



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

Summary





Australian Government

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



Shane Smithers 2020

Eternal Connection (panel 2 of 5)

Synthetic polymer on linen

Traditionally the Dharug people represented country with a hatch pattern. Country is the place where the sky meets the earth, the place where the generative forces of Wiari (mother earth) and Biari (father sky) come together to create all life. It is the place where we live, walking on the earth, touching the sky. The repetition of the vertical white lines represent our connection to the sky, to Aboriginal lore, the lore of our ancestors, which is the foundation of Aboriginal culture. Here we pay respect to the sky and the earth, to our country, our ancestors and sacred places.

Ownership of intellectual property rights in this publication

Unless otherwise noted, copyright (and any other intellectual property rights, if any) in this Environmental Impact Statement (EIS) is owned by the Commonwealth of Australia (referred to below as the Commonwealth).

Digital Data Sources

Data used in the maps contained in this EIS has been obtained from the following sources: Base map data including aerial photography – NSW Department of Customer Services; Department of Infrastructure, Transport, Regional Development, Communications and the Arts (DITRDCA); NSW Department of Planning and Environment (DPE); NSW Department of Planning, Housing and Infrastructure (DPHI); GeoScience Australia; nearmap.com and Esri. Note Esri base map data is sourced from Esri, HERE, Garmin, (c) OpenStreetMap contributors, Airbus, USGS, NGA, NASA, CGIAR, NCEAS, NLS, OS, NMA, Geodatastyrelsen, GSA, GSI and the GIS user community. Other map data sources have been obtained from: Australian Government DITRDCA; Commonwealth of Australia and Department of Climate Change, Energy, the Environment and Water (DCCEEW) including DCCEEW National Flying-fox monitoring viewer spatial platform and Find Environmental Data; Australian Government Data.gov.au; National Native Title Tribunal, NSW Department of Customer Services; NSW DPE including DPE Important habitat maps for threatened species and Heritage Databases; NSW Department of Planning; NSW DPHI; NSW Department of Education; NSW Government – Heritage NSW (AHIMS); NSW Government, SEED The Central Resource for Sharing and Enabling Environmental Data in NSW; Navin Officer Heritage Consultants Pty Ltd; Airbiz; IRIS Visual Planning + Design; Environmental Risk Science Pty Ltd. and Todoroski Air Sciences.

Disclaimer

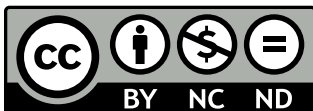
This EIS has been prepared by, or on behalf of, the Commonwealth in accordance with the *Environment Protection and Biodiversity Conservation Act 1999* (Cth) and the Guidelines for the content of a Draft Environmental Impact Statement – Western Sydney International Airport – Airspace and flight path design issued on 26 April 2022 and reflects the preliminary flight paths. Some of the information is illustrative or conceptual only, includes statements as to future matters which may not eventuate, and has been based on opinions and assumptions which may not be correct. The actual flight paths, aircraft movements, noise contours and aircraft noise over specific addresses may be different to that shown in the EIS.

The Commonwealth, its contractors and the respective data custodians make no representations or warranties as to the accuracy or completeness of the data, maps, statements or other information (including from third party sources) contained in this EIS. To the extent permitted by law, the Commonwealth, its contractors and the respective data custodians disclaim any and all liability whatsoever arising directly or indirectly from anything done or omitted to be done, or directly or indirectly from any use of, or reliance on, the data, maps, statements or other information contained in this EIS by any person for any purpose.

To the extent permitted by law users of this EIS release the Commonwealth, its contractors and the respective data custodians from any and all liability (including for negligence) arising directly or indirectly from any use of, or reliance on, the data, maps, statements or other information contained in this EIS, by themselves or any other party.

Creative Commons licence

With the exception of (a) the Coat of Arms; and (b) any third party material, and where otherwise stated, copyright in this EIS is licensed under a Creative Commons Attribution-NonCommercial-NoDerivs 3.0 Australia Licence



The **CC BY-NC-ND** Licence allows you to copy and distribute this publication in any medium or format in unadapted form only, for non-commercial purposes only, provided that you attribute the publication to the Commonwealth, and that you abide by the other licence terms: <https://creativecommons.org/licenses/by-nc-nd/3.0/au/>.

Further information on the licence terms is available from <https://creativecommons.org/licenses/by-nc-nd/3.0/au/legalcode>

This publication should be attributed in the following way:

© Commonwealth of Australia 2024.

Use of the Coat of Arms

The Department of the Prime Minister and Cabinet sets the terms under which the Coat of Arms is used. Please refer to the Commonwealth Coat of Arms – Information and Guidelines publication available at <http://www.pmc.gov.au>.

Contact us

This EIS is available in hard copy or (and) PDF format. All other rights are reserved, including in relation to any departmental logos or trademarks which may exist. For enquiries regarding the licence and any use of this EIS, please contact:

Director – Creative Services
Communication Branch
Department of Infrastructure, Transport, Regional Development, Communications and the Arts
GPO Box 594
Canberra ACT 2601
Australia

Email: WSflightpaths@infrastructure.gov.au

Website: www.WSflightpaths.gov.au

Contents

Glossary and abbreviations	04
Purpose of this summary	06
Western Sydney International (Nancy-Bird Walton) Airport	06
Preliminary airspace and flight path design	07
About the EIS	07
Supporting information	09
Aircraft noise information brochure and noise tool	09
Digital EIS	09
Consultation on the Draft EIS	10
Overview of submissions	11
Submissions report	13
Design refinements to the project	13
Next steps	13
Part A – Introduction	14
Stage 1 Development	14
Objectives of the project	16
The project	16
Strategic context and need	17
Need for WSI	17
Benefits of the project	17
Project setting	17
The Sydney Basin airspace	17
The Airport Site and surrounds	20
Statutory context	22
Part B – The project	24
Airspace design principles	24
Project development and alternatives	25
Key features of the project	27
Volume of aircraft traffic	28
Forecast schedules	28
Aircraft fleet mix	29
Air traffic control procedures	29
Runway modes of operation	30
Preferred runway modes of operation	31
Flight paths	31
Off-procedure manoeuvring operations	38
Facilitated changes (prior to WSI opening)	38
Community and stakeholder engagement	38
Engagement during and post exhibition of the Draft EIS	39

Part C – Environmental impact assessment	40
Approach to impact assessment	40
Assessment years	41
Summary of key impact assessment findings	41
Aircraft noise	41
Air quality and greenhouse gas	45
Aircraft hazards and risk	45
Land use	46
Landscape and visual amenity	47
Biodiversity	48
Heritage	49
Social	50
Economic	50
Human health	51
Matters of National Environmental Significance	52
Facilitated impacts	52
Cumulative impacts	53
Part D – EIS synthesis	55
Environmental management framework	55
Mitigation and management of impacts	55
Conclusion	61

List of figures

List of tables

Glossary and abbreviations

Abbreviation	Description
2016 EIS	Western Sydney Airport – Environmental Impact Statement
AIP ENR	Aeronautical Information Publication Australia, Part 2 - En route
Air Services Act	Air Services Act 1995
Airports Act	Airports Act 1996 (Commonwealth)
Airport Plan	Western Sydney Airport – Airport Plan
Airspace	The three-dimensional space in which aircraft fly
ANEC	Australian Noise Exposure Contour
ANEF	Australian Noise Exposure Forecast
ANSP	Air Navigation Service Provider
ALC	Airport Lessee Company
ATMs	Air traffic movements
CASA	Civil Aviation Safety Authority
Civil Aviation Act	Civil Aviation Act 1988
DITRDCA	Australian Government Department of Infrastructure, Transport, Regional Development, Communications and the Arts
DPE	(NSW) Department of Planning and Environment
EIS	Environmental Impact Statement
EPA	(NSW) Environment Protection Authority
EPBC Act	Environment Protection and Biodiversity Conservation Act 1999 (Commonwealth)
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

Abbreviation	Description
Expert Steering Group	Expert Steering Group – led by the Australian Government Department of Infrastructure, Transport, Regional Development, Communications and the Arts (DITRDCA) 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
FOWSA	Forum on Western Sydney Airport
GBMA	Greater Blue Mountains Area (including World Heritage Area)
IFR	Instrument flight rules
IUCN	International Union for Conservation of Nature
LGA	Local government area
MAP	Millions of annual passengers
MNES	Matters of National Environmental Significance
NASF	National Airport Safeguarding Framework
NIPA	Noise Insulation and Property Acquisition
OAR	Office of Airspace Regulation
RRO	Reciprocal Runway Operations
Runway modes of operation	The use of a certain runway or a combination of runways
SID	Standard instrument departure
STAR	Standard arrival route
The project	The project consists of the development and implementation of proposed 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
WSI	Western Sydney International (Nancy-Bird Walton) Airport

Purpose of this summary

This summary outlines the key findings of the Environmental Impact Statement (EIS) for the preliminary airspace and flight path design for Western Sydney International (Nancy-Bird Walton) Airport (WSI), termed 'the project'. It describes the project and its development to date, the relevant legislative and policy framework and the outcomes of public and First Nations consultation, including exhibition of the Draft EIS.

