impacts affecting these behaviours are not likely to be substantial
- concern that frog species may not be able to adapt to aircraft noise and therefore may not be able to move around their habitat is unlikely to be of concern give the low likelihood of substantive or significant noise impacts assessed.

Further details of potential species impacted is provided in Technical paper 8 and Technical paper 14.

22.5.2 Impacts to threatened species within the GBMA

22.5.2.1 Issue raised

Raised by

Community, Blue Mountains World Heritage Institute

Issue

EPBC Act species

Submissions raised concern that the project would result in adverse impacts on a range of threatened species and their habitats present within the GBMA. It was argued that the EPBC Act recognises 92 fauna and 79 migratory species in the area and disputed the assessment presented in the Draft EIS that the impacts of the project would not be significant.

Noise impacts

It was identified that there was potential for irreversible impacts on endangered species due to ongoing and increasing aircraft noise in the GBMA. It was stated that there were critically endangered, endangered and vulnerable species within 60 to 75 decibel noise contours. Threatened species which were identified of concern included:

- bats and flying-foxes– such as the Grey-headed Flying-fox (*Pteropus poliocephalus*), the Large-eared Pied Bat (*Chalinolobus dwyeri*), and various microbats which may experience disruptions in foraging and communication activities. The significant altitude of the Grey-headed Flying-fox was also identified as a risk for direct strikes by aircraft flying over the GBMA
- frogs – such as the Giant Burrowing Frog (*Heleioporus australiacus*) and other endangered or vulnerable frog species, including the Booroolong Frog (*Litoria booroolongensis*), and the Green and Golden Bell Frog (*Litoria aurea*). It was noted that frog breeding behaviour is highly sensitive to sound and disturbances caused by aircraft noise could interfere with their communication, especially during nighttime breeding activities
- birds – several bird species, including the Regent Honeyeater (*Anthochaera phrygia*) and Swift Parrot (*Lathamus discolor*), were identified in submissions as having confirmed or likely to inhabit areas under noise contours. Other species noted included the Glossy Black Cockatoo (*Calyptorhynchus lathami lathami*), the Gang-gang Cockatoo (*Callocephalon fimbriatum*), Greater Gliders (*Petauroides volans*) and Yellow-bellied Gliders (*Petaurus australis australis*).

Request for additional studies

It was requested that detailed assessments be undertaken including:

- a bird and bat strike risk assessment to assess the potential impacts of the project
- a review of noise impacts on wildlife in the GBMA.

22.5.2.2 Response

EPBC Act species

It is acknowledged that the EPBC Act recognises 92 fauna and 79 migratory species. As discussed in the biodiversity assessment (Technical paper 8), of these species, only 17 fauna and 28 migratory species were identified as having a high likelihood of occurrence in the assessment zone (including the GBMA).

Significant impact assessments (SIAs) were completed in accordance with the Australian Government's significant impact guidelines for all MNES biodiversity entities. The SIAs were undertaken for each of the above noted species and the results presented in Appendix C of Technical paper 8. Overall, the SIAs completed for all threatened and migratory candidate species concluded that the project is unlikely to have a significant impact on threatened or migratory species listed under the EPBC Act. The SIAs identified that there was unlikely to be a significant impact on these species as:

- direct impacts would be restricted to occasional wildlife strike. This impact would likely be minor, infrequent and largely limited to airspaces within the wildlife buffer
- indirect impacts are unlikely to result in the loss or significant modification of habitats or populations as:
  - potential noise impacts are unlikely to result in changes that would alter fauna species behaviour or use of available habitats
  - potential changes in light, air quality and water quality are likely to be negligible
- given the extent of potential impacts and biodiversity values within the region already being exposed to similar impacts, the proposed action is unlikely to lead to a long-term reduction in the size of a population, reduce the area of occupancy of a population or adversely affect critical habitat for a species, nor would the project fragment a population, disrupt the breeding cycle of a population, introduce invasive species or pathogens that may cause a species to decline, impact on habitat to the extent that it would cause a species to decline, or significantly interfere with recovery plans' actions.

A summary of these assessments was presented in Section 9.1 of Technical paper 8.

Noise impacts

Noise impacts on biodiversity species have previously been addressed in Chapter 15 (Biodiversity) of this Submissions Report. In summary, the outcomes of the noise assessment within Technical paper 8 concluded that:

- noise impacts will be limited to specific locations and the vast majority of the GBMA will remain unaffected by increased noise
- research shows that species can acclimatise to regular noise and it is highly likely that this will be the case
- the increase in noise will not be an instant maximum noise change in a single year, rather it will ramp up over a 30-year period and this is expected to assist in species acclimatisation within the affected areas
- there would be minimal areas where noise above 70 dB(A) would impact the GBMA or the vast majority of wilderness or biodiversity values
- the affected areas will be affected by N60 in year 2055 as follows:
  - over a 24-hour period, the majority of the flights over the GBMA and wilderness areas equate to around 10 to 49 flights over a 24 hour period (depending on the runway mode of operation is in use) that generate noise for short durations over 60 dB(A), or less. Some areas closer to the Airport Site within or adjacent to the GBMA near Lake Burragorang would have more than 100 flights over a 24 hour period that generate noise over 60 dB(A) (depending on the runway mode of operation)
  - during the overnight period all areas within the GBMA and associated wilderness areas are expected to be impacted by 2 to 19 flights over the night period (11 pm to 5:30 am) which are at or above 60 dB(A), or less. Areas closer to the Airport Site within or adjacent to the GBMA near Lake Burragorang would have around 10 to 49 flights overnight that are at or above 60 dB(A).

Request for additional studies

As noted previously:

- a comprehensive bird and bat strike risk assessment was prepared as part of the finalised EIS to assess the potential impacts of the project. This was included as Technical paper 5
- a review of noise impacts on wildlife in the GBMA was included as part of Technical paper 1 and Technical paper 14.

It is not proposed to conduct further or additional studies in addition to those that were undertaken for the Draft EIS.

22.6 Aboriginal heritage

22.6.1 Aboriginal heritage impacts in the GBMA

22.6.1.1 Issue raised

Raised by

Community, IUCN

Issue

Submissions criticised the proposed flight paths stating that they would have substantial impacts on Aboriginal heritage and culture associated with the GBMA. While submissions acknowledged that the project would not have a direct impact on physical evidence of cultural connections to the GBMA, they noted that it would be inevitable that visual presence and aircraft noise would impact Aboriginal sites within the GBMA, and impact the integrity of the GBMA with respect to First Nation people's ongoing cultural practices and/or custodial relationships.

In particular, issues raised included:

- severance of Indigenous connection to Sky (most notably the Emu in the Sky constellation at Faulconbridge) by introducing aircraft and associated noise over important Aboriginal cultural areas. It was noted in submissions that this cultural connection is of very high importance to many Aboriginal groups and that the addition of a high concentration of flight paths would result in the loss of connection between the land and the constellation
- the potential for impacts to Aboriginal rock art (such as the Ticehurst Park Aboriginal rock art engraving site in Faulconbridge)
- disruption to the natural setting of a number of Aboriginal heritage locations such as Emu Cave and The Three Sisters
- significant or noticeable impacts to Aboriginal Places, such as Shaws Creek Aboriginal Place, Yellomundee Regional Park and Euroka Clearing.

It was stated that the preliminary flight path design should not be approved where impacts to the integrity of the GBMA occur through the erosion of ongoing practices or custodial relationships. Impacts linked to places of cultural value and significance should be avoided.

Potential impacts to significant places of Aboriginal cultural heritage were also considered to have been assessed in a cursory and superficial way in the Draft EIS, including declared Aboriginal Places such as Echo Point and The Three Sisters, which were identified as likely to suffer significant visual intrusion from proposed flight paths.

Submissions also stated that no meaningful consultation with Traditional Owners had been undertaken as part of the preparation of the Draft EIS.

22.6.1.2 Response

Severance of Indigenous connection to Sky

The importance of Aboriginal sites that are connected to stories that link places on the land with the stories about the constellations such as the Emu in the Sky at Faulconbridge are acknowledged by the project.

Knowledge holders interviewed as part of the project stated that around March to April was the most important time for the connection between the emu and the sky and the engraving sites at Faulconbridge. The Emu in the Sky site at Ticehurst Park would be directly under 5 flight paths at altitudes around 10,500 ft to 17,500 ft. The other site would not be directly overflown but is close to a departure transition area for WSI. The assessment presented in the finalised EIS recognises that the intrusion of aircraft over head of these sites could potentially result in detrimental indirect impacts to the cultural values of this site. The assessment also acknowledges that during March and April when the Emu in the Sky constellation is most visible, the visual intrusion would be likely to have some negative cultural impact to the existing land-sky connection. Impacts would be seasonal and are expected to be moderate and low at the two sites.

The Department of Infrastructure, Regional Development, Communications, and the Arts (DITRDCA) will ensure that the detailed design phase considers Aboriginal cultural places and values, noting that safety is not negotiable and that capacity, environment and efficiency factors must also be considered in the flight path design. This mitigation measure is listed as H1 in Table 24.1 of the finalised EIS.

Impacts to Aboriginal rock art

Occupation sites and rock art are acknowledged to provide physical evidence of the longevity of the strong Aboriginal cultural connections with the land. The conservation of these associations, together with the elements of the area's natural beauty, is considered to be important to the maintenance of value and integrity to areas such as the GBMA. The rock art of the Blue Mountains consists both of pigment art on rock shelter walls and pecked and abraded engravings on horizontal and semi horizontal sandstone surfaces. The distribution of the majority of known rock art sites occurs across a number of areas within the Sydney Basin, including throughout the GBMA in both remote and urban areas (such as the Ticehurst Park Aboriginal rock art engraving site located around 150 m north of the Great Western Highway).

Although it is possible to outline processes of potential rock art deterioration related to aircraft emissions, it is as yet impossible to evaluate the risk presented by these processes, or indeed to identify and quantify any resulting damage. It was acknowledged as part of the assessment that there are places, including within the GBMA, where the physical fabric of a place may potentially be impacted. These included locations of Aboriginal rock engravings and/or pigment art which typically occur on sandstone surfaces. The assessment noted that there was general acknowledgement that general air pollution is likely to be detrimental to Aboriginal rock art including international research findings that suggested that overall air pollution can accelerate the rate of stone deterioration in urban settings, by weakening the fabric of the stone, making it more susceptible to other stresses such as physical weathering.

While a substantial number of both arrival and departure flightpaths overfly the sandstone ranges within the GBMA, given their height and distance from the WSI site, the impacts are unlikely to extend into the proximity of a majority of the rock art sites located within the GBMA. Additionally, Technical paper 2: Air quality (Technical paper 2) assessed the risk of pollutants associated with the project reaching the ground surface (and therefore the surface of rock art) as being low , also noting that most modelled pollutants are gaseous and no tangible deposition of gasses on any surface is likely). Sites such as the Ticehurst Park Aboriginal rock art engraving site are also likely to be currently influenced by their proximity to existing infrastructure such as emissions associated with vehicles utilising the Great Western Highway.

It is also recognised that the GBMA is typically comprised of large tracts of national park where there has been minimal industrial development in the past. As such, there is a potential impact resulting from the introduction of new or increased emissions from the proposed flight paths to these environments. This may result in some impact to known (or previously undiscovered) rock art, in particular in areas under the more frequently flown sections of flightpaths. It is however considered that the likelihood of this is considered to be generally minimal.

A research program will be undertaken to investigate the potential impact of aircraft emissions on historic and Aboriginal heritage sites (including rock art sites), with a particular focus on sites within the GBMA. The research program will be designed and implemented in consultation with Heritage NSW and include participation of local First Nations stakeholders. This mitigation measure is listed as H2 in Table 24.1 of the finalised EIS.

Disruption to the natural setting of Aboriginal heritage locations

As discussed in Section 6.4 of this Submissions Report, the preliminary flight path design has sought to provide a balance between minimising impacts on residential areas and bushland areas (including the GBMA) while providing an optimal and efficient airspace design. Avoiding overflight of both residential areas and sites such as the GBMA would impact on the efficiency of the design, requiring much longer, more circuitous routes that would also conflict with other airspace users, such as flights operating from Sydney (Kingsford Smith) Airport.

It is recognised that the project may result in some disruption to the natural setting of some Aboriginal heritage locations, impacting their experiential values such as peace and tranquillity. To a large extent, the potential impact will be influenced by how high aircraft are when traversing over or near an Aboriginal heritage location. Noise in particular is noted as an issue that may affect the enjoyment and use of both Aboriginal and historic heritage places. This was recognised and discussed in Section 6.3 of Technical paper 9: Heritage (Technical paper 9).

In relation to specific Aboriginal Places, including locations such as Emu Cave and The Three Sisters, the development of the flight path design sought to avoid impacts on Aboriginal Places as far as possible. Ongoing detailed design of the flight paths would seek, wherever possible, to consider options to further reduce the impacts (in particular acoustic and visual impacts) on Aboriginal Place locations including Emu Cave, Euroka Clearing, Nye Gnorang and at Shaws Creek in Yellomundee.

Consultation with Traditional Owners

As part of the preparation of the Draft EIS, a range of consultation activities was undertaken with First Nations people and Traditional Owners including one-on-one meetings and group presentations with Knowledge Holders. This included discussion with 21 individual knowledge holders from Dharug, Dharawal and Gundungurra people regarding the project. Additionally, 15 organisations were contacted for input and to identify relevant Knowledge Holders. During this period, over 120 phone calls, emails, virtual meetings and face-to- face meetings with First Nations people and organisations were held (as detailed in Section 3.1.3 of Technical paper 9).

In addition to consultation during the development of the Draft EIS, all participant Knowledge Holders were invited to a briefing by DITRDCA regarding noise impacts prior to the public launch of the online Aircraft Overflight Noise Tool. All participants and organisations were also sent a letter notifying them when the Draft EIS went on exhibition and advising them of how they could make a submission.

Section 17.2.2 of this Submissions Report provides additional detail regarding the direct engagement and other consultation undertaken with First Nations people and Traditional Owners during the development of the flight paths and preparation of the Draft EIS.

22.7 Mitigation and management

22.7.1 Mitigation measures

22.7.1.1 Issue raised

Raised by

Community, Blue Mountains City Council, Blue Mountains World Heritage Institute, IUCN, Rainforest Conservancy Inc, WSROC, The Parks – Sydney Parkland Councils

Issue

Submissions stated that the Draft EIS lacked identification of mitigation measures that would provide for monitoring of impacts to the overall integrity of the GBMA.

Submissions also identified a series of mitigation measures that should be applied to the project in order to minimise potential impacts of the project on the GBMA. These measures included:

- the finalisation of overflight procedures, particularly the RRO should consider the impacts on the key sensitive areas within the GBMA
- re-design or redirection of the flight paths to avoid initial take-offs and landings occurring over the GBMA and directing flight paths over the urban areas and ocean
- alternative flight path options that integrate mitigation measures to ensure that any feature of the preliminary flight path design that negatively impacts the Outstanding Universal Value of GBMA is avoided
- implementing a restriction on flight paths to ensure that no flights operate lower than 31,000 ft over the GBMA or other wilderness areas
- implementing aircraft movement caps over the GBMA
- instigating a curfew at night between 9 pm and 6 am to restrict flights over the GBMA

- inclusion of mitigation measures to address impacts to visitor experiences of the GBMA or wilderness
- implementing a long-term air quality monitoring program, pre- and post-operation across the GBMA
- implementing comprehensive baseline acoustic monitoring along with ongoing biodiversity monitoring, focusing on key EPBC Act-listed threatened species
- comprehensive monitoring of noise and air quality alongside monitoring of key species that represent the attributes of the Outstanding Universal Value of GBMA to inform further mitigation measures to avoid negative impacts (adaptive management), as needed
- establishment of a fund to offset residual impacts, including collection of a per-passenger levy from airport users to be used for environmental offsets, investment in natural and cultural heritage protection, monitoring, and promotion for the GBMA
- development of a website/mobile phone application identifying WSI flight operations so that visitors to the GBMA can identify when to visit each area or precinct so as to avoid aircraft noise and overflights
- provision of funding for scientific research programs and ongoing monitoring over at least the next 2 decades to confirm potential biodiversity impacts.