This summary includes a series of impact assessments of the operation of the project and proposes mitigation and management measures to support residual or post-mitigation impacts.

Detailed information on each of the environmental issues assessed can be found within the relevant Volumes and sections of the EIS. Information on where to view the EIS and other support tools is provided further in the 'Supporting information' and 'How to be involved' sections of this summary.

Western Sydney International (Nancy-Bird Walton) Airport

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).

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 Greater Sydney.

Following the finalisation of the 2016 EIS, the Western Sydney Airport – Airport Plan (Airport Plan) (DITRDC, 2021) was approved in December 2016. The Airport Plan authorised the construction and operation of the Stage 1 Development of WSI: a single runway and terminal facility capable of initially handling up to 10 million passengers per year. It also set the requirements for the further development and assessment of the preliminary airspace design for WSI.

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 region 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.

Preliminary airspace and flight path design

The design and assessment process for the next phase of the airspace design (referred to as the preliminary airspace design) was set by Condition 16 of the Airport Plan. This included the future airspace design principles and the establishment of an Expert Steering Group to guide the development of the preliminary 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.

The project involves:

- the development and implementation of proposed flight paths and a new controlled airspace volume for single runway operations at WSI
- the development of associated air traffic control and noise abatement procedures for eventual use by civil, commercial passenger and freight aircraft
- adjustments to airspace for Sydney (Kingsford Smith) Airport, Bankstown Airport, the Royal Australian Air Force (RAAF) Base Richmond (RAAF Base Richmond) and the Orchard Hills Defence Establishment.

DITRDCA, Airservices Australia and the CASA each have a role in the development and/or approval of the project. For the purposes of the *Environment Protection and Biodiversity Conservation Act 1999* (Commonwealth) (the EPBC Act), DITRDCA has been nominated as the proponent. The overall assessment, approvals and implementation pathway for the project is explained further throughout this Summary.

About the EIS

The purpose of the EIS is to address the requirements of Condition 16 of the Airport Plan and to support the request to the Australian Minister for the Environment and Water for advice in accordance with Section 160 of the EPBC Act prior to any approval of the project.

The EIS provides the opportunity for the community and industry to make comment on the preliminary airspace design before a final airspace and flight path design is determined.

The EIS:

- provides public information on the need for the flight path design project, and the project development and alternatives
- provides an overview of the preliminary flight paths, including refinements made following exhibition of the Draft EIS
- presents the likely effects of the preliminary flight paths on the natural, social and economic environment, specifically addressing the EIS Guidelines issued by the delegate for the Australian Minister for the Environment and Water on 26 April 2022 having regard to relevant Airservices Australia policies and standards
- assesses compliance of the action with principles of Ecologically Sustainable Development as set out in the EPBC Act
- demonstrates how any negative environmental and social impacts can be avoided, or where impacts are unavoidable, managed or mitigated.

The EIS is presented in 4 main parts, including the background and need for the project, main project description, impact assessment and mitigation, management and conclusions, and is supported by a series of appendices and detailed technical papers. The structure and content of the EIS is outlined in Figure S.1.

Part A Background		Appendices	
1	Introduction	A	Proponent details and environmental record
2	Strategic context and need	B	EIS team
3	Introduction to airspace	C	EIS Guidelines
4	Project setting	D	List of persons and agencies consulted during the preparation of the EIS
5	Statutory context	E	Project coordinates
Part B The project		F	Background to Western Sydney International (Nancy-Bird Walton) Airport Noise Insulation and Acquisition policy
6	Project development and alternatives	G	Assessment of the refinements to the project
7	The project	Technical Papers	
8	Facilitated changes	TP1	Aircraft noise
9	Community and stakeholder engagement	TP1 addendum	Aircraft noise addendum
Part C Environmental impact assessment		TP2	Air quality
10	Approach to impact assessment	TP3	Greenhouse gas emissions
11	Aircraft noise	TP4	Hazard and risk
12	Air quality and greenhouse gas	TP5	Wildlife strike risk
13	Aircraft hazard and risk	TP6	Land use and planning
14	Land use	TP7	Landscape and visual amenity
15	Landscape and visual amenity	TP8	Biodiversity
16	Biodiversity	TP9	Heritage
17	Heritage	TP10	Social
18	Social	TP11	Economic
19	Economic	TP12	Human health
20	Human health	TP13	Facilitated changes
21	Facilitated impacts	TP14	Greater Blue Mountains World Heritage Area
22	Cumulative impacts	Submissions Report	
23	Matters of National Environmental Significance	A	Summary of public exhibition activities and submissions received
Part D EIS synthesis		B	Response to submissions
24	Mitigation and management	C	Refinements to the project and conclusions
25	Conclusion		
26	References		

Figure S.1 Structure of the EIS

Supporting information

In addition to this summary, other tools have been developed to assist in the understanding of the EIS.

Aircraft noise information brochure and noise tool

Aircraft noise brochure

This brochure has been developed to allow the community to explore and understand the projected changes to airspace and flight paths arising from the project and resulting aircraft noise. The booklet is available online at wsiflightpaths.gov.au/resources.

Aircraft Overflight Noise Tool

This summary is further supported by an online web-based information tool (the online Aircraft Overflight Noise Tool), which has been developed to allow individuals to look at the proposed new flight paths and learn about expected noise impacts. The online Aircraft Overflight Noise Tool shows the aircraft arrival and departure flight paths and allows you to search an address to see the indicative altitude of the proposed flight paths, forecast number of flights, and noise mapping, including the estimated aircraft noise in decibels, at different locations.

The online Aircraft Overflight Noise Tool displays noise contours that reflect the noise modelling and assessment undertaken for the Draft EIS. Noise from aircraft movements based on the new preliminary WSI flight paths may be experienced beyond the noise contours shown.

The online Aircraft Overflight Noise Tool is available for desktop or mobile at wsiflightpaths.gov.au.

Noise Insulation and Property Acquisition policy

Under the Western Sydney Airport Plan, the DITRDCA is required to develop a noise insulation and property acquisition policy in relation to aircraft overflight noise for buildings outside WSI, having regard for the 24-hour nature of operations at WSI.

A draft of the Noise Insulation and Property Acquisition (NIPA) policy was provided for comment within the Draft EIS. The draft NIPA policy outlines the eligibility requirements.

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 program's implementation in mid-2025.

Digital EIS

As part of the exhibition of the Draft EIS, a Digital EIS was made available to provide the community and industry the ability to access the Draft EIS in a flexible, accessible and interactive manner. The Digital EIS provided a summary of the key elements of the Draft EIS including an overview of the project, and summary of the key environmental impacts associated with the project.

The Digital EIS was available for desktop or mobile at wsiflightpaths.gov.au.

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 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 NIPA policy and facilitated changes were also developed.

A summary of the activities undertaken during the public exhibition period is provided in Figure S.2. Further detail on the engagement activities and an analysis of the submissions received is provided in the Submissions Report.

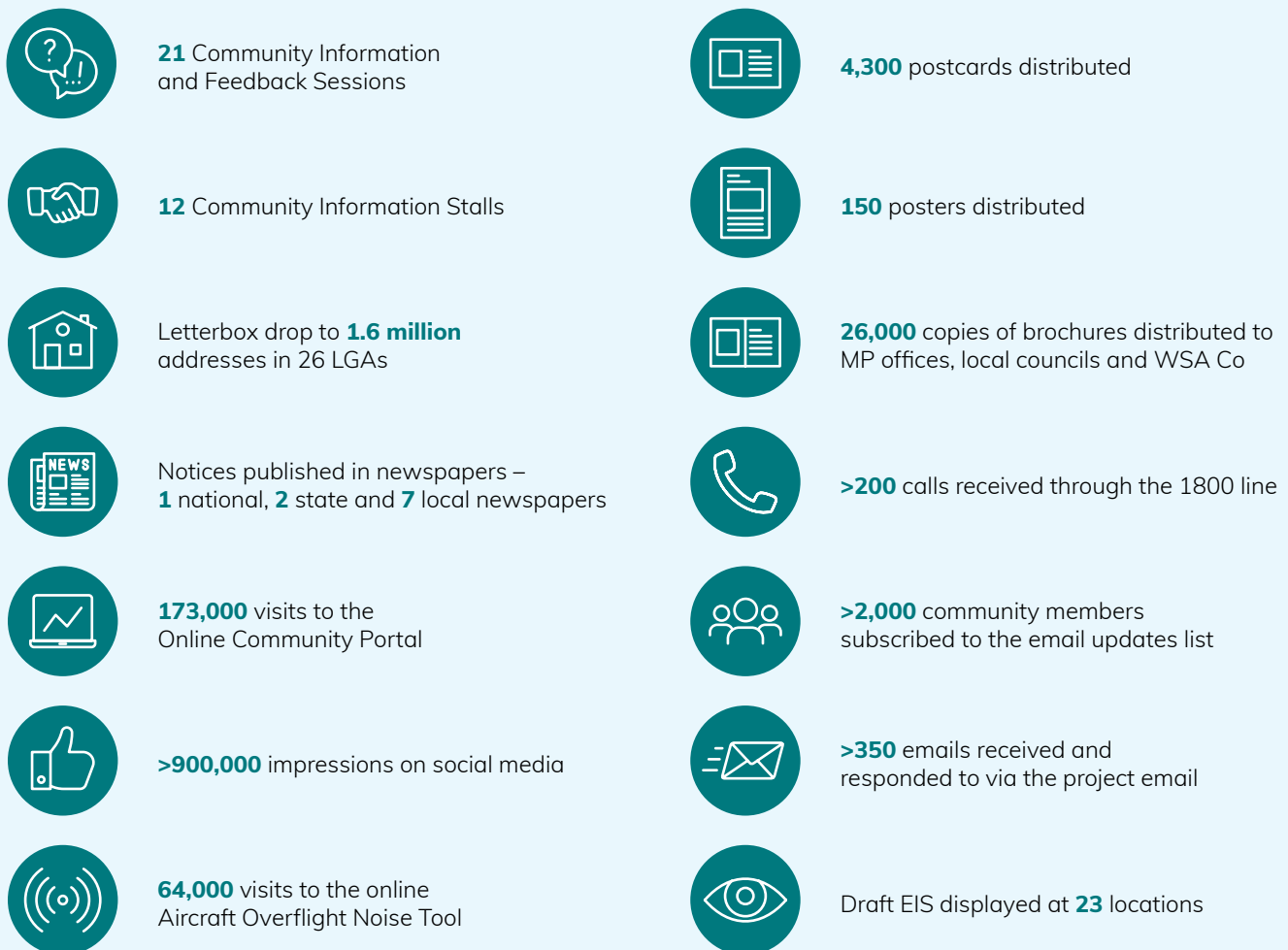


Figure S.2 Activities conducted during the public exhibition period



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.

Seventy-five 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 including:
 - 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 one 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 top 5 key issues identified in submissions were:

- 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.

A full breakdown of the key issues raised in submissions is provided in Figure S.3.

Summary of key issues raised in submissions

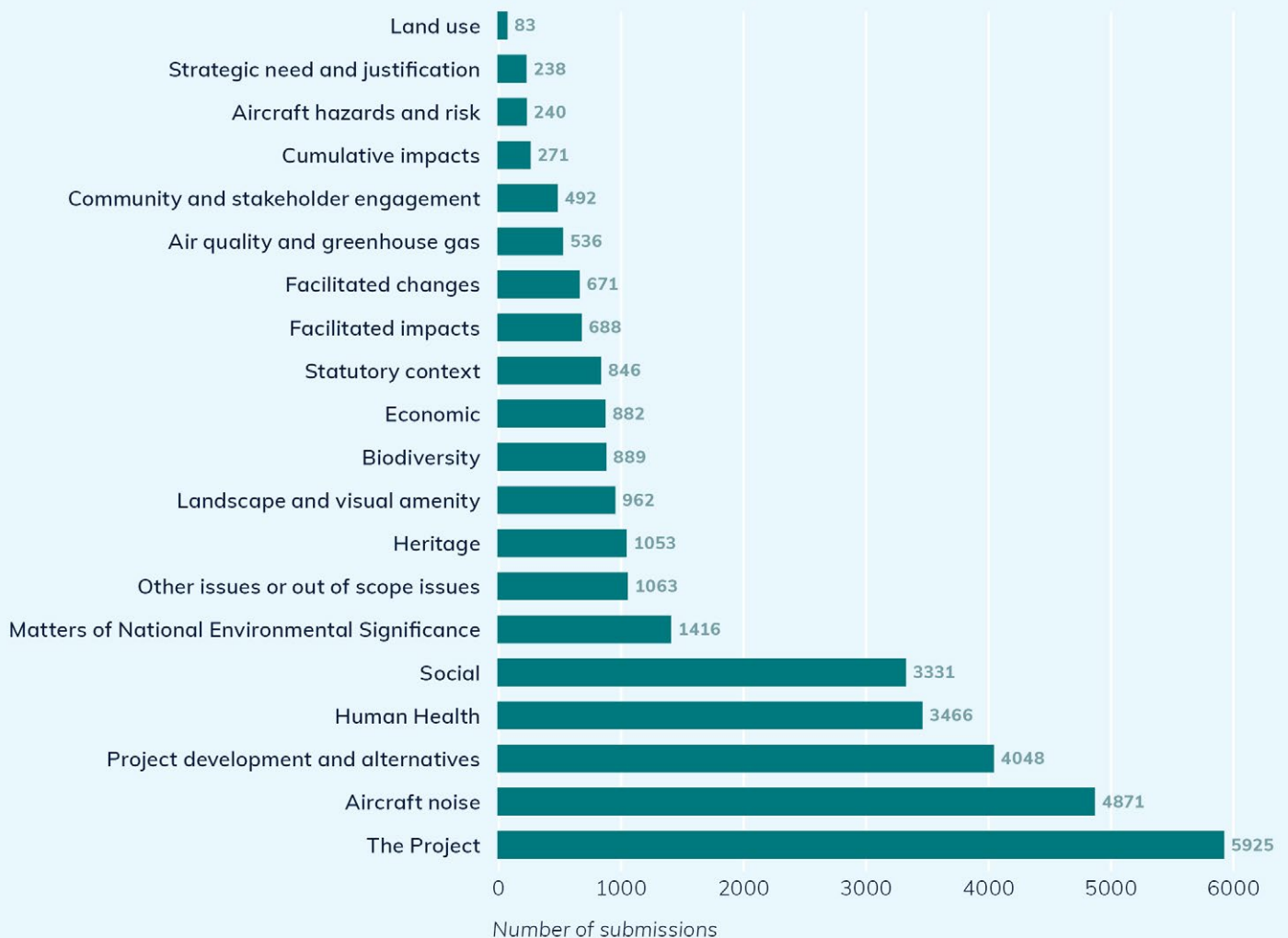


Figure S.3 Key issues raised in submissions

Submissions report

A Submissions Report was prepared to consider the issues raised in all submissions received from the community and stakeholders during the exhibition period of the Draft EIS. The 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: 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: 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: 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.

The 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.



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
- removal of Required Navigation Performance – Approval Required approach (A13) south of Linden
- minor refinement to preliminary flight path A21 (RRO night approach to Runway 05) to provide a more southerly alignment
- refinements 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
 - the introduction of a new RRO mode noise abatement procedure (RRO-NAP).

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 the 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 9 (Community and stakeholder engagement) of the EIS.

Next steps

Following the exhibition of the Draft EIS, the EIS was finalised and submitted to the Australian Minister for the Environment and Water, with copies of submissions received during the public comment period and a submissions report to illustrate how DITRDCA had 'due regard' to those submissions. The Australian Minister for the Environment and Water will then provide advice regarding the project to DITRDCA, Airservices Australia and CASA, including any recommended conditions.

Once complete, Airservices Australia will be responsible for preparing and submitting the Airspace Change Proposal that will be submitted to CASA for approval. This would need to consider the advice provided by the Australian Minister for the Environment and Water.

Once approved, the procedures associated with the flight paths and changes to the Sydney Basin airspace would be published. A process of training and testing the procedures would occur before formal runway operations at WSI commence.

Part A – Introduction

Part A of the EIS sets the scene for the project, describing the project background, the reasons for the project and the legislative environment in which approval is being sought. It provides a general description of the project setting and introduces the key concepts of airspace architecture and airspace management considerations.

Stage 1 Development

The Stage 1 Development of WSI has been approved and is limited to single runway operations. It would handle up to 10 million annual passengers and around 81,000 air traffic movements per year by 2033 including freight operations (a movement being a single aircraft arrival or departure). Single runway operations are expected to reach capacity at around 37 million annual passengers and around 226,000 air traffic movements per year in 2055.

The approval provides for the construction of the aerodrome (including the single runway), terminal and landside layout and facilities, and ground infrastructure such as the instrument landing systems and high intensity approach lighting arrays. Construction of the Stage 1 Development commenced in 2018.

Figure S.4 shows location of the single runway within the Airport Site.

The single runway is 3,700 metres long by 45 metres wide and is capable of handling both domestic and international services. The runway is orientated on an approximately north-east/south-west axis (refer to indicative schematic in Figure S.5), which reflects the physical alignment of the runway and compass heading for aircraft operating to or from it – in this case 50 degrees north-east (Runway 05) and 230 degrees south-west (Runway 23) (magnetic).