22.7.1.2 Response

The airspace and flight path design process for the preliminary flight paths has resulted in a design that is expected to result in minimal direct impacts on the World Heritage or National Heritage values of the GBMA. It is expected that the existing management of the GBMA, which is guided by a number of policies and guidelines relating to the consideration of management of World Heritage, would continue to be implemented during operation of the flight paths. Of particular relevance would be the *Greater Blue Mountains World Heritage Area Strategic Plan* (NSW DECC, 2009) and *Greater Blue Mountains World Heritage Area Strategic Plan Addendum 2016* (NSW Office of Environment and Heritage, 2018). These plans provide the frameworks for the GBMA integrated management, protection, interpretation and ongoing monitoring of the GBMA.

With regards to the specific measures identified in submissions that should be considered:

- given the nature of the project, directing flight paths over the urban areas and ocean in order to avoid overflight of the GBMA would not be possible without requiring much longer, more circuitous routes that would also conflict with other airspace users, such as flights operating from Sydney (Kingsford Smith) Airport. Similarly, given the location of WSI, restricting flights over the GBMA to altitudes greater than 31,000 ft would not be possible
- as described in Section 6.5.2 and Section 6.2.4 of this Submissions Report it is not proposed to put a limit, or 'cap' the daily number of aircraft movements at WSI or a curfew of flights operating from WSI, or over the GBMA
- as identified in Section 15.6.1 of the finalised EIS, the design of the flight paths aimed to minimise noise and other environmental impacts, including visual impacts, to the extent practicable while still achieving safe and efficient operations. Sensitive tourist and recreation areas associated with the GBMA were considered in the design of the flight paths. Based on the nature of the potential impacts, no other reasonable or feasible project specific mitigations are considered to be available that would further reduce these potential impacts
- as described in Section 11.8.2 of the finalised EIS (mitigation measure M1), Airservices Australia will install a system of permanent and temporary noise monitoring terminals at suitable locations around WSI which would be incorporated into the Airservices Australia Noise and Flight Path Monitoring System (NFPMS) network and reporting systems. The system will provide accurate noise monitoring data for reporting, validation and noise model calibration. With an established baseline it could give an evidence base for any future flight path modification or noise abatement initiatives. The final location for monitoring equipment would be determined during detailed design noting that as part of the noise monitoring strategy, the locations of the monitors would need to meet minimum requirements with regards to:
  - aircraft overflights
  - minimum influence from other noise sources
  - minimal reflections from hard surfaces

  - security, work health and safety
  - connectivity with communications networks
  - long term leasing with the landowner(s) of the proposed monitoring sites
- as described in Section 12.6.1 of the finalised EIS, air quality monitoring, initially established at WSI to establish baseline air quality conditions, will continue during future operations at WSI. Once operational, emissions from aircraft will be captured by these monitors in addition to existing ground level sources. As the assessment of the flight paths in the finalised EIS did not identify any significant change in the approved ground level impacts per the 2016 EIS, no additional monitoring for aircraft engine emissions is required
- funding opportunities for research and passenger levies are outside the scope of the current project
- the WebTrak interface allows community and other stakeholders to see where aircraft fly and explore historical trends and patterns (https://www.airservicesaustralia.com/community/environment/aircraft-noise/webtrak/) which would include tracking of flights arriving and departing WSI when operational.

Chapter 23 Other issues

This chapter outlines the matters raised in submissions that relate to general support or objection to WSI, issues concerning the Stage 1 Development, miscellaneous queries, or comments about WSI, the project or the website created for the project, and matters beyond the scope of the project.

Overall, submissions raised general concern regarding the project in addition to WSI more broadly. This submission typically made objections or queries to WSI, discussed the approval and impacts of the Stage 1 Development and airport infrastructure, and commented on the functionality of the Online Community Portal.

Submissions also raised issues that were out of scope. These were typically concerning the long-term development at WSI (particularly the second runway), traffic and transportation issues surrounding WSI and development associated with the Aerotropolis and Western Sydney more broadly.

Each of these concerns were noted, and where possible, further information was provided.

23.1 Submission overview

23.1.1 Number and origin of submissions

A total of 1,063 submissions raised matters concerning other issues not previously discussed in the Draft EIS. Issues raised in submissions that were categorised as other include:

- general comments and/or enquiries about the project or the Stage 1 Development
- concerns that are beyond the scope of the Draft EIS.

The majority of these submissions originated from the Sydney Basin and surrounds. The distribution of submitters by postcode is shown in Figure 23.1. Around 30 per cent of submissions did not provide a postcode.

Of the 1,063 submissions, around 30 per cent of submissions were from the Central City District, 20 per cent from the Western City District (Blue Mountains only) and 16 per cent from the Western City District (excluding Blue Mountains).

The remainder originated from other districts in the Sydney Basin, intrastate or interstate locations.

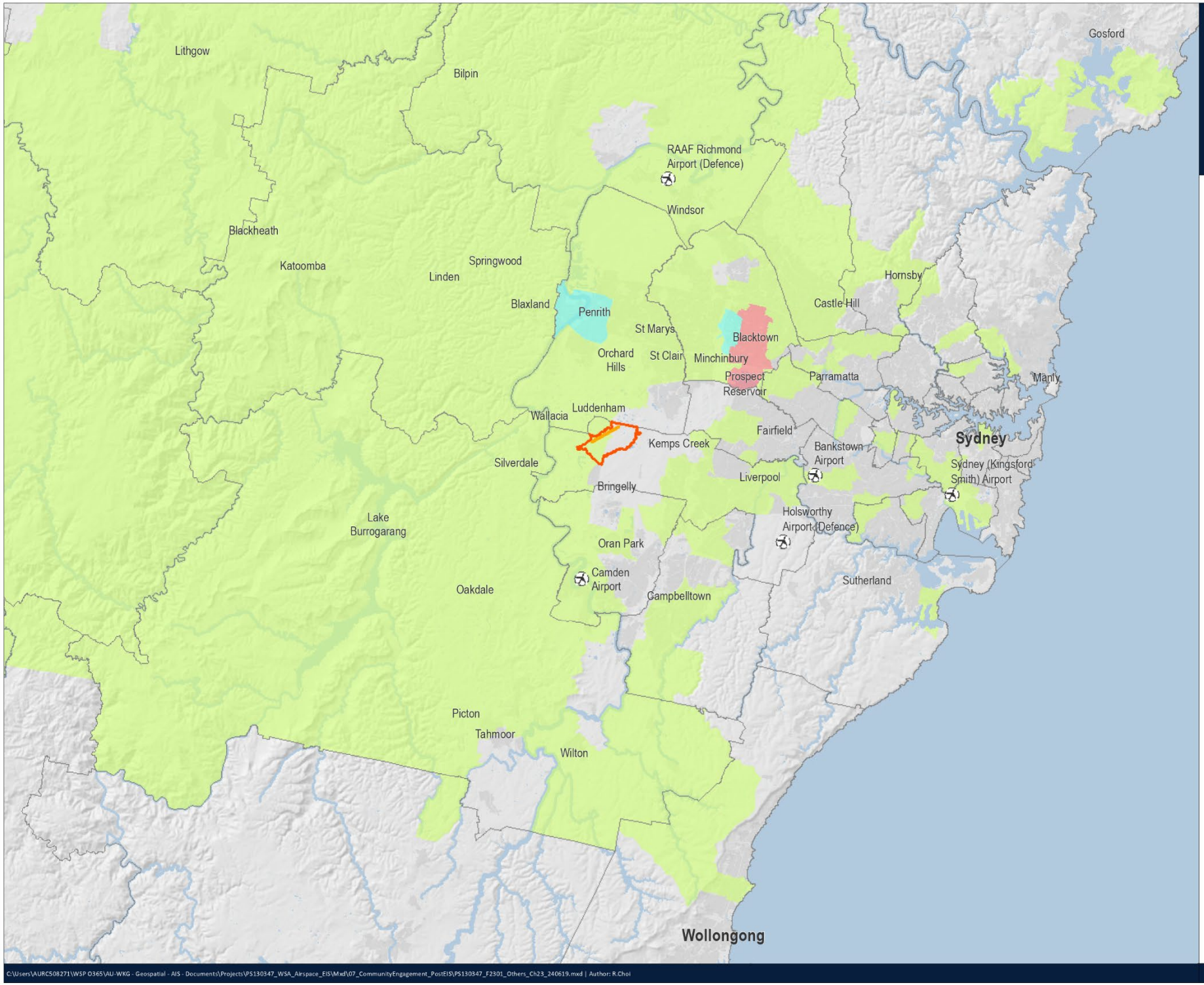


Figure 23.1

Origin of submission raising issues captured under Chapter 23 of this Submissions Report

Legend

- WSI Runway
- Western Sydney International (Nancy-Bird Walton) Airport land boundary
- Local Government Area

Number of submissions by postcode

- 1 - 50
- 51 - 100
- 101 - 150
- 151 - 200
- 201 - 250
- 251 - 300
- 301 - 350
- 351 - 400
- 401 - 450
- 451 - 500
- 501 - 550
- More than 550

0 5 10 km

Coordinate system: GDA 1994 NSW Lambert

Scale ratio correct when printed at A4

1:600,000 Date: 20/06/2024

Data sources: - DITRDC, DCS, Geoscience Australia
Esri, HERE, Garmin, (c) OpenStreetMap contributors, and the GIS user community
Airbus,USGS,NGA,NASA,CGIAR,NCEAS,NLS,OS,NMA,Geodatastyrelsen,GSA,GSI and the GIS User Community

23.1.2 Key issue breakdown

A breakdown of the sub-issues within this key issue and the percentage of total submissions that raised each of these sub-issues is outlined in Table 23.1.

Table 23.1 Breakdown of sub-issues raised in relation to other issues or out of scope issues

Sub-issue	Number of submissions that raised the sub-issue	Percentage of submitters that raised the sub-issue
General opposition to WSI or the project	383	5%
Stage 1 Development	594	7%
Other WSI queries	9	<1%
Out of scope issues	122	1%
Website matters	11	<1%

Of the submissions relating to the Stage 1 Development of WSI, 75 per cent of submissions originated from the Central City District. The Western City District (including the Blue Mountains) accounted for only 16 per cent of the submissions raising this sub-issue.

In contrast, around 39 per cent of the submissions that expressed general concern with WSI originated from the Western City District (Blue Mountains only) and 25 per cent from the Western City District (excluding Blue Mountains. Only 7.5 per cent of submissions raising this sub-issue originated from the Central City District.

For issues categorised as out of scope, they were raised at relatively similar frequencies across Western City District (Blue Mountains only), the Western City District (excluding Blue Mountains), the Central City District and the Eastern City District.

For submissions concerning general queries or the functionality of the Online Community Portal, submissions were raised by various districts.

23.2 General opposition to WSI or the project

23.2.1 General concerns

23.2.1.1 Issue raised

Raised by

Community, Blue Mountains City Council, Glenbrook Chamber of Commerce, Rainforest Conservancy Council, Residents Against WSA Inc (RAWSA), Varuna – The National Writers House, Wollondilly Shire Council

Issue

A number of submissions expressed objections to the project and/or WSI generally. It was suggested that the project should be abandoned.

Submissions were critical that WSI was proceeding despite opposition from the community, local councils, and/or elected representatives. Submissions also criticised the position or action taken by local councils or elected representatives concerning WSI.

Other submissions stated that WSI must be domestically owned and operated to ensure the local economy benefits, or to ensure environmental impacts are appropriately managed and minimised.

23.2.1.2 Response

The objections to the project and/or WSI generally are noted. The need and justification for the project and WSI has been set out in the 2016 EIS and the Draft EIS. This is discussed further in Chapter 4 (Strategic need and justification) of this Submissions Report.

Issues or concerns about the position or action taken by local councils or elected representatives has been considered but is not a matter for this Submissions Report.

23.3 Stage 1 Development

23.3.1 Approval and impacts of the Stage 1 Development

23.3.1.1 Issue raised

Raised by

Community, Luddenham Progress Association Inc, Mulgoa Valley Landcare Group Inc, RAWSA, Social Justice Committee – Holy Spirit Catholic Church St Clair, Susan Templeman MP – Member for Macquarie (Federal)

Issue

Submissions stated that the runway should have been built in a west-east direction to allow for aircraft to travel directly towards the coast and limit flight paths above Western Sydney and the Blue Mountains.

Submissions were critical of the approval pathway for the Stage 1 Development, specifically that it was not subject to the *Environment Protection and Biodiversity Conservation Act 1999* (Cth) (EPBC Act). Submissions made comment on the engagement completed on the 2016 EIS specifically that it was inadequate or lacked genuine engagement.

Submissions stated that noise disturbance, water contamination and light pollution from WSI construction and ground operation is not acceptable and should be mitigated as much as possible to protect both residents, endangered ecological communities and the Greater Blue Mountains Area (GBMA). Submissions expressed concern the construction of WSI would worsen the urban heat island effect in Western Sydney and that this was not considered in the Draft EIS. Submissions questioned if appropriate monitoring of Stage 1 impacts have been conducted.

Submissions criticised the reliance on offsets for the impacts associated with the Stage 1 Development given the land designated as offset sites are already protected.

23.3.1.2 Response

The potential impacts due to the construction and operation of WSI were a key consideration in the approval process of WSI in 2016 . The approval of the Stage 1 Development was in accordance with the *Airports Act 1996* (Cth) and met the requirements of the EPBC Act. The approval of the Stage 1 Development is beyond the scope of this project and the Draft EIS.

The runway alignment was considered in the 2016 EIS process, which evaluated the safety, efficiency, and viability of the design of the airfield geometry and runway orientation. Matters concerning this design, the environmental impacts and the environmental management of the Stage 1 Development is beyond the scope of the project. The runway orientation and length, and the location of runway taxiway entries and exits were set following the 2016 EIS process.

The 2016 EIS and conditions of the Airport Plan identified the requirements that must be met to manage the effects of the construction of WSI and ground-based operations. Enquires or concerns about construction related activities are to be directed to WSA Co on 1800 972 972 or via email (info@wsaco.com.au).

Biodiversity offsets for the Stage 1 Development of WSI were also a major consideration in the 2016 EIS process. The biodiversity offsets package for the Stage 1 Development as detailed in the Biodiversity Offsets Delivery Plan was determined in consultation with the Biodiversity Experts Group and was approved by the former Department of Environment and Energy (now Department of Climate Change, Energy, the Environment and Water) in 2018. In accordance with the EPBC Act Environmental Offsets Policy (DSEWPaC, 2012), a minimum of 90 per cent of required offsets are required to be 'direct offsets' such as securing the management and conservation of equivalent sites, purchasing offset credits from existing sites or the acquisition of land. Direct offsets for WSI have included securing a conservation area within the Defence Establishment Orchard Hills site and the ongoing management of this land, as well as the purchase of biodiversity credits generated by the Biodiversity Stewardship Agreement sites.

23.3.2 Airport infrastructure

23.3.2.1 Issue raised

Raised by

Community, Social Justice Committee – Holy Spirit Catholic Church St Clair, Stephen Bali MP – Member for Blacktown (NSW)

Issue

Submissions expressed concern about the potential impacts associated with the transport of aviation fuel by heavy vehicles to the Airport Site. This includes road traffic noise, road network performance, air emissions and road hazards. It was suggested that aviation fuel should instead be transported via a pipeline or rail.