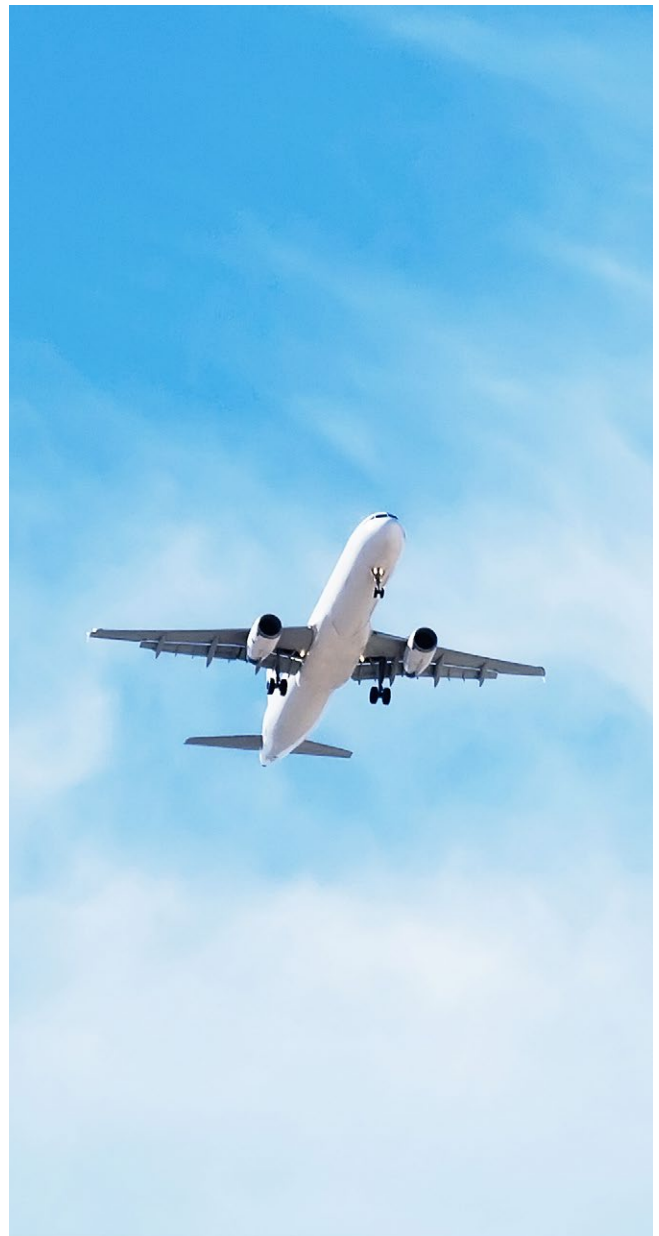




Figure S.4 Western Sydney International Stage 1 Development



Figure S.5 Runway 05 and Runway 23

Objectives of the project

The overall objectives for WSI are to:

- improve access to aviation services for Western Sydney
- resolve the long-term aviation capacity constraints in the Sydney Basin
- maximise the economic benefit for Australia by maximising the value of WSI as a national asset
- optimise the benefits of WSI for employment and investment in Western Sydney
- deliver sound financial, environmental and social outcomes for the Australian community.

The project would assist in achieving these overall objectives as it would enable single runway operations to commence through the introduction of new flight paths and a new controlled airspace volume.

The project

The project consists of the development and implementation of proposed flight paths and a new controlled airspace volume for single runway operations at WSI. The project 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 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 safety, meteorological conditions and low flight demand permit) to minimise the number of residences subjected to potential noise disturbance.

The project does not include any physical infrastructure. No construction works or changes to the previously approved physical ground infrastructure (currently under construction) are required for the project. This includes the airfield, terminal, landside layout and facilities, instrument landing systems and high intensity approach lighting arrays.

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 minor adjustments to existing arrival and departure routes. These changes are referred to as 'facilitated changes'. These changes would be implemented prior to the opening of WSI in 2026.

Further information on the project, proposed flight paths and facilitated changes are provided in Part B of this summary document.

Roles and responsibilities

DITRDCA, Airservices Australia and CASA each have a role in the development and/or approval of the project. The primary roles and responsibilities in preparing and promoting the flight paths and airspace management concept are:

- **DITRDCA** is the nominated proponent for the purposes of the EPBC Act. DITRDCA administers the Airports Act (and its associated Regulations) and is responsible for leading the airspace design for single runway operations at WSI. Once the environmental assessment and community consultation process is complete, DITRDCA, alongside Airservices Australia, would be responsible for the detailed design of the flight paths.
- **Airservices Australia**, as the relevant ANSP. Airservices Australia would ultimately be responsible for the implementation and management of the proposed airspace and flight paths. Once the detailed design process is complete, Airservices Australia would prepare the Airspace Change Proposal for final approval by CASA.
- **CASA**, as the regulator responsible for the administration of airspace under the Airspace Act 2007 (Airspace Act). The Office of Airspace Regulation would ultimately approve the proposed airspace changes to introduce the control zone, and changes to the control areas, including validating the flight procedures before the commencement of operations. CASA administers the Civil Aviation Act 1988 (Civil Aviation Act), under which safety standards for a range of aviation operations, including flight path design, are established.
- **Airport Lessee Company (ALC)**, as the owner of the airport lease granted by the Australian Government, and responsible for the development and operation of WSI. The ALC is Western Sydney Airport Company Limited. The ALC cannot permit regular aircraft operations to commence at WSI until the requirements of the Airport Plan (Condition 16) have been met.
- **The Expert Steering Group** is led by DITRDCA and involves Airservices Australia, CASA, Department of Defence and the ALC. This group was established to guide the development of the flight path design and will continue to be involved for the remainder of the design process.

Other key stakeholders have been consulted in the development of the project regarding the integration of the airspace design into the Sydney Basin operations. These include other aircraft operators, and the Forum on Western Sydney Airport (FOWSA), which provides a forum for the community, the aviation industry, Government and Western Sydney Airport Company Limited during the delivery of WSI and the development of the proposed flight path design.

Strategic context and need

Need for WSI

Western Sydney is one of Australia's fastest growing regions and is Australia's third-largest economy. Two million people currently live in Western Sydney with the expectation of another million people moving into the region by the 2030s.

The need for an airport in Western Sydney has been driven principally by the growing demand for aviation services in the Sydney region and the diminishing ability of existing airports (in particular Sydney (Kingsford Smith) Airport) to accommodate future growth. Sydney is reliant on the aviation system to maintain its status as a global city, tourist destination and major financial and services centre within the Asia Pacific region. There is expected to be an increase in the overall demand for aviation services to meet the needs of population growth, as well as economic growth from business-related activities, generally within the the Sydney Basin.

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. The physical constraints at Sydney (Kingsford Smith) Airport limit its ability to handle further passenger growth. These limitations are apparent at peak times and are likely to become more noticeable in the future.

By 2035, Sydney (Kingsford Smith) Airport would need to accommodate close to 80 million passengers a year (equivalent to around a 50 per cent increase on 2010 flight movements). Due to capacity constraints, Sydney (Kingsford Smith) Airport will not be able to accommodate all of the forecast demand.

Benefits of the project

The project is an integral part of WSI, ensuring that the benefits of WSI are realised. 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.

WSI would increase aviation capacity for Sydney, meaning more passenger and freight services and less congestion for travellers. WSI would cater for domestic, international and freight flights with airport terminal facilities designed for both low cost and full service carriers. This would provide the growing communities of Western Sydney with better access to aviation services. Access today to an airport for Western Sydney residents can involve a 2-hour commute (DITRDCA, 2021).

The development and operation of WSI would support the population and economic growth in the Western Sydney region and broaden employment opportunities. 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). It would support almost 28,000 direct and indirect jobs by 2031 and increasing to 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).

WSI would provide direct connections to the world, allowing opportunities for residents and the community to enhance Western Sydney's connection to world economies. Tourism is expected to be boosted, with WSI providing improved accessibility to destinations across Western Sydney and the Blue Mountains. New or upgraded transport infrastructure currently being built to service WSI would also provide benefit to local communities.