Submissions stated the construction of WSI should have included a waste disposal facility to minimise offsite storage of waste.

23.3.2.2 Response

The development and implementation of a fuel pipeline to WSI or waste management at WSI is beyond the scope of the project. The delivery of fuel to WSI was considered in the 2016 EIS which found that the traffic from fuel delivery trucks would be minimal compared to volumes generated by other airport activities.

WSA Co Ltd is not responsible for developing fuel infrastructure outside the Airport Site. In accordance with Condition 28 of the Airport Plan, a review into fuel supply options to WSI was completed by WSA Co Ltd in consultation with Transport for NSW. The review made several recommendations, including that the NSW Government should prioritise the facilitation of one or more pipeline corridors from potential ports to WSI, that governments should undertake periodic reviews to determine if there is a case for incentivising the construction of a pipeline, and that any such pipeline should have open access to facilitate competition and commercial outcomes. The full report is available at https://westernsydney.com.au/sites/default/files/2023-05/WSI%20Review%20of%20Aviation%20Fuel%20Supply%20Options%202023.pdf.

Waste generated by the construction and/or operation of the Stage 1 Development was covered in the 2016 EIS.

23.4 Other WSI queries

23.4.1 General

23.4.1.1 Issue raised

Raised by

Community, Aeria Management Group, Penrith City Council, General Aviation Advisory Network, Sydney Airport Corp Ltd

Issue

A number of miscellaneous questions or comments were made in submissions relating to WSI or the project, specifically:

- if negotiations with the Department of Defence have occurred to allow current and future WSI commercial aircraft to use restricted airspace over the Richmond RAAF Base and Defence Establishment Orchard Hills, and the outcomes of this engagement
- if contracts have been signed with airlines and other service providers for WSI, or suggestions for a specific route to be served
- concern that future use of electric aircraft could present as a hazard
- concern that aircraft on the proposed flight paths would impact wireless phone and internet signals
- whether there are measures in place to prevent diversion of flights to WSI if Sydney (Kingsford Smith) Airport is impacted by weather or operational matters
- if flights would occur between WSI and Sydney (Kingsford Smith) Airport, and if so, then these should be assessed. This included concern that the Draft EIS did not address the likely demand for rotorcraft operations to and from WSI and their intersection with the Bankstown control zone, on the basis that there would be demand for rapid movement between WSI and Sydney (Kingsford Smith) Airport over time
- that access for remotely piloted aircraft systems (RPAS) and advanced air mobility (AAM) aircraft to the subject airspace will be required, and/or that this would increase congestion in the Sydney Basin.

Penrith City Council supplied a number of written representations made to council regarding the project by individuals or organisations and requested that these issues be considered by the Department of Infrastructure, Regional Development, Communications, and the Arts (DITRDCA).

23.4.1.2 Response

Queries on the current negotiations between the Department of Defence and WSA Co have been noted. The Department of Defence has participated in the Expert Steering Group ESG for the project, which has overseen the planning and design process. In line with the preliminary airspace design principles set in the Airport Plan, the project has been designed with consideration of national security and to provide a viable future access capability. Issues concerning interaction with restricted airspace with the project design have been outlined in Chapter 6 (Project development and alternatives) of the Draft EIS.

As announced in June 2023, Qantas and Jetstar have signed agreements with WSA Co Ltd for domestic flights from WSI, and Memorandums of Understanding have been entered into with Virgin Australia and other major international airlines. These discussions are continuing.

While concerns regarding the potential hazards of electric aircraft are noted, this matter is not within the scope of this project. The expected timetable for new generation aircraft that use electric and hydrogen powered propulsion systems to enter global fleets remains uncertain and years away from application at scale.

While DITRDCA notes that communities may be concerned with Wi-Fi signal inference, this issue is not considered to be within the scope of the Draft EIS. However, DITRDCA is not aware of any correlation between aircraft overflights and Wi-Fi interference.

Further, the Civil Aviation Safety Authority (CASA) is working with the aviation industry and the Australian Communications and Media Authority (ACMA) to ensure aviation safety during the introduction of the expanded 5th generation (5G) mobile network in Australia. This includes measures to mitigate potential interference from 5G to radio altimeters. There have been no recorded incidents in Australia of wireless broadband systems interfering with radio altimeters.

Concerns of potential aircraft movement between WSI and Sydney (Kingsford Smith) Airport have been considered. There are no proposed flight paths between WSI and Sydney (Kingsford Smith) Airport, as these airports would operate independently. In the event of an emergency or if weather conditions prevent airport operations, air traffic control and pilots would manage arriving aircraft in accordance with standard safety and operational procedures by placing aircraft in holding patters or diverting them to a suitable alternative airport. Sydney Airport Corporation Ltd is responsible for managing aircraft arrivals in line with the *Sydney Airport Curfew Act 1995* (Cth) and the associated regulations.

Concerns regarding the increased use of RPAS and AAM have been noted. However, this issue is beyond the scope of the project. RPAS are currently subject to the *Civil Aviation Safety Regulations 1998* (Cth) and Part 101 Manual of Standards (MOS), and AAM is an emerging form of aviation. The *National Emerging Aviation Technologies Policy Statement* (DITRDC, 2021b) (NEAT Policy Statement) (DITRDC 2021b) sets out the Australian Government's commitments in supporting the continued development of the RPAS and AAM sectors in Australia. A key initiative of the NEAT Policy Statement (DITRDC, 2021b) is CASA's *RPAS-AAM Strategic Regulatory Roadmap* (CASA, 2022) which outlines the approach to safely integrate these technologies into the Australian airspace and regulatory system. The road map is complemented by other initiatives such as Australia's Future Airspace Framework. Until the completion of these initiatives, the current regulations and standards that guide airspace and flight path design remain in place.

The individuals or organisations that made representations to Penrith City Council had also made submissions direct to DITRDCA. These issues have been captured in this Submissions Report.

23.5 Out of scope issues

23.5.1 Long term development at WSI

23.5.1.1 Issue raised

Raised by

Community, Camden Council, Penrith City Council

Issue

A series of submissions suggested that the assessment of the impacts of the flight paths should be based on assessment of the full potential scale of WSI (i.e. 2 runways) rather than assessment of single runway operations (up to around 2055). It was argued that the exclusion of the flight path design for the final stage of the airport's development (i.e. second runway operations) presented a critical deficiency in assessing impacts to current and future communities, or impacts to general aviation. It was stated that potential impacts, post 2055, with the opening of the second runway must be included in the current EIS.

Submissions identified that future assessment should consider all of the same factors considered in the Draft EIS, including some stakeholders that requested to be part of consultation for any future assessment should WSI seek to operate an additional runway or increase the number of air traffic movements beyond those considered in the Draft EIS.

23.5.1.2 Response

Requests for the impact assessment to include long term development have been noted. However the Draft EIS was prepared to meet the requirements of the Airport Plan. The Airport Plan states that the 'Infrastructure Department and Airservices Australia will undertake a comprehensive airspace planning and design process for single runway airport operations. The Airport Plan also authorises the construction and operation of the Stage 1 Development of WSI, which includes a single runway.

While the need and justification of a second runway at WSI was considered as part of the 2016 EIS, this matter is not within the scope of this project. The introduction of parallel runway operations at WSI would require a substantial review of airspace arrangements across the Sydney Basin. A second parallel runway is not expected to be required until 2055 when single runway operations approach capacity at around 37 million annual passengers and around 226,000 air traffic movements per year. It is not feasible, and would be potentially misleading, to show and assess with a reasonable level of accuracy the likely airspace arrangements that might be implemented after this timeframe. For example, currently unforeseen developments in navigation technologies and aircraft performance have the potential to strongly influence the options that are available for designing and operating flight paths several decades into the future. Accordingly, the flight paths presented in the EIS have been designed for current aircraft operations and the anticipated operational requirements for single runway operations through to 2055.

Any project to introduce additional runway operations and associated flight paths would be subject to further formal environmental assessment and community consultation at that time in accordance with requirements under the *Airports Act 1996* (Cth), and EPBC Act (or their equivalents at the time of assessment). It is likely that these requirements would be similar to the current factors considered in the Draft EIS, including the need for extensive consultation with the community and relevant stakeholders.

23.5.2 Traffic and transportation

23.5.2.1 Issue raised

Raised by

Community, Blue Mountains City Council

Issue

Submissions raised concerns that WSI would generate traffic and congestion along motorways and other roads in Western Sydney during the construction and operation of the Stage 1 Development. This was attributed to heavy vehicles transporting freight, light vehicles associated with airport workers, passengers and crew travelling to/from WSI, or population growth within the aerotropolis precinct, in addition to the increase in tourism to the Blue Mountains. Submissions stated that this increase in traffic, particularly along motorways, would exacerbate noise and air quality impacts.

Submissions criticised the provision of transport links to/from WSI. Submissions requested investment in road and rail infrastructure in Western Sydney in response to these future demands (including freight transport by rail), and that investment in public transport infrastructure should be prioritised to limit impacts on the road network and to improve connectivity to WSI. Submissions stated that increased connectivity would improve house prices in the region.

Submissions raised concerns about recent funding decisions for transport infrastructure in Western Sydney.

Other submissions criticised or made comment on the design of Western Sydney Airport Metro.

23.5.2.2 Response

Impacts on the road network due to the construction and operation of the Stage 1 Development were detailed in the 2016 EIS and is beyond the scope of this project. Cumulative impacts were considered in Chapter 22 (Cumulative impacts) of the Draft EIS.

The NSW Government is responsible for the delivery of major transport network improvements in support of WSI and the Western Sydney Aerotropolis, which have been jointly funded by the Australian and NSW governments. These projects are detailed in the Western Sydney City Deal (2018) and the Western Sydney Infrastructure Plan (DITRDCA, 2018). The NSW Government has also released its 30-year strategic vision for integrated transport outcomes for the region in Connecting the Western Sydney Airport Precinct (Transport for NSW 2023).

Under these policies, a number of road network improvements have already been delivered in the region and the Sydney Metro-Western Sydney Airport and the M12 Motorway are set to be open alongside WSI in 2026 (refer to Section 22.3 of the EIS for details on these projects). The delivery of infrastructure in this region will be staged to meet the evolving needs of the precinct in line with available funding. The Australian Government has invested around $3.5 billion into the Western Sydney Infrastructure Plan in support of improving transport in the Western Sydney region, and announced a further $1.9 billion of funding towards Western Sydney transport projects in May 2024 (DITRDCA, 2018).

Comments on the design of the Sydney Metro-Western Sydney Airport are noted. However, these matters are beyond the scope of this project. Further information can be found at https://www.sydneymetro.info/westernsydneyairportline.

23.5.3 Aerotropolis and Western Sydney development

23.5.3.1 Issue raised

Raised by

Community

Issue

Submissions expressed concern with development in the region associated with the Western Sydney Aerotropolis Precinct Plan. This included issues in connection to increased urbanisation, insufficient provision of open or recreational spaces, vegetation removal and associated biodiversity impacts, and climate change. Submissions stated that the Aerotropolis Precinct Plan would exacerbate the housing crisis as it would worsen affordability, or concern with the cost of providing the required social and built infrastructure to support future populations in the region (including increased taxes). Other submissions stated that more funding is required for health infrastructure such as hospitals to cater to incidences relating to the airport.

23.5.3.2 Response

The 2016 EIS examined how the Stage 1 Development would contribute to the cumulative impacts associated with existing and proposed developments in Western Sydney.

Concerns relating to the development if the Western Sydny Aerotropolis have been considered but are beyond the scope of this project. The NSW Government is responsible for strategic land use planning of the Western Sydney Aerotropolis and its policy for development is set out in the Western Sydney Aerotropolis Plan (NSW DPE 2023b) and State Environmental Planning Policy (Precincts – Western Parkland City) 2020. Issues arising from proposed developments within the precinct is the responsibility of the relevant approval authority when assessing proposed development applications.

The provision of social and built infrastructure in the Western Sydney Aerotropolis is the responsibility of the NSW Government and local councils. To support this provision in addition to traditional funding streams (including funding from the Australian Government), the NSW Government introduced a special infrastructure contribution that developers will need to pay to contribute towards the funding of new State and regional infrastructure in the precinct. This includes transport (active, road and public transport), regional open space, hospitals and community health facilities, multi-use community and cultural facilities, schools and environmental conservation. This is in addition to contributions that developers pay to local councils for local infrastructure.

23.6 Website matters

23.6.1 Website functionality

23.6.1.1 Issue raised

Raised by

Community

Issue

Submissions stated the Online Community Portal had issues including accessibility for non-English speakers, link connection issues for individual chapters, errors when registering for a community event or had issues generating a property report. Submissions stated the digital Draft EIS including maps and videos was not always accessible.

Submissions stated that the online submissions portal to make submissions was inactive on some days.

23.6.1.2 Response

Feedback on the functionality of the Online Community Portal have been considered. Issues when identified with the Online Community Portal or online Aircraft Overflight Noise Tool were resolved.

All animations and the 4 principal project brochures were translated into the 5 most frequently spoken languages other than English in Western Sydney (Arabic, Hindi, Vietnamese, Simplified Chinese and Tagalog). Key project material, such as brochures, included instructions on how readers could view the brochure in languages other than English and to access the Translating and Interpreting Service (TIS National).

Submissions made via email or post were accepted alongside submissions made through the online submissions portal. The submitters that expressed difficulty in making a submission occurred over a limited window of time and submissions from individuals who made contact with DITRDCA through other channels were received. These submissions are captured in this Submissions Report. Feedback was also taken in person at events where interpreter services were also available.

In addition to this issue, it is noted that in some instances submissions were not uploaded due to submitter error or attachments had corrupted. This occurred in very limited circumstances, and contact was made with submitters to resubmit a submission when contact details had been provided.

Part C
Refinements to the project and conclusions

Chapter 24 Refinements to the project since exhibition

This chapter outlines the refinements made to the project since the exhibition of the Draft EIS, and complements the detail provided in Chapter 7 (The project) of the finalised EIS.

This chapter is intended to assist the community, government agencies and the approval authority to understand the changes proposed.

The assessment of the associated environmental impacts of the preliminary flight path refinements is presented in the finalised EIS, including Appendix G (Assessment of the refinements to the project).

24.1 Description of proposed refinements

24.1.1 Overview

A series of refinements to the preliminary flight paths have been identified as part of ongoing development and following submissions received during the public exhibition of the Draft EIS. These refinements provide functional improvements to the preliminary flight path designs and can be safely implemented within the existing and proposed airspace.