Project setting

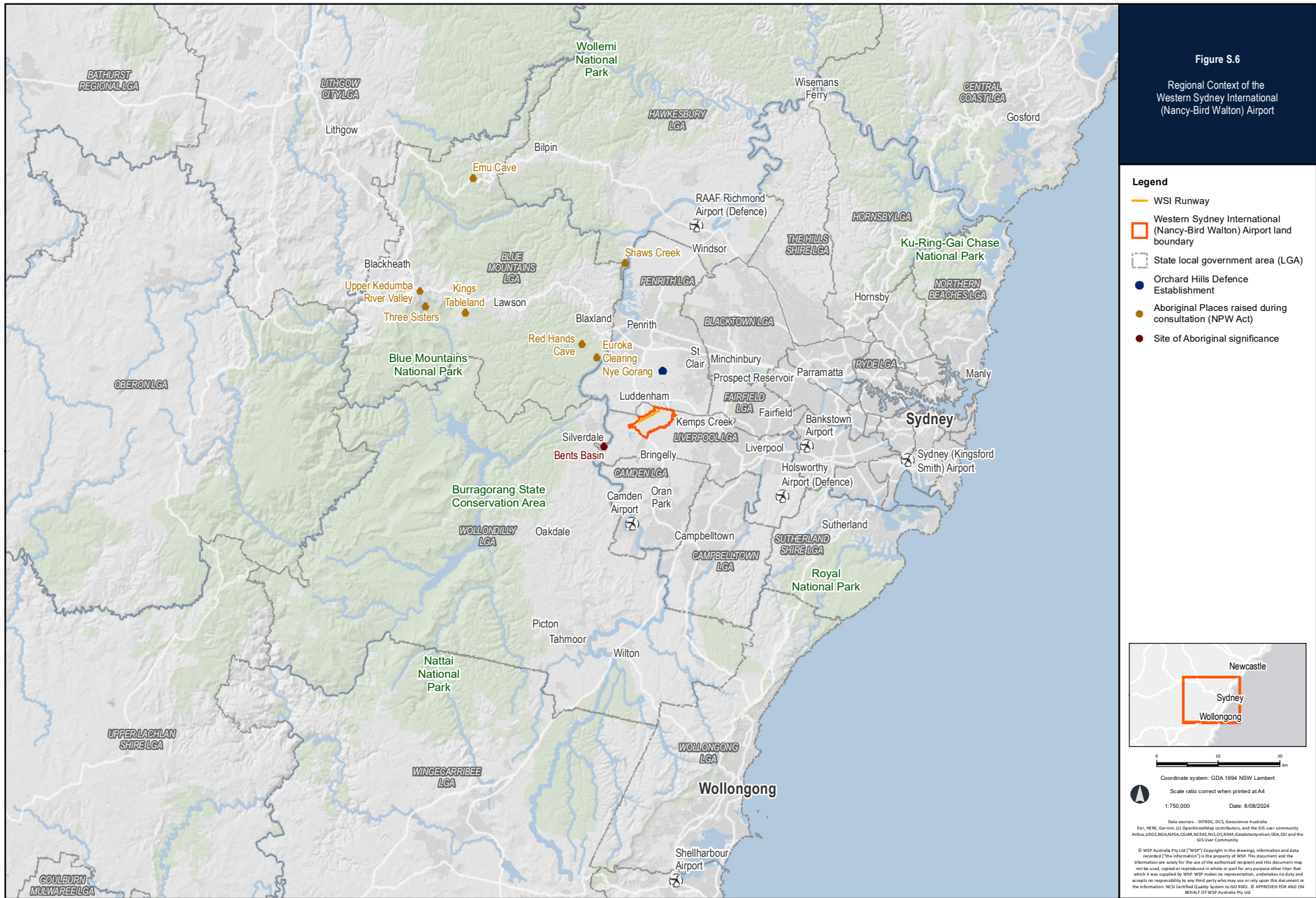
The Sydney Basin airspace

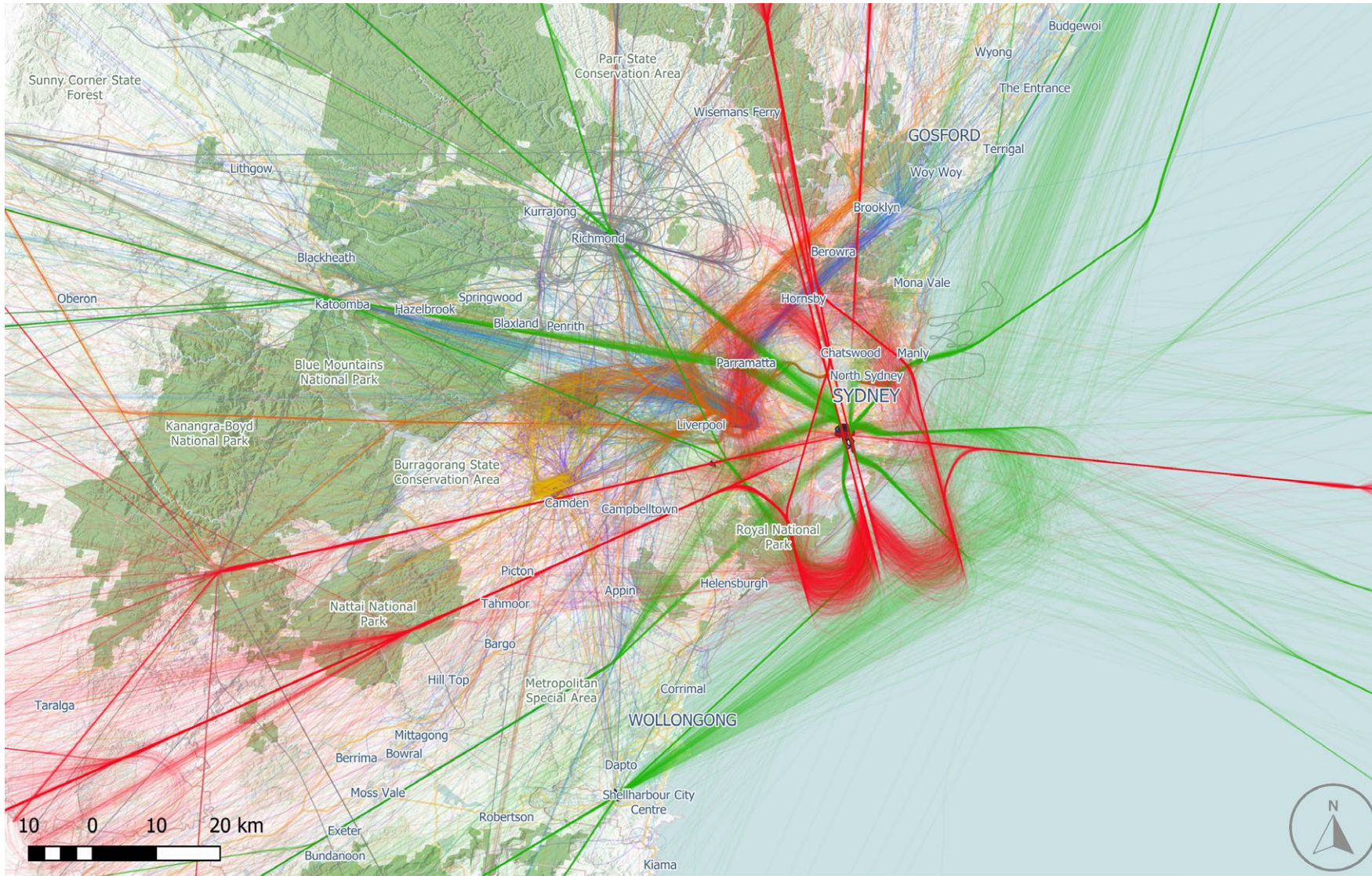
The Sydney Basin airspace refers to the airspace area within the Sydney Basin, generally bordered by Sutherland and Bargo in the south, Lake Macquarie and the Hawkesbury River in the north and Mount Victoria in the west. It encompasses an extensive network of flight paths associated with existing airports, Defence facilities, recreational aviation activities (gliders, ballooning and parachuting), emergency aviation activities (for example, medical or bushfire), helicopter activity and transiting flights. Key airports or sites that influence the Sydney Basin airspace include:

- Sydney (Kingsford Smith) Airport
- Bankstown Airport, Camden Airport and Shellharbour Airport
- Defence airports – Royal Australian Air Force (RAAF) Base Richmond and Australian Army Holsworthy Airport
- Orchard Hills Defence Establishment – This facility is operated by the RAAF and comprises munitions storage base and the Defence Explosive Ordinance Training School. Airspace over this facility is restricted when the site is in use.

The location of the key airports and sites within the Sydney Basin airspace relative to WSI is shown in Figure S.6.

The Sydney Basin airspace is the most complex and busiest airspace in Australia. In 2019, there were more than 710,000 air traffic movements in the Sydney Basin airspace. Most parts of the Sydney Basin, including much of the Greater Blue Mountains, currently experience some level of daily overflight. The level of existing aircraft activity within the Sydney Basin airspace is evident in reviewing flight tracks flown from Sydney (Kingsford Smith) Airport, Camden Airport and Bankstown Airport over a one week period in 2019 (refer to Figure S.7).





Note: This figure does not include other airports that operate aircraft within the Sydney Basin such as the RAAF Base Richmond or Australian Army Holsworthy Airport

Figure S.7 One week sample of flight track activity in the Sydney Basin (March 2019)





The Airport Site and surrounds

WSI is located within the Western City District, which includes the Blue Mountains, Camden, Campbelltown, Fairfield, Hawkesbury, Liverpool, Penrith and Wollondilly Local Government Areas (LGA). Blacktown LGA, located around 8 km from the Airport Site, is within the Central City District, alongside Cumberland, Parramatta and The Hills LGAs.

Within the Airport Site, the biophysical setting is characterised by the construction of 2 major projects. Construction of the WSI Stage 1 Development including the airfield, terminal and the landside layout and associated facilities such as navigational aids (and associated systems) commenced in 2018. Construction, including station excavation, for the Sydney Metro – Western Sydney Airport (new metro railway line) commenced in late 2022. Both these developments are scheduled to be completed in 2026 to enable airport operations to commence.

Most of the land within and immediately surrounding the Airport Site currently comprises low density rural residential and agricultural land uses. To the north-east and east of the Airport Site are the localities of Badgerys Creek, Kemps Creek and Mount Vernon. The villages of Luddenham and Wallacia lie immediately west of the Airport Site and the villages of Silverdale and Warragamba are located south-west in the vicinity of Greendale. The development of the Aerotropolis associated with WSI would bring significant change to surrounding land uses (refer below).

Lake Burragarang, a man-made lake created by Warragamba Dam, and part of major water catchment area for Sydney is also located to the south-west of WSI.