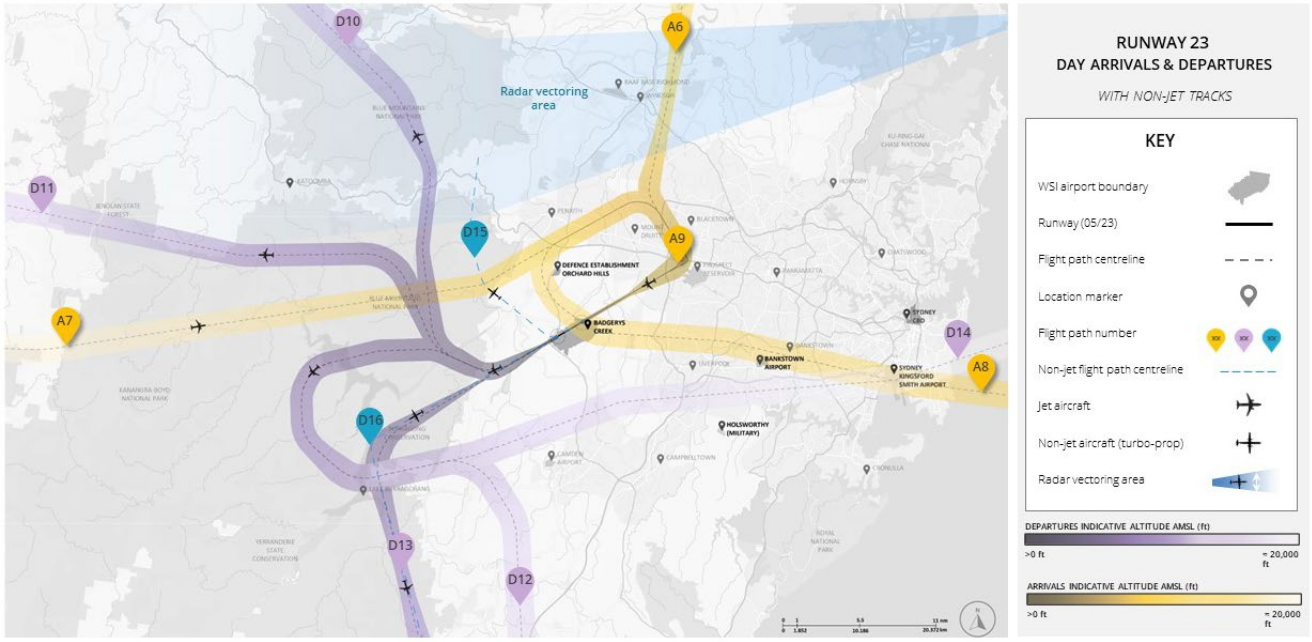
The proposed refinements to the preliminary flight path designs as described in the finalised EIS are collectively referred to in this report as the 'revised flight path designs'. The key refinements proposed are:

- minor refinement to preliminary flight path D10 to provide a more westerly alignment north of Linden (refer to Section 24.1.2)
- removal of Required Navigation Performance – Approval Required approach (A13) south of Linden (refer to Section 24.1.3)
- minor refinement to preliminary flight path A21 (RRO night approach to Runway 05) to provide a more southerly alignment (refer to Section 24.1.4)
- refinements to the RRO runway mode of operation (refer to Section 24.1.5) as follows:
  - the withdrawal of preliminary flight path D28 for jet operations and the reallocation of those aircraft to preliminary flight path D32 (refer to Section 24.1.5.1)
  - the introduction of a new RRO mode noise abatement procedure (RRO-NAP) (refer to Section 24.1.5.2).

24.1.2 Mt Tomah, Mt Wilson and Mt Irvine

The proposed change would realign a section of the daytime northern jet departures preliminary flight path Runway 23 Departure North Day (preliminary flight path 10) further away from the Mt Tomah, Mt Wilson and Mt Irvine areas. The new alignment would be located to the south and west of the preliminary flight path presented in the Draft EIS and, at the widest point of realignment, be up to around one nm (2 km) further west than the preliminary flight path presented in the Draft EIS.

The realignment would commence from a point over one nm (around 2.5 km) north of Linden (where flights would be at an altitude of around 11,000 ft (3.4 km)) and merge back to the preliminary flight path generally to the east of Lidsdale at around 18,000 ft (5.5 km) (refer to Figure 24.1 (Draft EIS) and Figure 24.2 (refined flight path)).



Source: Draft EIS Figure 7.8

Figure 24.1 Mt Tomah, Mt Wilson and Mt Irvine preliminary flight path as presented in the 2023 Draft EIS

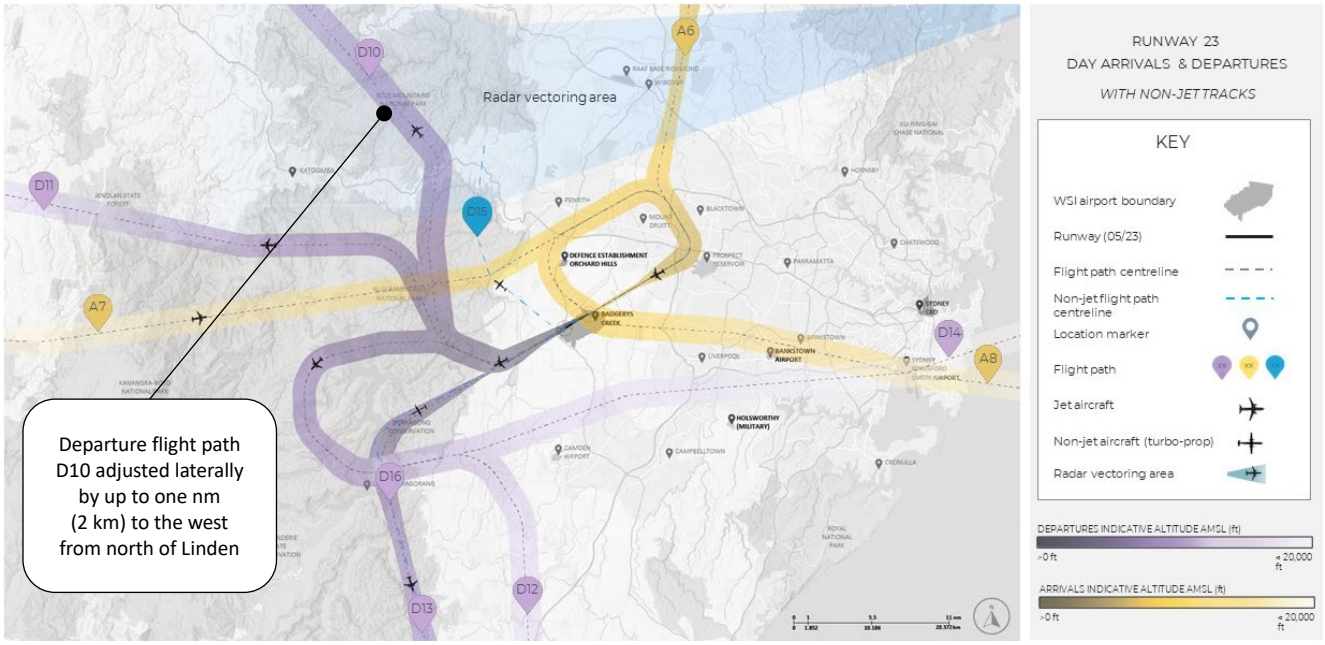


Figure 24.2 Mt Tomah, Mt Wilson and Mt Irvine refined preliminary flight path

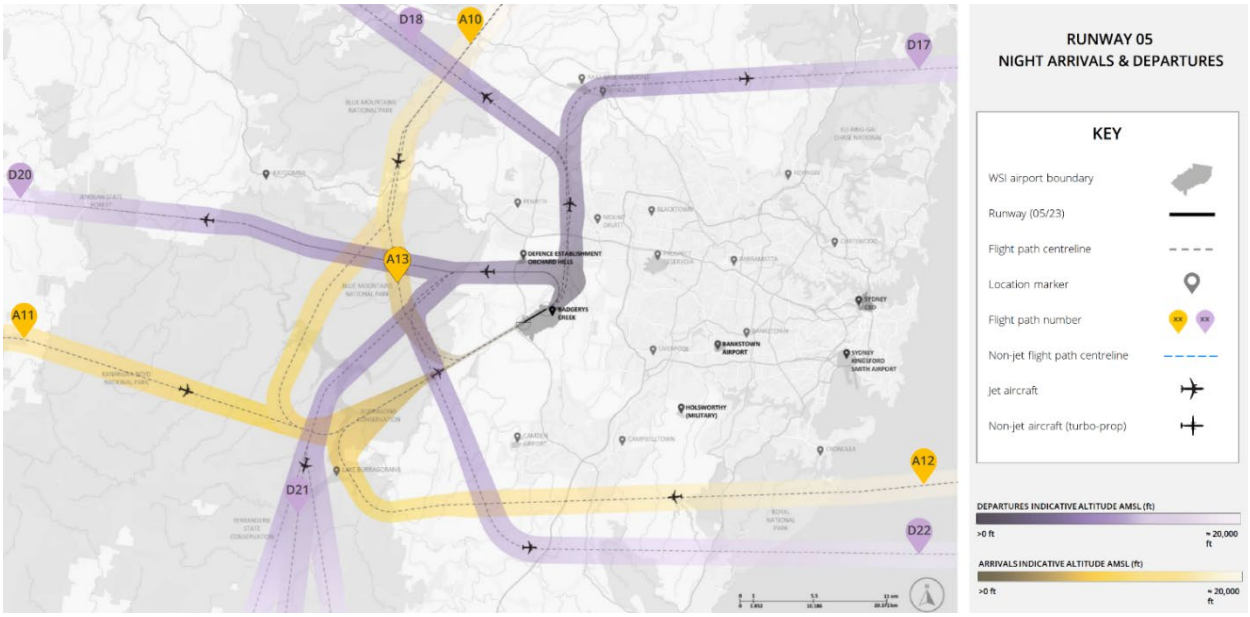
The proposed realignment of the flight path would:

- move the Runway 23 northern jet departures preliminary flight path approximately one nm (2 km) further away from Mt Tomah and 0.9 nm (1.8 km) from Mt Wilson/Mt Irvine residential areas, therefore providing additional lateral distance between the preliminary flight path and these communities
- change the location of the preliminary flight path to provide additional lateral separation between the preliminary flight path and the Emu Cave Aboriginal Place site
- not increase the required fuel burn from aircraft (due to increased flight length) or reduce airport efficiency compared to the preliminary flight path presented in the Draft EIS.

24.1.3 Required Navigation Performance – Approval Required approach

The proposed change would remove the Required Navigation Performance – Approval Required (RNP AR) preliminary flight path (Runway 05 Arrival (RNP) North Night – preliminary flight path A13) identified in the Draft EIS during night time periods (refer to Figure 24.3). Flights approaching WSI would instead utilise the alternative preliminary flight path A10 as presented in the Draft EIS (refer to Figure 24.4).

Removal of the RNP AR approach flight path at night would result in an increase in the altitude of aircraft which fly over the residential areas on this approach. In particular, removal of the RNP AR approach flight path and use of the Runway 05 Arrival North Night flight path (preliminary flight path A10) would result in all aircraft on this approach path flying over Linden and Woodford at a height of around 12,000 ft (3.7 km) rather than around 5,000 ft (1.5 km), which would occur on the proposed RNP AR approach flight path as described in the Draft EIS.



Source: Draft EIS Figure 7.9

Figure 24.3 Required Navigation Performance – Approval Required as presented in the 2023 Draft EIS

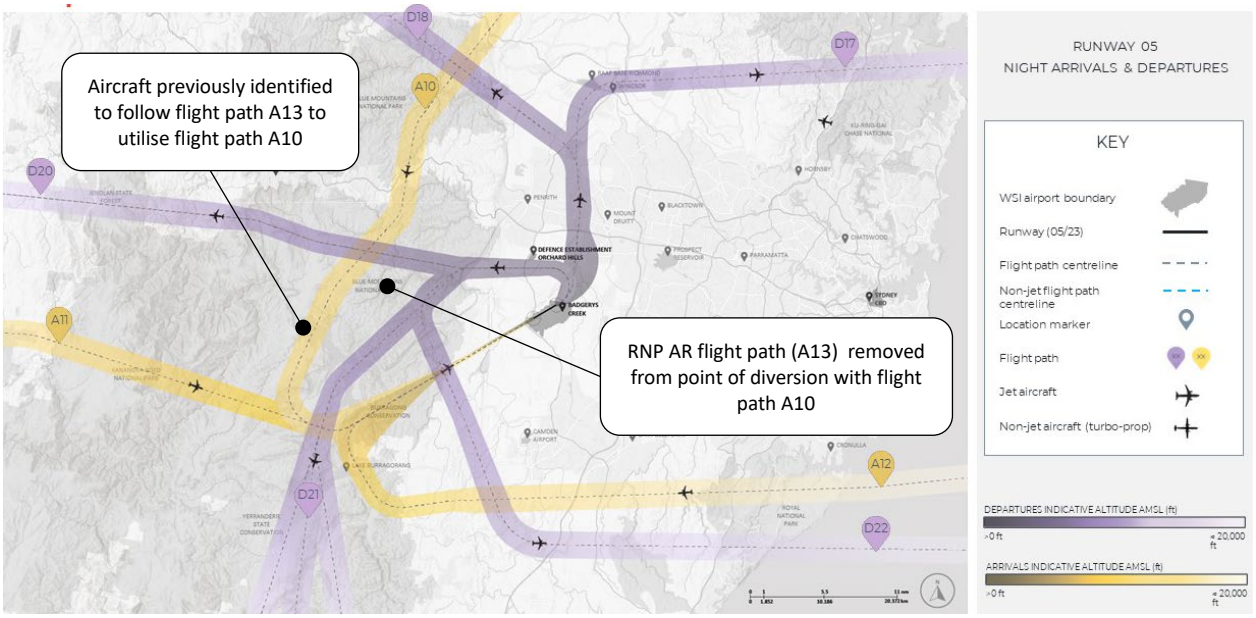


Figure 24.4 Required Navigation Performance – Approval Required approach removal

The proposed removal of the RNP AR flight path would:

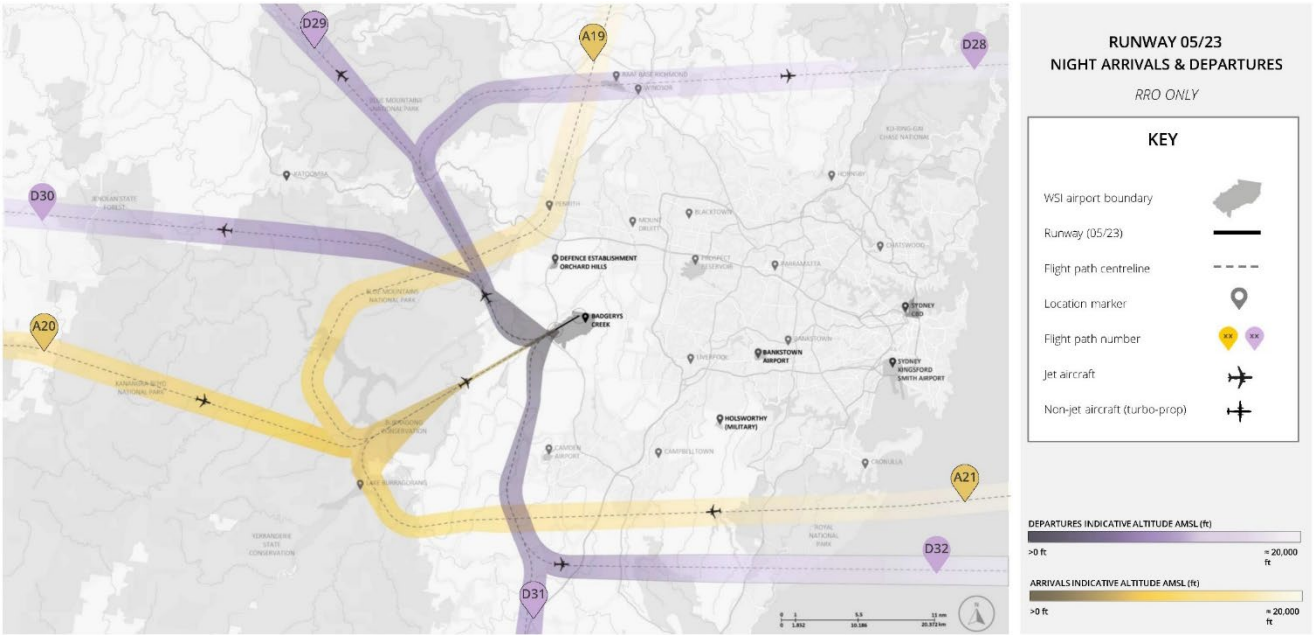
- result in a measurable noise benefit to the communities of Linden and Falconbridge when RNP AR capable aircraft are approaching Runway 05 at night
- allow aircraft passing over the Linden observatory to pass this location at a higher altitude, reducing the extent of visual intrusion to this site
- result in reallocation of aircraft to preliminary flight path A10, resulting in a minor increase in fuel burn for RNP AR capable aircraft at night.

24.1.4 RRO night approach to Runway 05 (Arrival East)

The proposed change would move the Runway 05 Arrival East Night flight path (preliminary flight path A21) that approaches WSI from the east around 0.8 nm (1.5 km) further south at the point where it crosses the coastline south of Bundeena. Arriving aircraft at the point south of Bundeena would be at an altitude around 15,000 ft (4.5 km) (refer to Figure 24.5 (Draft EIS) and Figure 24.6 (refined flight path)).

The revised flight path would continue to provide separation between the arrival (A21) and departure (D22) preliminary flight paths. The realigned preliminary flight path would merge with the preliminary flight path at a point near the suburb of Mount Hunter (at an altitude of around 9,000 ft (2.7 km)). From this point, the revised flight path would continue to WSI along the same flight path alignment as presented in the Draft EIS (A21).

The proposed refinement to the flight path would result in a series of benefits compared to the preliminary flight path presented in the Draft EIS. The proposed refinement would reduce the level of direct community overflight to communities such as Bundeena.



Source: Draft EIS Figure 7.11

Figure 24.5 RRO night approach to Runway 05 preliminary flight path as presented in the 2023 Draft EIS

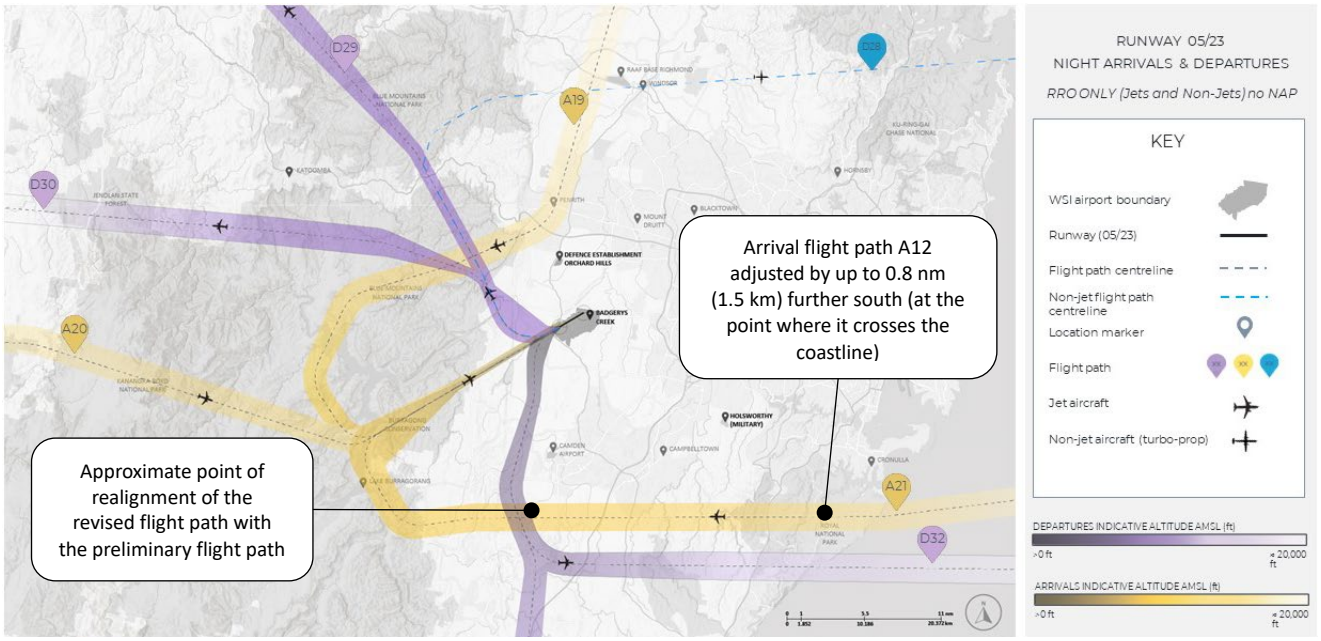


Figure 24.6 RRO night approach to Runway 05 refined preliminary flight path

24.1.5 Refinements to the RRO mode of operation

Changes have been proposed to the preliminary flight paths that aircraft will follow during RRO. The preliminary RRO flight paths presented in the Draft EIS showed departures from WSI would turn at an altitude as soon as safely possible after take-off to allow for maximum separation with other RRO arriving aircraft (refer to Figure 24.7). This would allow air traffic control to maximise the use of the RRO mode of operation. These preliminary flight paths would continue to be used when required. The proposed changes to the RRO procedures and preliminary flight paths have sought to further improve community outcomes and would be implemented when it is safe to do so and when traffic permits.

24.1.5.1 East flight paths

This change would discontinue use of the Runway 23 Departure Northeast Night (RRO) flight path (preliminary flight path D28) for jet aircraft. All traffic previously assigned jet aircraft along the Runway 23 Departure Northeast Night (RRO) flight path would be redistributed to the Runway 23 Departure Southeast Night (RRO) (preliminary flight path D32). The reassigned traffic includes all eastern departures to destinations in New Zealand, Pacific Island countries and the USA.

The change to the Runway 23 Departure Northeast Night (RRO) preliminary flight path would not affect non-jet aircraft which would continue to use this flight path (refer to Figure 24.8).

24.1.5.2 North and west flight paths

This change would include the introduction of a new night-time (11 pm to 5:30 am) RRO noise abatement procedure (RRO-NAP). Under the proposed new RRO-NAP, northbound and westbound departure aircraft will maintain the Runway 23 straight ahead runway heading (230 degrees) flight path for approximately 5 nm (9.3 km) rather than immediately turning as soon as safely possible. This would result in avoiding overflights of communities as much as possible, including Wallacia and Mulgoa. However, the RRO-NAP would result in additional overflight of parts of Silverdale and Warragamba.

Once past 5 nm (9.3 km) air traffic control would radar vector northern and western jet aircraft to their outbound tracks along a more southern route than the preliminary flight paths shown in the Draft EIS. Jet aircraft will be processed along a revised flight path south of the Great Western Highway avoiding communities and other noise sensitive areas such as the Greater Blue Mountains Area (GBMA), to the extent practicable (refer to Figure 24.8). Non-jet aircraft proceeding west will also follow this path.

Non-jet aircraft proceeding north, after turning right at 5 nm (9.3 km), will be directed to join the preliminary Runway 23 Departure North Night (RRO) flight path (preliminary flight path D29). The expected number of non-jet aircraft operations to/from WSI in the night period (11 pm to 5:30 am) is expected to be extremely low.

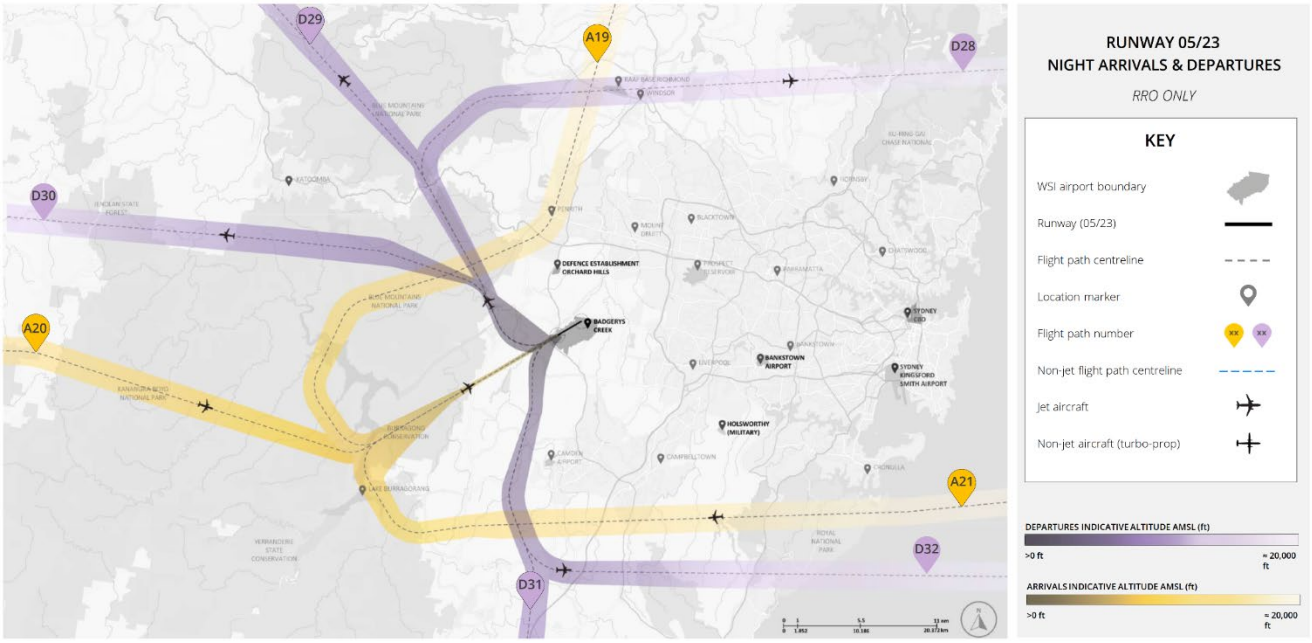
The RRO-NAP would only be able to operate during certain light traffic (low aircraft number) conditions. When night-time traffic demand exceeds around 12 movements per hour, air traffic would revert back to normal RRO departure procedures as presented in the Draft EIS. This mode is expected to be available where the departure is rolling on its take-off roll, and the inbound aircraft is at or beyond 30 nm (56 km) resulting in a 10-minute separation between any departure and a subsequent arrival movement. Air traffic control may actively manage aircraft sequencing to create this 30 nm (56 km) gap between arrivals. Similar to normal RRO operations this throughput rate may vary when the demand is not balanced and a bias towards either departures or arrivals exists.

As overnight aircraft traffic increases, flight operations will increasingly need to use the published RRO standard instrument departure (SID) flight paths as presented in the Draft EIS, to ensure RRO use is retained (within the existing parameters of the RRO mode).

The proposed change offers alternative departure flight paths to aircraft travelling north and west during the RRO mode. These 2 new tracks are only available when traffic permits, as described above, and are direct alternatives to departure flight path D29 (Runway 23 Departure North Night (RRO)) and departure flight path D30 (Runway Departure West Night (RRO)) (refer to Figure 24.7). The proposed RRO-NAP flight paths and procedure changes would only apply to west, north, and north-west departure operations.

The flight paths depicted are indicative. Air traffic control (ATC) will radar vector aircraft along paths similar to these tracks as indicated by the shaded area in Figure 24.8.

With respect to aircraft movements, the RRO-NAP is expected to be able to divert up to around 80 per cent of movements away from the northbound tracks in the RRO runway mode of operation initially (2033). As demand grows, this ratio is expected to decrease to up to around 40 per cent of movements by 2055.



Source: Draft EIS Figure 7.11

Figure 24.7 RRO flight paths as presented in the 2023 Draft EIS

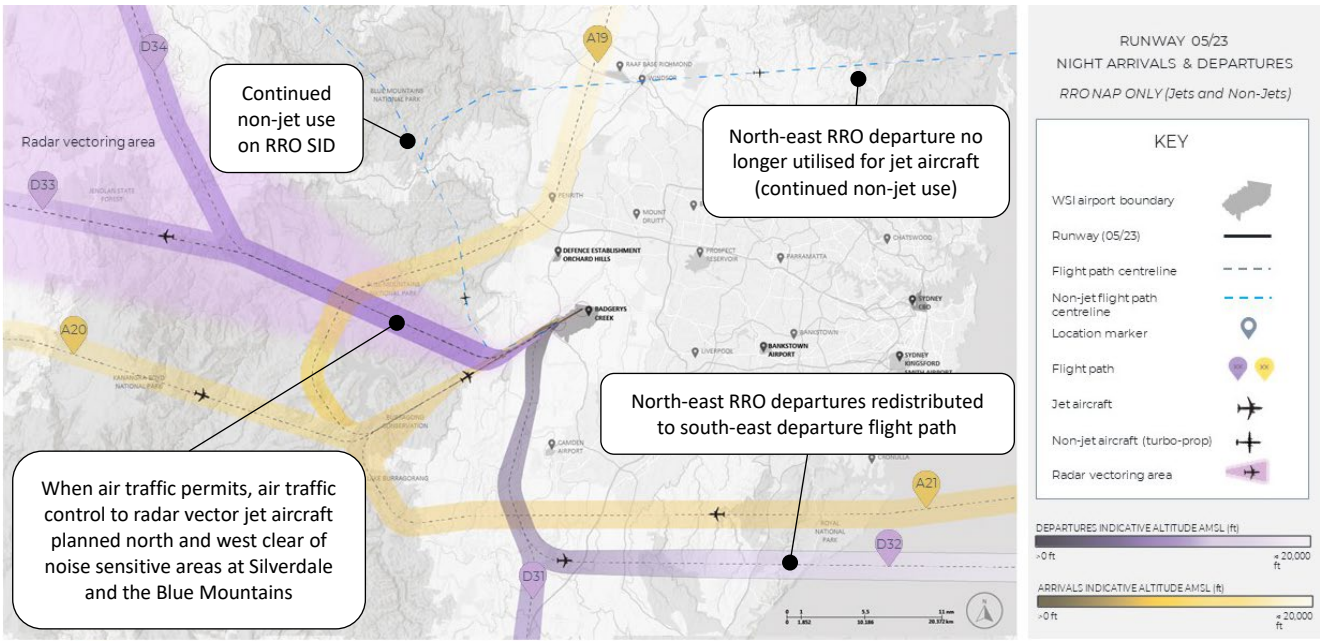


Figure 24.8 Refined RRO runway mode of operation flight paths, RRO-NAP and proposed radar vectoring area

Overall, the proposed change to RRO procedures is focussed on reducing to the extent practicable, 'severely impacted' areas identified in the Draft EIS. The proposed refinement is aimed at reducing the number of aircraft overflights of these communities and sensitive sites, improving the aircraft visual amenity and noise impacts during night hours (11 pm to 5:30 am).

24.2 Engagement on the proposed refinements

In August 2024, the Department of Infrastructure, Regional Development, Communications, and the Arts (DITRDCA) completed additional targeted engagement with affected communities on 2 proposals to the Reciprocal Runway Operation (RRO) design in the project:

1. Removing the flight path Runway 23 Departure Northeast Night (RRO) for jet aircraft and reallocating those aircraft to the flight path south of WSI (the Runway 23 Departure Southeast Night (RRO) flight path).
2. A RRO Noise Abatement Procedure (RRO NAP) for aircraft travelling to the north and west of WSI.

The proposals were developed in response to submissions received on the Draft EIS. Proposal 1 responded to feedback received from the north-east of WSI and the mid-Blue Mountains. Proposal 2 responded to feedback from residents in Wallacia, Silverdale, and the mid-Blue Mountains.

Given the significance of the 2 proposals, additional environmental assessment was undertaken including aircraft noise modelling. This environmental assessment is set out in Appendix G (Assessment of the refinements to the project) of the finalised EIS.

24.2.1 Consultation approach

The consultation approach follows the principles and objectives set out in the Engagement Plan for the EIS process, focusing on communities that would be most impacted by the proposals. The approach aimed to:

- inform affected communities and key stakeholders about the proposals and consultation process
- explain to affected communities the impact of the proposals and how they differ from the existing RRO design
- encourage people to attend community information and feedback sessions to give feedback
- obtain affected communities' feedback on the proposals to inform consideration on their inclusion in the EIS.

The consultation and awareness raising activities included in Table 24.1.