Greater Blue Mountains Area

The Greater Blue Mountains Area (GBMA), listed as a World Heritage property and National Heritage place, is located to the west of WSI (refer to Figure S.8). At its closest point, the GBMA is around 4 nautical miles (nm) (around 7 km) from WSI. It is a deeply incised sandstone tableland that encompasses around 1.03 million hectares of eucalypt-dominated landscape just inland from Sydney (UNESCO 2022). The Greater Blue Mountains comprises

one of the largest and most intact regions of protected bushland in Australia and is noted for its representation of the evolutionary adaptation and diversification of the eucalypts in post-Gondwana isolation on the Australian continent (UNESCO 2022). It supports an exceptional representation of the taxonomic, physiognomic and ecological diversity that eucalypts have developed: an outstanding illustration of the evolution of plant life.

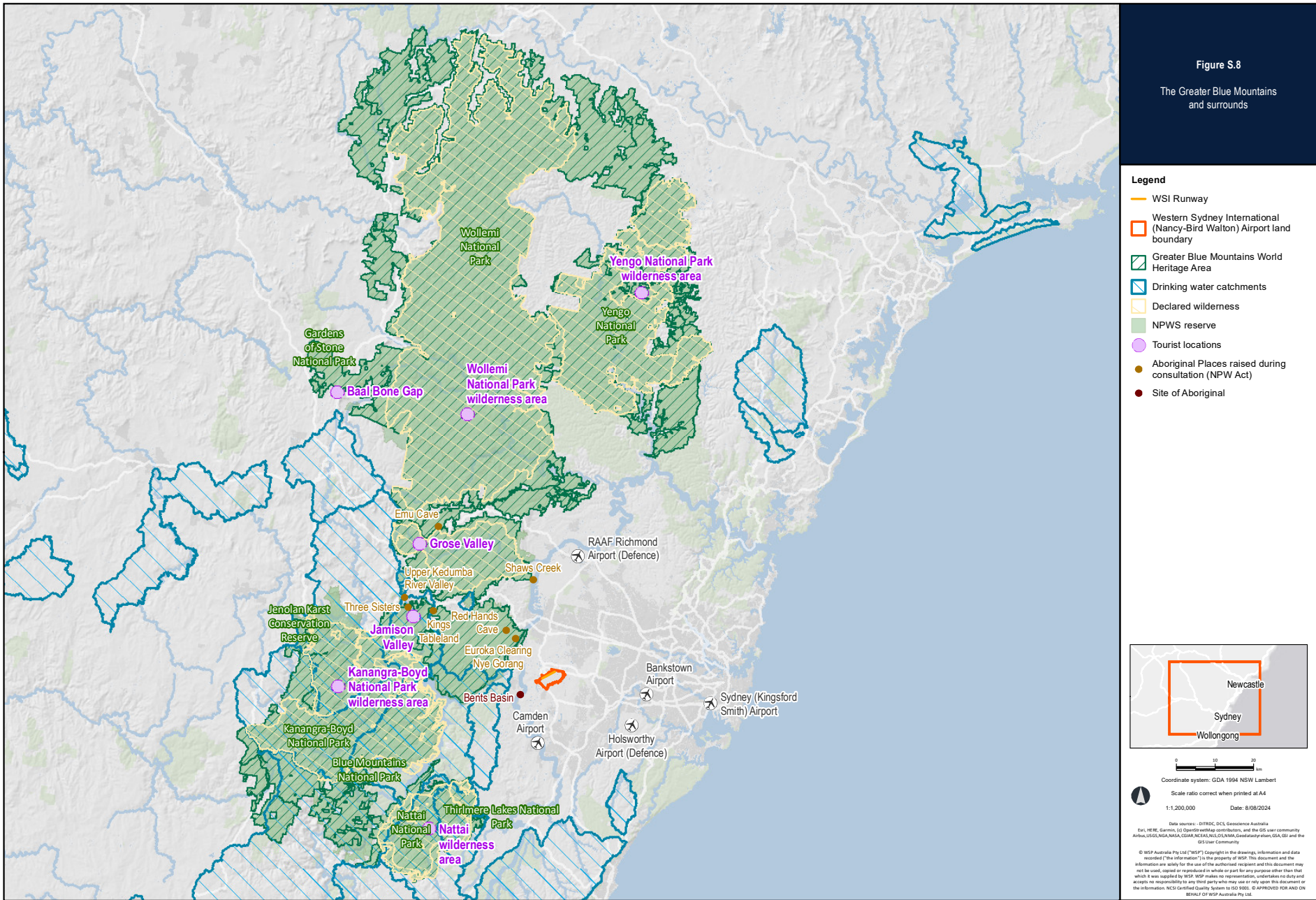
Several rare and endemic species, including relict flora such as the Wollemi Pine, also occur within its boundaries. The GBMA includes an outstanding diversity of habitats and plant communities that support its globally significant species and ecosystem diversity. Ongoing research continues to reveal the rich scientific value of the area as more species are discovered.

The Greater Blue Mountains was inscribed on the World Heritage List in 2000 for both its fauna and flora values. This listing formally recognises that the area has Outstanding Universal Value of the Greater Blue Mountains biodiversity under the World Heritage Convention. Its exceptional biodiversity values are complemented by numerous others, including indigenous and historic cultural values, geodiversity, water production, wilderness, recreation and natural beauty.

Future setting

The development of the Aerotropolis associated with WSI would bring significant change to surrounding land uses.

Under the NSW Government's overarching vision for Sydney, the Western Parkland City would be the primary focus of the Western City District and would be established on the strength of WSI and the Aerotropolis. The Aerotropolis would comprise an area around 11,200-hectare surrounding WSI. The Aerotropolis would become a hub of industry and innovation, creating more than 100,000 new job opportunities across the Aerotropolis Core, Badgerys Creek, Northern Gateway and Agribusiness precincts by 2056. It would include the Bradfield City Centre, which would be established within the Aerotropolis Core and centred on the new Sydney Metro station. Luddenham Village, located at the core of the Agribusiness precinct, is set to become a tourist and cultural hub for the Aerotropolis, while servicing employees within the Agribusiness Precinct.



Statutory context

The Australian airspace is governed by Commonwealth legislation. The key Acts and related Regulations which govern the development and approval of the project are:

- **Airports Act 1996** – The Airports Act establishes the regulatory arrangements that apply to certain federally-leased airports, including the requirements for land use planning, building approvals and environmental management. These arrangements require the approval of a master plan for WSI (which would ultimately replace the existing Airport Plan) and major development plans, which are submitted by an Airport Lessee Company.
- **Airspace Act 2007** – The object of the Airspace Act is to ensure that Australian-administered airspace is administered and used safely, taking into account the protection of the environment, efficient use of that airspace, equitable access to the airspace for all users of that airspace, and national security. CASA, is the regulator responsible for the administration of Australian airspace architecture under this Act and the Airspace Regulation 2007.
In accordance with the Airport Plan, CASA and Airservices Australia have been involved in the development of the preliminary airspace design for WSI. Following the exhibition of the Draft EIS and the finalisation of this EIS, Airservices Australia and DITRDCA would be responsible for the detailed design and implementation of the airspace. Airservices Australia would seek the approval from Office of Airspace Regulation (OAR) on the detailed design of the airspace architecture.
- **Civil Aviation Act 1988** – The Civil Aviation Act is the primary legislation relating to aviation safety in Australia and is administered by CASA. Requirements relating to the safety of all aspects of civil aviation are set out in the Civil Aviation Regulations 1988. The Regulations implement the standards and recommended practices of the International Civil Aviation Organization, which govern international civil aviation world-wide. As detailed throughout the EIS, the project has been designed in accordance with the relevant provisions and safety standards.

- **The Environmental Protection and Biodiversity Conservation Act 1999** – The Environmental Protection and Biodiversity Conservation (EPBC) Act provides the national framework for protecting and managing nationally (and internationally) important flora and fauna, ecological communities and heritage places (including World heritage) that are defined under the EPBC Act as 'matters of national significance'. The EPBC Act also confers jurisdiction over actions that have the potential to make a significant impact on the environment where the actions affect Commonwealth land or are undertaken on behalf of Commonwealth agencies.
A referral was made under Section 161 of the EPBC Act by the then Minister for Communications, Urban Infrastructure, Cities and the Arts, Airservices Australia and CASA in 2021 (EPBC 2022/9143). The delegate for the Australian Minister for the Environment and Water determined on 28 January 2022 that the project would be assessed by way of an EIS and, in doing so, issued the EIS Guidelines and nominated DITRDCA as the proponent for the project.
- **Air Services Act 1995** – The Air Services Act establishes and governs Airservices Australia, which is wholly owned by the Australian Government and is accountable to the Australian Minister for Infrastructure, Transport, Regional Development and Local Government. Under the Act, Airservices Australia is to provide the facilities and services for the safety, regularity and efficiency of air navigation within Australian-administrated airspace. This includes providing air traffic services, aviation rescue firefighting services, aeronautical information, radio navigation and telecommunications.

NSW planning laws do not apply in relation to the management of controlled airspace, nor the assessment of a plan for aviation airspace management by virtue of Section 160(5) of the EPBC Act. Consideration has been given to relevant NSW legislation, including environmental planning instruments, where appropriate.

A flow chart of this assessment, approvals and implementation pathway is provided in Figure S.9. Further detail is provided in the EIS.