Table 24.1 Consultation and awareness activities – response to submissions

Activity	Purpose and description
Online Community Portal	The proposals were published online on the morning of 2 August 2024 with: • a brochure explaining the proposals and their noise impacts; and • information posters summarising the proposals and noise impacts with imagery. On the same day, details of the community information and feedback sessions to support the consultation were also published online. Between 29 July 2024 and 1 September 2024, there were 27,708 views of the Online Community Portal.
Stakeholder briefings	The Forum on Western Sydney Airport meeting on 2 August 2024 in Penrith commenced consultation on the proposals, with members receiving a briefing on the proposals, environmental assessment and consultation approach. Following the meeting, DITRDCA shared with members direct links to the information published online, supporting presentation material and social media tiles for the community information and feedback sessions. The supporting presentation material and record of the meeting were subsequently published on DITRDCA's WSI website in September 2024. Briefings on the proposals were also offered to key stakeholders, including affected local Federal and State MPs and local councils. Briefings were accepted by and held with the following MPs: • the Hon. Angus Taylor MP, Member for Hume • Susan Templeman MP, Member for Macquarie • Office of the Prime Minister and Member for Grayndler • Tanya Davies MP, Member for Badgerys Creek • Trish Doyle MP, Member for Blue Mountains • Judy Hannan MP, Member for Wollondilly. Briefings were also accepted by and held with the following local councils: • Penrith City Council • Wollondilly Shire Council.
Information postcard	A letterbox drop was undertaken in communities that would be most affected by the proposals, notifying them of the proposals and how to find out more information. The drop commenced on 3 August 2024. Information postcards were delivered to approximately 10,000 residential and business addresses in the following suburbs: • Wallacia • Warragamba • Silverdale • Greendale • Bringelly • Mulgoa • Theresa Park • Cobbitty • Ellis Lane • Mount Hunter • Faulconbridge • Linden • Woodford • Megalong Valley.

Activity	Purpose and description
Local newspaper notices	Notices of the community information and feedback sessions were published in 3 local newspapers to notify the reader that the proposals had been released and details of the sessions they could attend to find out more and give feedback. The notices were published in the Western Weekender, The District Reporter and the Blue Mountains Gazette.
Social media	Social media ads for the community information and feedback sessions went online from 3 August 2024. Location-specific community information and feedback social tiles were targeted at users from the relevant and surrounding areas.
Community information and feedback sessions	**Online** An online information and feedback session was held on 12 August 2024 with members of the public. 518 people joined the session to hear about the proposals, ask questions and give feedback. DITRDCA sought to answer as many questions as it could during the session, which was recorded and uploaded to YouTube on 15 August 2024. DITRDCA also published a Frequently Asked Questions document responding to the top questions and themes raised during the session online on 30 August 2024. **In-person** DITRDCA held 5 in-person community information and feedback sessions between 14 August 2024 and 24 August 2024. They were held in communities that would be affected by the proposals in locations that were accessible to surrounding areas: • Wallacia (14 August 2024) • Megalong Valley (15 August 2024) • Warragamba (21 August 2024) • Faulconbridge (22 August 2024) • Cobbitty (24 August 2024). A total of 566 people attended these sessions, and 161 pieces of feedback were recorded and registered from these sessions.
Community 1800 number	The community has continued to be able to ask questions via the 1800 line. During the period 2 August 2024 to 2 September 2024 inclusive, the team received 33 calls on the 1800 line. People that called predominantly had queries about the community information and feedback sessions and the proposals. Some calls also involved queries about overall flight paths and noise impact on locations.
Project email	The community has been able to send feedback on the proposals and queries to the project email (wsiflightpaths@infrastructure.gov.au). During the period 2 August 2024 to 2 September 2024 inclusive, the team received 168 email exchanges to the project email. 133 of these contained feedback on the proposals and other matters relating to flight paths. 35 contained queries, which the team responded to.
Email updates	Notifications were sent out via email to key stakeholders, including relevant NSW state agencies, and community members who had signed up to receive email updates about the release of the proposals and consultation.
Ministerial correspondence	During the period 2 August 2024 to 2 September 2024 inclusive, the team also received 36 emails and letters from the public writing to the Minister or to their local member which were registered as feedback.

24.2.2 Collection of feedback

There was no formal submission process for the consultation on the proposals, because this consultation was additional to the formal submission process from 24 October 2023 to 31 January 2024 for the 2023 Draft EIS.

DITRDCA encouraged people to provide feedback on the proposals at a community information and feedback session during August 2024. The flight paths team recorded feedback from attendees at each session, and after each session provided the recorded feedback to DITRDCA for review and consideration. DITRDCA also enabled people to give feedback in writing to wsiflightpaths@infrastructure.gov.au. DITRDCA also received some feedback via ministerial correspondence.

DITRDCA undertook to consider all feedback received at the information sessions in August in reviewing the proposals for inclusion in the finalised EIS. As there was no formal submission process for the consultation, DITRDCA did not place an end date on the provision of written feedback. This is because members of the public are entitled to write to DITRDCA any time. As such, DITRDCA endeavoured to consider written feedback that it received on the proposals. This was communicated to the public and stakeholders in the brochure, in the automated response to all correspondence to the project email, and in stakeholder briefings.

For each feedback received, DITRDCA collated, registered and categorised the feedback based on whether there was feedback on the proposals (proposal 1, proposal 2 or both), the sentiment towards the proposals, and if there was feedback on other issues outside of the proposals.

24.2.3 Feedback received

For the purpose of finalising the EIS, DITRDCA has considered all feedback received at the information sessions in August, and written feedback received between 2 August 2024 and 2 September 2024 inclusive to the project email and by Ministerial correspondence. During this period, DITRDCA collected and registered in total 330 pieces of feedback.

Of the total feedback received, 113 contained feedback on the proposals. Of this number, 83 pieces of feedback supported or partially supported the proposals, or sought more changes. Thirty of the registered feedback objected to the proposals. People from communities that would be expected to experience less aircraft noise in the RRO mode generally supported the proposals, such as Wallacia, Warragamba, north Silverdale and the mid-Blue Mountains. For these people, the feedback received was that the proposals were preferable to the RRO design in the Draft EIS or were an improvement on the original RRO design. For people in communities that would be expected to experience more noise as a result of the proposals in RRO mode, there was a mix of feedback:

- People from the Megalong Valley and some from the upper Blue Mountains, which would be impacted by proposal 2, expressed concern about the impacts including noise, frequency and altitude. Several groups were interested to understand how impacts would be monitored and managed after WSI opens.
- People from south Silverdale, Greendale and Werombi generally preferred the original RRO design in the Draft EIS compared to proposal 2.
- For communities to the south of WSI, people did not express a particular view on the proposals. Most people, including attendees at the Cobbitty CIFS, were more interested in finding out the overall impacts from the flight paths and wanted to understand why proposal 1 was put forward.

DITRDCA also acknowledges that many people, particularly from the Blue Mountains, provided feedback on other matters as they considered the proposals do not address their concerns on the preliminary flight paths. DITRDCA registered 213 pieces of feedback concerning other matters. Most of the feedback in this category sought more changes to reduce or remove flight path impacts, including the application of a curfew to WSI, conducting a review of all flight paths in the Sydney Basin, applying a flight cap, and requesting flights over the Blue Mountains be higher than 30,000 ft above ground level.

People also raised a number of other matters in their feedback, many which mirror the issues that were raised in submissions on the Draft EIS. These included:

- Land use planning: This was most frequently raised by people in communities close to WSI including Silverdale and Werombi. There was frustration from residents who would like to build a secondary dwelling on their property, but are not able to because of planning restrictions.
- Noise insulation: Many people attending CIFS also suggested that eligibility for noise insulation for WSI should be extended beyond what is set out in the draft policy.
- Environmental and health impacts: People expressed concern about aircraft impact on sleep, human health, water catchments, air pollution and wildlife. Blue Mountains communities also expressed concern that the proposals would not alleviate perceived adverse impacts on the Greater Blue Mountains World Heritage Area, including wildlife and biodiversity in the Blue Mountains.
- Consultation: There was also sentiment and feedback from attendees at CIFS that not enough consultation had occurred on the preliminary flight paths. This was raised at Cobbitty, Wallacia and Warragamba CIFS. Some attendees at the Faulconbridge CIFS expressed apathy towards the consultation, suggesting that there has been no consideration of feedback on the Draft EIS because the proposals do not go far enough in addressing people's concerns about flights paths. Many people also expressed disappointment that the online Aircraft Overflight Noise Tool had not been updated to show the proposals.

24.2.4 Response to feedback

On balance of the feedback received, the overall sentiment is that it is preferable to implement the 2 proposals rather than to retain the previous RRO design. As such, the proposals will be adopted as part of the final preliminary flight paths for WSI. Proposal 1 (removing the flight path Runway 23 Departure Northeast Night (RRO) for jet aircraft and reallocating those aircraft to the Runway 23 Departure Southeast Night (RRO) flight path) will be a permanent change to the RRO mode design. Proposal 2 – the RRO NAP – will be a procedure that is implemented by Air Traffic Control when traffic conditions permit and when the RRO mode is available for use.

Overall there will be a lesser impact as a result of the proposals, with lower impacts experienced in Wallacia, Warragamba and the mid Blue Mountains, however there will be some communities that will experience more noise in particular south Silverdale under the noise abatement procedure in RRO mode. It should be noted that the procedure is intended to enable greater noise sharing during the night in the period from 11:00 pm–5:30 am, in addition to a lower overall impact on the community. Communities to the south of WSI including Theresa Park and Mount Hunter are not expected to experience a significant change in the expected aircraft noise levels as one additional jet aircraft is predicted to use the Runway 23 Departure Southeast Night (RRO) flight path in 2033. A maximum of 5 additional jet aircraft are predicted to use this flight path by 2055 when RRO mode is available.

DITRDCA also acknowledges that many people giving feedback sought additional changes to the preliminary flight paths. The development of and engagement on other noise abatement procedures for WSI will be ongoing and the expectation is that Airservices Australia and WSA Co will continue this work during the detailed design phase and into the future. Chapter 24 of the EIS provides a compilation of this and other mitigation measures to minimise and mitigate the potential impacts of the project.

For other matters raised in feedback, these matters are the same issues that were raised in submissions on the Draft EIS. These issues have been separately summarised and responded to in the Submissions Report.

Chapter 25 Conclusion

This chapter provides a conclusion to the Submissions Report and outlines next steps in the approval process.

25.1 Overview

The Draft EIS included a comprehensive assessment of the potential environmental impacts associated with the project, and proposed mitigation measures to address these potential impacts, where appropriate. The Draft EIS was publicly exhibited for 14 weeks between 24 October 2023 and 31 January 2024. An extensive programme of community and stakeholder consultation activities took place during exhibition of the Draft EIS.

In response to the exhibition of the Draft EIS a total of 8,477 submissions were received by DITRDCA, consisting of 8,398 community member submissions and 79 key stakeholder submissions. Of these submissions, less than 0.5 per cent clearly expressed support for the project, 68 per cent clearly expressed an objection to the project, and 32 per cent did not clearly state a position or provided comment only on the project.

25.2 Summary of issues raised

This Submissions Report provides responses to issues raised in submissions received during the exhibition of the Draft EIS. The top 5 key issues identified in submissions are:

- the project, including the proposed flight paths and flight path design, hours of operation, aircraft movements and aircraft type
- aircraft noise, including the impact assessment approach, ambient noise monitoring, the noise impacts of the project (including sleep disturbance), and the mitigation, management and monitoring of aircraft noise
- project development and alternatives, including the preliminary flight path design process, changes since the 2016 EIS and suggested alternatives identified in submissions
- human health, including the impact assessment approach, the human health impacts of the project such as noise (in particular sleep disturbance), air quality and water quality, and the mitigation of these impacts
- social, including impacts of the project on the way of life, surroundings, quality of life, equity, health and wellbeing. Impacts on the Linden Observatory and Dark Skies were also captured under this key issue.

Since the exhibition of the Draft EIS, changes have been made to the project in response to concerns raised by the community and stakeholders, and in response to further development of the project design. The revised flight path designs are described in more detail in Chapter 24 (Refinements to the project since exhibition) of this Submissions Report.

25.3 Next steps

This Submissions Report forms part of the finalised EIS, which will be provided to the Australian Minister for the Environment and Water along with copies of all comments received on the Draft EIS. Following the receipt of the finalised EIS, the Australian Minister for the Environment and Water will provide advice (including any recommended conditions) to the Department of Infrastructure, Regional Development, Communications, and the Arts (DITRDCA), Airservices Australia and Civil Aviation Safety Authority (CASA) under section 163 of the EPBC Act before any approval is given for the airspace design. Airservices Australia will submit the Airspace Change Proposal to CASA for approval. This would need to consider the advice provided by the Australian Minister for the Environment and Water.

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Appendix A

Response to Linden Observatory matters

For consideration in my evaluation and report, the geographic location being considered is:

LOCATION: Linden Observatory, Linden, NSW

ALTITUDE: 526m [1]

LATITUDE: South 33° 42' 28"

LONGITUDE: East 150° 29' 43"

1. Aircraft Footprint of Sky

In considering the impact of aircraft, the Boeing 737 and the Airbus A320 will have the highest volume of flights and thus impact. The Boeing 787 series as a large example of an aircraft is also considered:

Boeing 737-800: 39.5m wingspan [2]

Airbus A320: 37.6m wingspan[3]

Boeing 787-8: 60m wingspan[4]

Boeing 787-10: 68m length[5]

I considered the longest part of the aircraft (length or wingspan) as this axis that will create the largest footprint on the sky.

The three major routes of impact to Linden Observatory are, with the planes altitudes during peak impact:

Runway 23 Day-Evening (D10), Overnight (D23 and D24), and RRO Departure = 3.2km –4.1km

Runway 05 Overnight Arrival (A10, A13) = 4.1km – 1.5km

Runway 05 Day-Evening Departure = 3.2 km – 5.3km

[1] https://en.wikipedia.org/wiki/Linden,_New_South_Wales
[2] https://www.boeing.com/commercial/737ng#Technical%20Specs
[3] https://aircraft.airbus.com/en/aircraft/a320-the-most-successful-aircraft-family-ever/a320ceo
[4] https://www.boeing.com/commercial/787#technical-specs
[5] https://www.boeing.com/commercial/787#technical-specs

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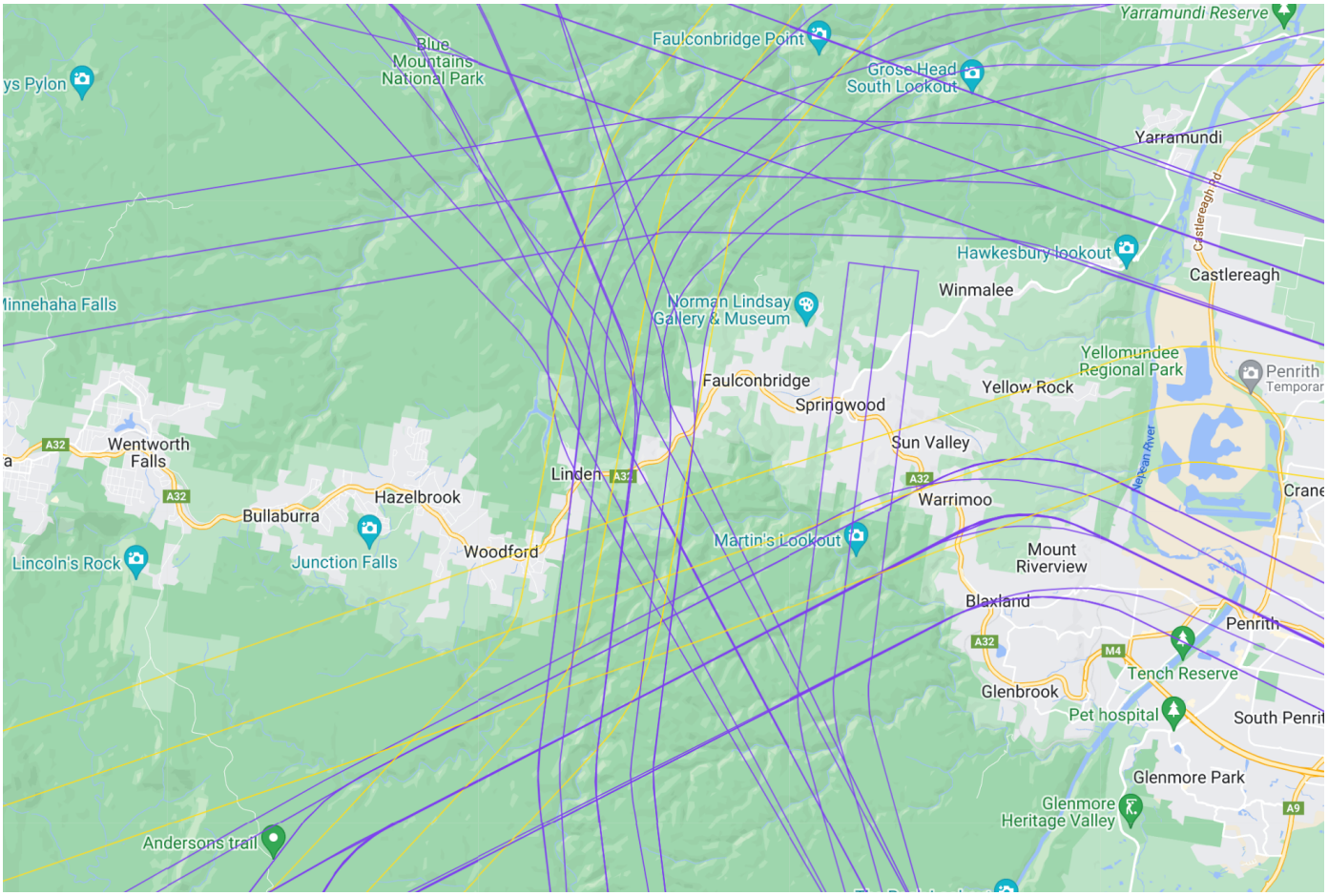

Figure 1. Flight path corridors that can impact Linden Observatory

Noting the altitude of Linden is at 526m, the footprint of the airplanes will need to be the airplane altitude – minus observatory altitude:

Additionally, flights on **Runway 23 Day-Evening (D10), Overnight (D23 and D24), and RRO Departure and Runway 05 Overnight Arrival (A10, A13)** occur directly above (near zenith) of Linden Observatory, flights on **Runway 05 Day-Evening Departure** pass to the north, either at 5km or 9km away at their closest approaches to Linden Observatory.

Of note, there is also a radar vectoring area for **Runway 05 Overnight Arrival (A10, A13),** however there is no centre for the flight corridor that I could determine the distance for.

Finally, for the use in this report, a plane that occurs anywhere along the width of the corridor at a specific location is taken as occurring on the closest edge of the corridor to Linden Observatory. In practice, there is a slight change in distance if the plane passes

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through the western edge of the corridor or the eastern edge of the corridor. For this report, we take the close part of the corridor as the location, to determine the larger end of any effect.

Therefore, the relative or effective distance on sky for each location:

Runway 23 Day-Evening (D10), Overnight Departure (D23 and D24), and RRO Departure = 2.7km –3.6km distance from Linden Observatory.
Runway 05 Overnight Arrival (A10, A13) = 3.6km – 1.0km distance from Linden Observatory.
Runway 05 Day-Evening Departure = 5.7 km – 10.2km distance from Linden Observatory.

At these heights, the airplanes have the following range of visual impact on sky / angular diameter:

Boeing 737-800: 2.26° at 1.0km, 0.84° at 2.7km, 0.63° at 3.6km, 0.47° at 4.8km, 0.22° at 10.2km
Airbus A320: 2.15° at 1.0km, 0.80 ° at 2.7km, 0.60° at 3.6km, 0.45° at 4.8km, 0.21° at 10.2km
Boeing 787-8: 3.43° at 1.0km, 1.27° at 2.7km, 0.95° at 3.6km, 0.72° at 4.8km, 0.34° at 10.2km
Boeing 787-10: 3.89° at 1.0km, 1.44° at 2.7km, 1.08° at 3.6km, 0.81° at 4.8km, 0.38° at 10.2km

The visual impacted footprint on the sky ranges from 0.21° to 3.89°. As a comparison, the Full Moon is about 0.5° in size on the sky.

The expected working range of the observatory can be considered to be 75° either side of the zenith (straight above), for a total of about 150°. Below 75° from zenith (up to 15° above the horizon), impact from local building, trees, natural turbulence, the mount of the telescope, and other factors will limit observations. Positions above are for a single location on sky, noting these objects will move across the sky, the width of the portion of the sky affected will be no more than the figures above, however the length of the impacted area will change depending on the flight path.

Additionally, most flight paths that are of consequence are passing through the eastern sky. This part of the sky is already most impacted by sky glow from Sydney, and objects are already limited, based on quoted sky measurements from Linden Observatory, as well as VIIRS measurements.[6] The western sky and southern sky, and generally have more objects in the early evening to look at for outreach and educational purposes, are the least impacted.

2. **Aircraft Impact on Observations**
    a. **Lighting Impacts**
    While passing through the field of view of the telescope, lights from airplanes will impact the observations. This will mean the exposure (if using a camera) will have to be stopped or visual observations suspended. However, the impacts will not last longer than the aircraft is in the field of view, and therefore will only affect up to on order of a

[6] https://lighttrends.lightpollutionmap.info/#zoom=8.640740704732666&lon=150.44001&lat=-33.82378

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few minutes. Landing lights, while much brighter, affect only one of the flight paths, **Runway 05 Overnight Arrival**, which is likely to have this issue.

While long exposures will be impacted, shorter exposures stacked or combined, as is common practice in both scientific observations as well astrophotography, can still occur, with a suspension in exposures while the aircraft is passing through the field of view. This will likely either already be implemented or need to be implemented due to the growing affect from satellites and satellite mega constellations, which regularly interrupt observations in approximately the first two hours after sunset, or before sunrise.

b. Turbulence Impacts

The other consideration is the impact on the atmosphere and observing quality, or seeing, based on turbulence from the aircraft. While passing through the location, aircraft turbulence will disturb the atmosphere, creating a blurriness of astronomical objects along the flight path. While still visible, turbulence affects what can be considered to be the resolution of the objects that are being observed.

The turbulence effects will last longer than any lighting effects, even after the aircraft is no longer in the field of view. The majority of these effects are short lasting[7], and in most cases, resumption activities of a given patch of sky can resume after a short period on a given night, usually 5 – 20 minutes.[8] This is the case at other observatories, such as Siding Spring Observatory in New South Wales which has observations impacted by flights. Even though the footprint on sky that is impacted is much smaller than those discussed here, the sensitive of the instruments at Siding Spring is much higher and thus requires some adapting of observing methods.

However, the length of effects from aircraft turbulence is highly dependent on both the weather of the night and local climate[9]. These can leave transparent layers of clouds hours after passing through the field of view. It is also noted that as the global climate changes, contrails and turbulence are also changing with it.[10]

c. Frequency

Finally, all of the calculations and description of effects in Sections 1 and 2 have been in the context of a single flight passing through the field of view of Linden Observatory, where in reality there will be multiple flights per day. For instance, in the situation of the **Boeing 737-800**, there is an estimated 71 flights daily in 2033, growing to 171 flights daily in 2055. While not all flights will occur on the paths discussed here, an unknown number of them will, and the length of the effects discussed thus far will need to be multiple by that number.

[7] https://articles.adsabs.harvard.edu//full/2001IAUS..196..173P/0000177.000.html
[8] https://articles.adsabs.harvard.edu//full/2001IAUS..196..173P/0000177.000.html
[9] https://earthobservatory.nasa.gov/images/78154/the-evolution-of-a-contrail
[10] https://articles.adsabs.harvard.edu/pdf/2010ESASP.686E.153W

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For instance, if 20 of these **Boeing 737-800** flights occur on the paths and times discussed, the turbulence impact is not 5 – 20 minutes, but 20 x 5 – 20 minutes, or 100 – 400 minutes.

3. Operational Considerations

a. Time of operation

In practice, the normal operational times for observations, either scientific, educational, or for astrophotography, will likely not be outside of Nautical Twilight when the Sun is 12° below the horizon. Dark for astronomical purposes does not occur until Astronomical Twilight when the Sun is 18° below the horizon, but in practice 12° is sufficient. To show the range when these times are on a given night, for Linden Observatory around the winter solstice and summer solstice:

DATE: 21 June 2024
TIME OF SUNSET: 16:56
END EVENING CIVIL TWILIGHT: 17:26
END EVENING NAUTICAL TWILIGHT: 17:56
END EVENING ASTRONOMICAL TWILIGHT: 18::26

DATE: 21 December 2024
TIME OF SUNSET: 20:07
END EVENING CIVIL TWILIGHT: 20:38
END EVENING NAUTICAL TWILIGHT: 21:13
END EVENING ASTRONOMICAL TWILIGHT: 21:52

Therefore, in the summer, useful observations are not likely to start, on average, before 9pm and before 6pm in the winter. Aircraft passing through and over Linden Observatory before these times will not usually be of impact to observations.

b. Use of lasers

Handheld green lasers are common for astronomical observations for educational purposes, to aid in the pointing out of objects in the night sky. Current legislation allows astronomical groups to use lasers up to 20mw. In practice and for safety, most are <5mw and class IIIa. These lasers have a range <2km. Therefore, flights outside this range will not be impacted.

Moreover, CASA and other airports have procedures for notification and the use of lasers. Either regular notification to WSI operations or an understanding astronomers will be using these on some nights at Linden

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Observatory can be established. Only astronomers are allowed to use these lasers and will not point them at aircraft, as is already the situation.

c. IAU and the proximity of airports to observatories

In the original response, a reference to Pederson 2001's conference proceedings[11] and reference to an IAU directive. This is not a directive, but rather a recommendation from at the time, IAU Commission 50 in 1977.[12]

Flights from Sydney International Airport heading to and from Asia regularly pass directly over (albeit at cruise altitudes) over Siding Spring Observatory. They also pass at lower altitudes, and within 5 kilometres near Mt Stromlo Observatory. There are restrictions and special operations at the NASA Deep Space Communication Complex at Tidbinbilla, but these are not for optical observations reasons but rather radio frequency transmission interference.

4. Dark Sky Accreditation

The process of accreditation and designation as an Urban Dark Sky Place, or Dark Sky Community by DarkSky International (note this was previously called the International Dark Sky Association) does not take airplane traffic into consideration for designation. The sites are approved, following the relevant criteria, based on the conditions on the ground It also does not take into account the quality of seeing – though this may affect the activities which may affect what can be included in the application. As an Urban Dark Sky Place or Dark Sky Community, the skyglow, or how bright the sky is, does not factor into the application.

For an Urban Dark Sky Place[13], "While there is no minimum night sky requirement for Urban Night Sky Place candidates, sites must demonstrate that they provide a quality night-time experience to their visitors." For a Dark Sky Community[14], "There are no night sky quality requirements for a Community. However, the Community will still participate in monitoring night sky quality to assess changes in this resource and as a way to further drive community engagement." The engagement between Linden Observatory and the design and operation of Western Sydney International would be seen as fulfilling the requirement of attempting to drive community engagement by working with various stakeholders.

5. Conclusions

In summary, it is clear there will be an impact on operations on Linden Observatory due to flights from Western Sydney International. In my evaluation, five flight paths are of consequence. Most of the impacts from these flights will require a temporary pause in activities on a given night, with pauses up to 20 minutes in some cases for a given flight in the case of astrophotography due to turbulence from passing aircraft, while activities like outreach and education will be able to resume

[11] https://articles.adsabs.harvard.edu//full/2001IAUS..196..173P/0000178.000.html
[12] https://www.eso.org/gen-fac/pubs/astclim/contrails/iau50.html
[13] https://darksky.org/what-we-do/international-dark-sky-places/apply/
[14] https://darksky.org/what-we-do/international-dark-sky-places/apply/

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sooner. However, the entire sky will not be impacted, and observations in another part of the sky, particular to the west and south, will be able to resume much sooner.

These effects will impact outreach and education programs as well as astrophotography and activities that are recording photometric (and if done, spectroscopic) observations. However, exposures can be set to be shorter, avoiding the impact of the flight, and then stacked together.

Linden Observatory will need to adapt some operations of their activities due to flights from Western Sydney International. This will include adjustment of timing of activities around flight paths, observing based on locations of targets in the sky (i.e. observing at times more to the west and south), and some changes to photometric observations. Most of their activities should still be able to occur, potentially at a reduced capacity.

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ANNEXURE A: DEFINITIONS OF ASTRONOMICAL EVENTS

Sunrise and Sunset are defined as the instant in the morning and the evening under ideal meteorological conditions, with standard refraction of Sun's rays, when the upper edge of the sun is coincident with an ideal horizon.

The **beginning of morning civil twilight and the end evening civil twilight** is defined as the instant in the morning or evening, when the centre of the Sun is at a depression angle of six degrees (6) below an ideal horizon. At this time in the absence of Moonlight, artificial lighting, or adverse atmospheric conditions, the illumination is such that large objects may be seen but no details are discernible. The brightest stars and planets can be seen.

The **beginning of morning nautical twilight and the end evening nautical twilight** is defined as the instant in the morning or evening, when the centre of the Sun is at a depression angle of twelve degrees (12) below an ideal horizon. At this time in the absence of Moonlight, artificial lighting, or adverse atmospheric conditions, it is dark for normal practical purposes. For navigation purposes at sea, the sea horizon is not normally visible.

The **beginning of morning astronomical twilight and end of evening astronomical twilight** is defined as the instant in the morning or evening, when the centre of the Sun is at a depression angle of eighteen degrees (18) below an ideal horizon. At this time the illumination due to scattered light from the Sun is less than that from starlight and other natural light sources in the sky.

An **Ideal Horizon** exists when the surface forming the horizon is at a right angle to the vertical line passing through the observer's position on the Earth. If the terrain surrounding the observer were flat and all at the same height above sea level, the horizon seen by the observer standing on the Earth would be the ideal horizon.

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Appendix B

Human health

An issue raised in the submissions relates to the definition of L_{night}, as used in the assessment of sleep disturbance, evaluated on the basis of the percent highly sleep disturbed (%HSD). This appendix has been prepared in support of the response summarised in Chapter 19 (Human health) of this Submissions Report.

The assessment presented in the Draft EIS relates to the night-time aircraft movement period, 11 pm to 5:30 am. This time frame for night-time noise is defined by the curfew period of the current Sydney (Kingsford Smith) Airport. This includes all traffic operating after 11 pm and before 5:30 am. By aligning with the curfew period this metric focuses on just the overnight flight paths which are not operated during the day periods when both airports are open.

The L_{night} period evaluated in Draft EIS spans 6.5 hours and is noted in the Draft EIS to be shorter than the 8 hour night-time period adopted as L_{night} in the studies that underpin the exposure-response relationship used to assess %HSD.

The 8 hour L_{night} more commonly covers the period of 10 pm to 6 am or 11 pm to 7 am.