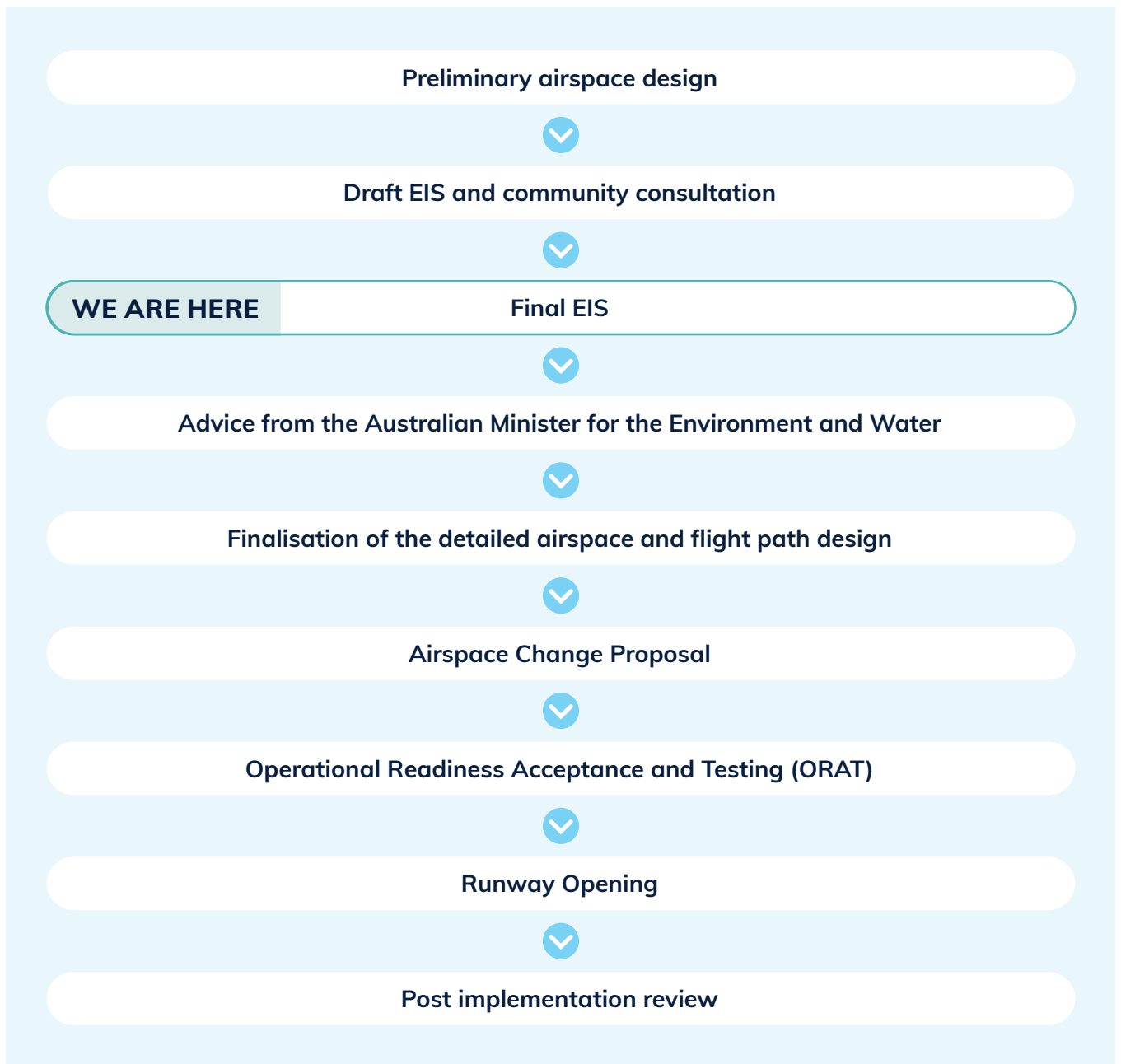


Figure S.9 The assessment, approvals and implementation pathway for the project

Part B – The project

Part B of the EIS provides a summary of the project's development and the options considered, a description of the key aspects of the design and factors that influence it, and a summary of the consultation process.

Airspace design principles

The principal consideration in deciding where and how aircraft arrive and depart from an airport is safety. This takes precedence over all other matters. Following safety, there are a wide range of other factors that influence the use of runways, and the location and design of where aircraft fly. The Airport Plan sets out 12 Airspace design principles that the design process is required to follow (presented in Figure S.10). The principles were informed by and reflect community and industry feedback on the 2016 EIS.

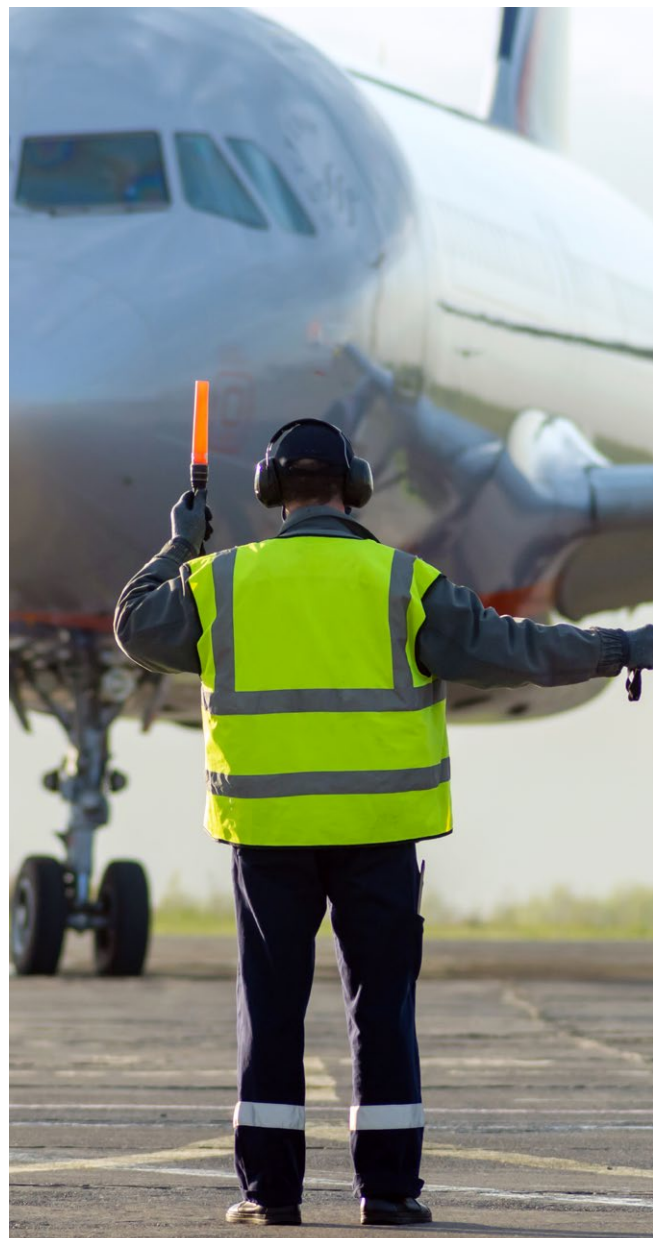




Figure S.10 Future airspace design principles

Project development and alternatives

Designing flight paths for a new airport is a large, complex and technical task. While the new airport and airfield are a greenfield development (and are not the subject of this EIS), the Sydney Basin airspace already comprises an extensive network of flight paths associated with civilian and Defence airports within the the Sydney Basin. The Sydney Basin airspace also caters for flying training, emergency aviation activities (including medical and firefighting), recreational aviation activities (gliders, ballooning) and transiting flights.

As a result, the airspace and flight path design process for WSI 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.

There are 4 main phases to the airspace and flight path design process (refer to Figure S.11). It is an iterative process informed by community and stakeholder engagement at each phase.

The flight path design started with developing a proof-of-concept design. This first step was completed as part of the 2016 EIS and Airport Plan to demonstrate that WSI could operate safely along with all other airspace movements in the Sydney Basin. Since then, planning for flight path design options has commenced and significant changes have been made to the design approach as a result of feedback received in 2015–16, including:

- minimising noise on residential areas
- minimising the impacts of air operations on natural and visually sensitive areas
- avoiding aircraft converging over a single merge point in a single residential area.