To determine if the assessment of sleep disturbance presented in the Draft EIS would change if the L_{night} noise metric changed to cover an 8 hour period, the calculations of %HSD were repeated on the basis of estimated L_{night} for the periods 10 pm to 6 am and 11 pm to 7 am. This data was provided for 2055 for three scenarios assessed in the Draft EIS that represent the runway modes of operation (RMO):

- **S1 – No preference.** This represents no priority for runways during day or nighttime operations (which would provide the worst-case night-time operations)
- **S3 – Prefer Runway 05.** This captures operations when the use of Runway 05 with reciprocal runway operations (RRO) is prioritised, with day operations preferring Runway 05 and night-time operations as RRO or no priority
- **S4 – Prefer Runway 23.** This captures operations when the use of Runway 23 with RRO is prioritised, with day operations preferring Runway 23 and night-time operations as RRO or no priority.

The revised calculations show that there are some receptors where there are slight increases in L_{night} and some areas where there are decreases in L_{night} as the aircraft movements relevant to the shoulder periods (earlier than 11 pm or after 5:30 am) are different to the night-time period. The assessment of %HSD considered where the calculation of %HSD was different to existing and could be of significance in terms of sleep disturbance. The same approach was adopted in reviewing data from the 8 hour L_{night} periods. The review of the calculations has not identified any additional SAL in the local study area where the change in %HSD is of potential significance.

For the SALs where the change in %HSD is of potential significance (as identified in the Draft EIS), Chart B.1 to Chart B.3 present a comparison of the average (markers) and range of %HSD for the receptors relevant to these SAL, for RMO scenarios S1 (Chart B.1), S3 (Chart B.2) and S4 (Chart B.3). The charts also include the %HSD relevant to existing noise in the suburb based on measured background noise relevant to these areas. It is noted that the %HSD relevant to existing noise in the SALs is based on limited background monitoring data.

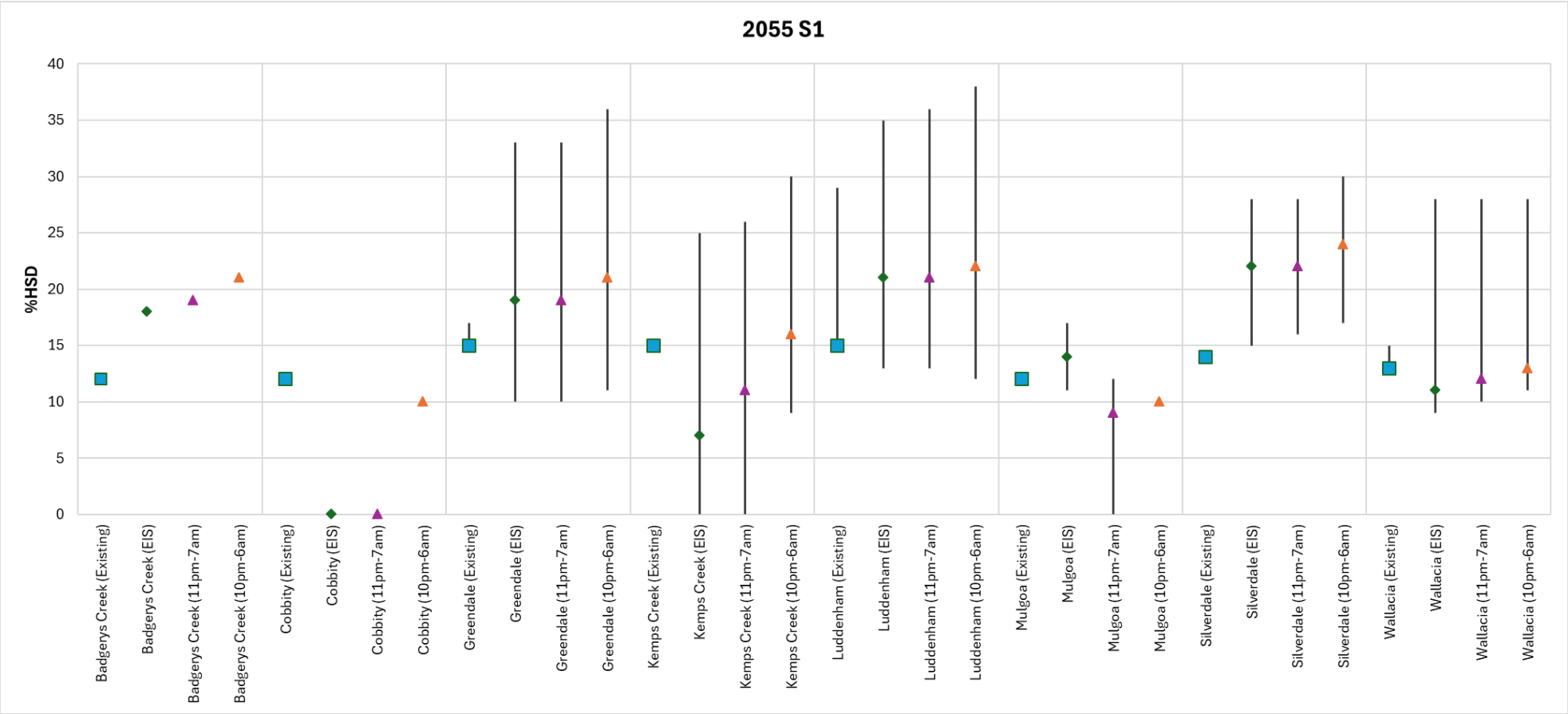

Chart B.1 Comparison of %HSD over varying L_{night} periods for all SALs where the change in %HSD is of potential significance – 2055 S1 (No preference)

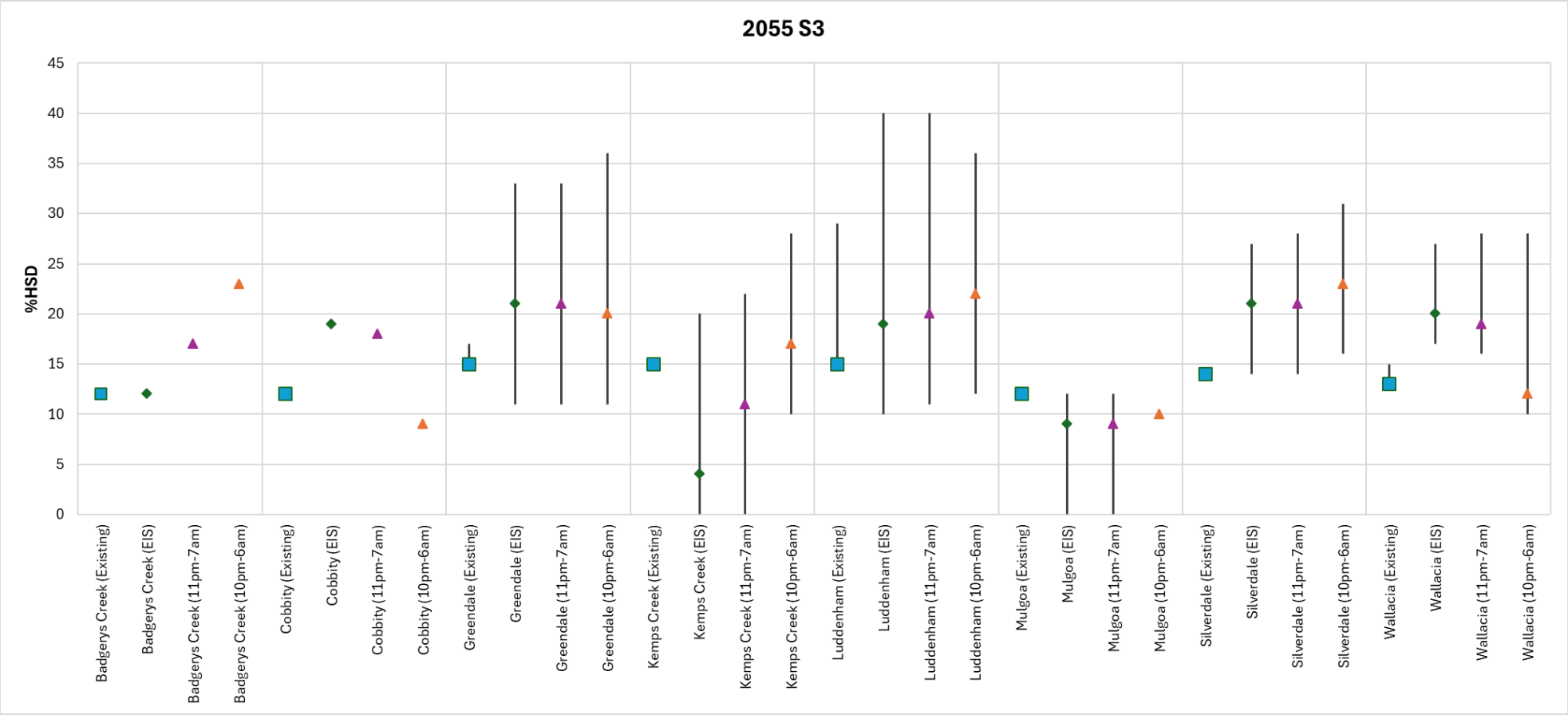

Chart B.2 Comparison of %HSD over varying L_{night} periods for all SALs where the change in %HSD is of potential significance – 2055 S3 (Prefer Runway 05)

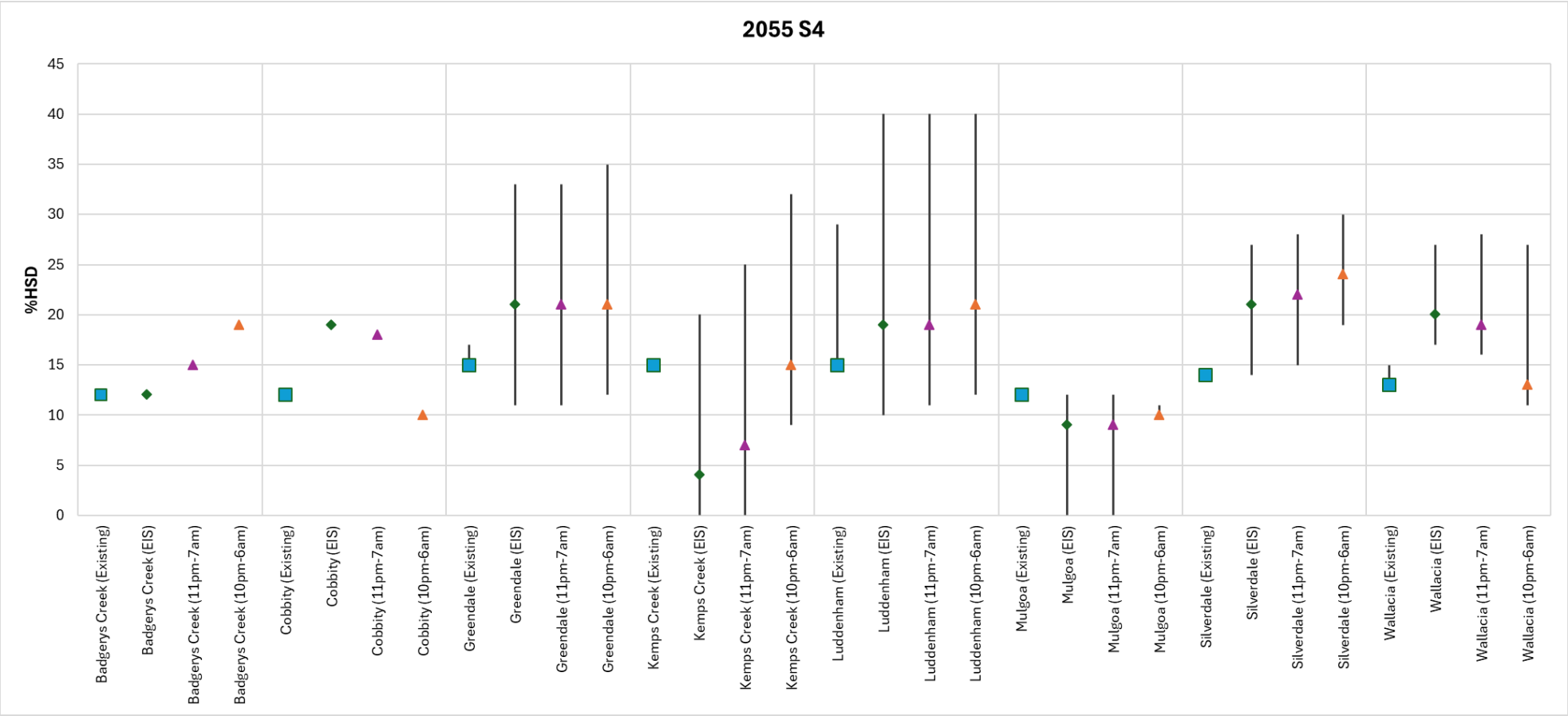

Chart B.3 Comparison of %HSD over varying L_{night} periods for all SALs where the change in %HSD is of potential significance – 2055 S4 (Prefer Runway 23)

Review of these charts indicates the following:

- **Badgerys Creek:** This assessment is based on one receptor location only. For this location the longer L_{night} periods show an increase in the %HSD for all RMO scenarios. It is noted that this location is located within the 2055 ANEC20 contours where land use planning policy is expected to prevent future sensitive development including residential where sleep disturbance is of relevance.
- **Cobbity:** For S1, while the %HSD for L_{night} (10 pm to 6 am) is higher than evaluated in the Draft EIS, it is the same as existing levels of %HSD and is not significant. For S3 and S4 the longer L_{night} periods show the %HSD is similar to or lower than in the Draft EIS.
- **Greendale:** Regardless of the hours assessed for L_{night}, the average %HSD, and the range of %HSD, is essentially unchanged from that presented in the Draft EIS for all RMO scenarios.
- **Kemps Creek:** Regardless of the hours assessed for L_{night}, the average %HSD remains no higher than existing for all RMO scenarios. The average and range of %HSD for L_{night} (10 pm to 6 am) extends higher than the %HSD presented in the Draft EIS, with the receptors in areas where residents may be located where the highest %HSD is estimated remains unchanged from that identified in the Draft EIS and already addressed in the management measures proposed for 2055.
- **Luddenham:** For the longer L_{night} hours the %HSD is essentially unchanged or there is a small increase in the average, but the range remains essentially unchanged from that presented in the Draft EIS for all RMO scenarios.
- **Mulgoa:** Regardless of the hours assessed for L_{night}, the average %HSD remains no higher than existing for all RMO scenarios.
- **Silverdale:** The average %HSD, and range, calculated for L_{night} (11 pm to 7 am) is essentially unchanged from that presented in the Draft EIS for all RMO scenarios. The %HSD and range, calculated for L_{night} (10 pm to 6 am) is slightly higher than presented in the Draft EIS, however the location if the highest %HSD which influences the increase in the average %HSD (for all RMO scenarios) is located within the 2055 ANEC20 contours where land use planning policy is expected to prevent future sensitive development including residential where sleep disturbance is of relevance.
- **Wallacia:** For S1, regardless of the hours assessed for L_{night}, the average and range of %HSD is no higher than existing. For S3 and S4 the longer L_{night} periods show the %HSD is similar to or lower than what was presented in the Draft EIS.

Based on the above data and evaluation, where longer L_{night} periods are considered, whether this is from 11 pm to 7 am or 10 pm to 6 am, the outcomes and conclusions in relation to impacts of aircraft noise on sleep disturbance presented in the Draft EIS remain unchanged.

In addition to the above analysis it is noted that the Draft EIS, refer to Technical paper 1: Aircraft noise, also considers a secondary night-time period based on the Australian Noise standards and is used in weighting cumulative impacts of overflights between 7 pm and 7 am for inclusion in the Australian Noise Exposure Forecast (ANEF). The ANEF metric is meant to define the acceptable land near the airport. It indicates where areas may not be suitable for residential or other noise sensitive development. This is a much longer night-time period than evaluated above and provides for the further management of land use in the areas around the airport to minimise impacts of noise on sleep disturbance. Both the L_{night} from 11 pm to 5:30 am and the ANEF night-time periods are tied to existing standards measured at other Australian airports.

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