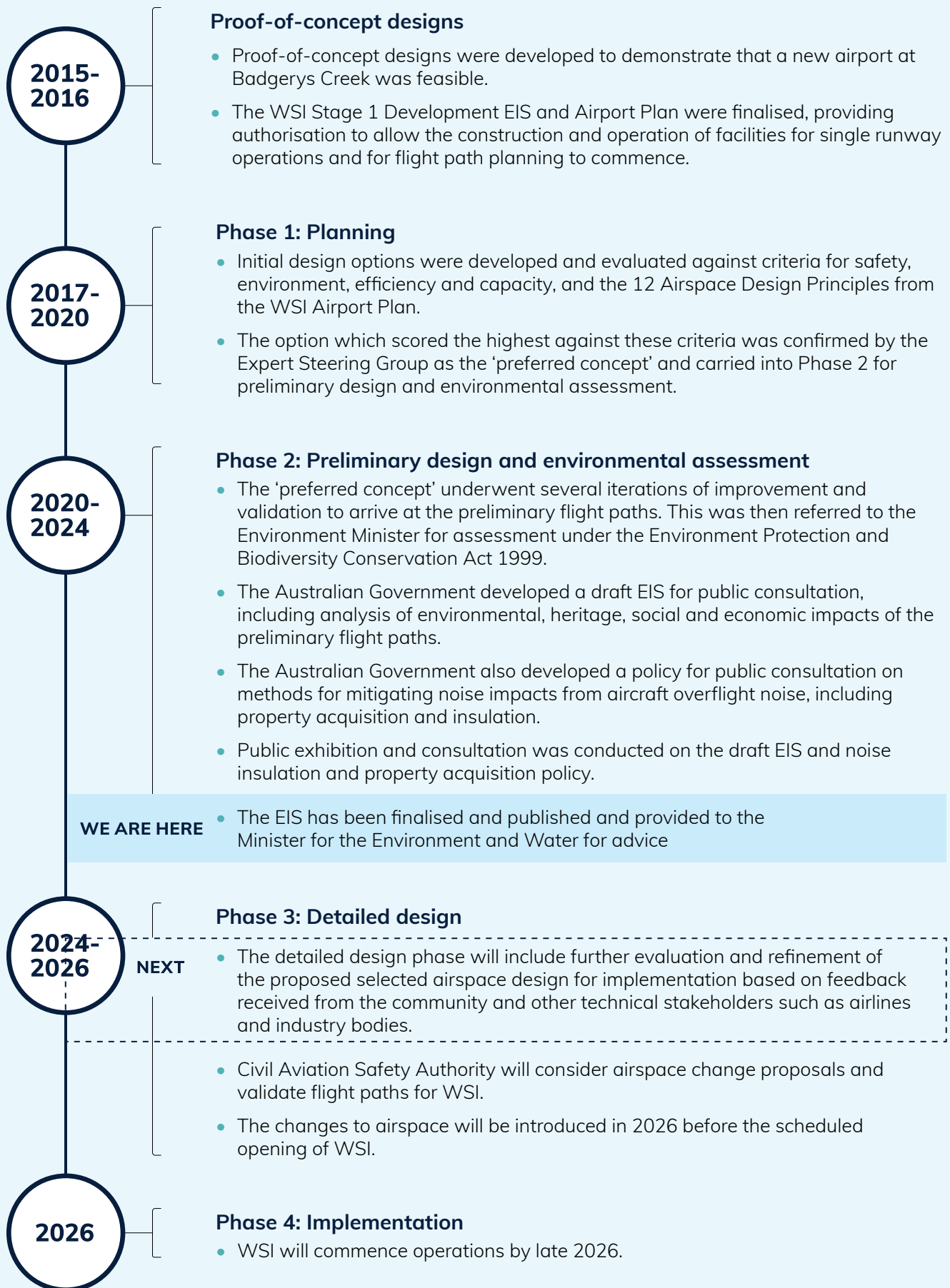


Figure S.11 Flight Path Design Pathway

The Draft EIS formed the second phase: Preliminary Design and Environmental Assessment. A range of constraints informed the technical feasibility of the preliminary flight path design. These included:

- the need to maintain a safe airspace: the need to comply with safety requirements and international rules of aviation was paramount for the development of the proposed flight paths
- the fixed nature of the runway alignment: there will be no changes to the north-east/south-west runway alignment, which was approved in the 2016 EIS and is currently under construction
- the final approach and initial departure paths are fixed: given the fixed runway alignment and the requirement for aircraft to approach and depart the WSI on a relatively straight trajectory (from a minimum distance of around 4 nm (around 7 km) from the runway) was fixed for this portion of the flight paths. The need to safely manage the speed and altitude of aircraft in the final approach and departure phases of flight was also considered
- the altitude of aircraft is constrained: the height at which aircraft operate is determined by a number of factors, including the aircraft type, weather conditions, safety requirements and international rules of aviation. This includes the height at which aircraft start their landing approach (e.g. maintaining a certain glide path towards the runway)
- the presence of existing airports and other airspace requirements in the Sydney Basin: major changes cannot be made to the flight paths for Sydney (Kingsford Smith) Airport and considerations were needed for operations at other airports, such as Camden, Bankstown, Richmond and Holsworthy.

The need to process aircraft in an orderly sequence when arriving has limited the opportunity to develop multiple alternative approach paths for aircraft arriving at WSI.

In developing this preliminary airspace design, proposed flight paths and runway operating modes have been subject to multiple and iterative reviews with the objective of optimising outcomes (that is, minimising the unavoidable residual impacts of aircraft noise on communities). This has included consideration of alternative flight paths identified by the community and other stakeholders during exhibition of the Draft EIS.

Future design phases would continue to ensure a rigorous

approach to the finalisation and implementation of the airspace and flight path design. The finalised EIS forms part of Phase 3: Detailed design. The detailed design phase will include further evaluation and refinement of the proposed selected airspace design to a level appropriate to secure regulatory approvals. This would be based on feedback received from the community and other technical stakeholders such as airlines and industry bodies. The implementation phase would include the regulatory certification and authorisation of the proposed airspace design and its implementation and post-implementation would involve the ongoing monitoring of the operation of the design by key operational stakeholders.

Key features of the project

The project is the development of proposed flight paths and a new controlled airspace volume for single runway operations at WSI, including the associated air traffic control and noise abatement procedures, runway modes of operation and facilitated changes to airspace.

The airspace design is for single runway operations, as approved by the Airport Plan, and has been developed on the requirement for WSI to operate 24-hours, 7 days a week. The airport infrastructure at WSI has been designed to be an all weather operation. The eventual use is for commercial passenger and freight aircraft.

The scope of airspace operations for the project is restricted to:

- standard instrument arrivals (STAR) from when an inbound aircraft leaves the higher level enroute sector to when it joins its final alignment for landing
- standard instrument departures (SID) from when a departing aircraft leaves the runway and is established in a stable configuration to safely execute turns to join the higher level enroute sector for its destination
- taking off (from start of roll for aircraft) or landing (until an aircraft exits runway).

These phases of flight are depicted in Figure S.12.

The project does not consider the operation of aircraft when performing manoeuvring operations on the runway and taxiway system on their way to or from their parking positions at the terminals (as assessed in the 2016 EIS).

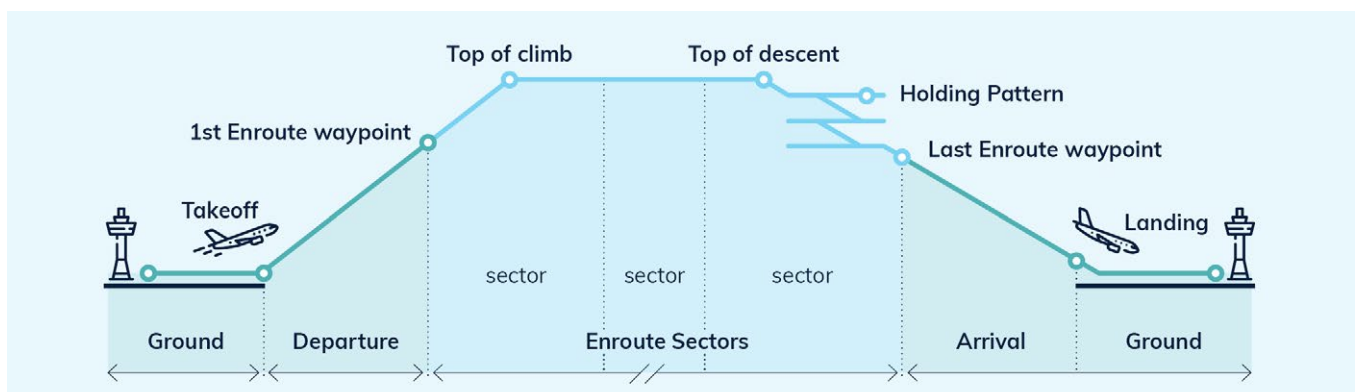


Figure S.12 Phases of flight

Volume of aircraft traffic

An aircraft movement is defined as a single landing or take-off event.

The approval for WSI is limited to single runway operations with the capacity to handle up to 10 million annual passengers and around 81,000 air traffic movements per year by 2033, including freight operations. In the medium to longer term, WSI's airfield and terminal facilities would be expanded incrementally to handle up to 37 million annual passengers and around 226,000 air traffic movements per year in 2055. This includes both jet and non-jet (for example turbo-prop) aircraft.

This phasing of operations is represented by particular years as depicted in Figure S.13 and forms the basis of the forecast schedules and assessment years for the purpose of the EIS. The years and reasons for selection are:

- **2033** – representing 7 years after opening, when passenger numbers at WSI reach the planned design capacity for the initial Stage 1 terminal development of 10 million passengers per year. The volumes predicted for 2033 provides a more appropriate representation of mature levels of activity (and therefore potential impacts) than those predicted in 2026.
- **2040** – representing continued growth at WSI, at a point when WSI reaches 15 million passengers per year.
- **2055** – representing a year as the single runway approaches capacity. While significant enhancements to aircraft technology are likely by this timeframe, the forecast schedules have not considered technological step changes (for example, upgrading of aircraft fleets) and have instead relied on existing and soon-to-be commissioned aircraft types. This provides a conservative impact assessment.

Forecast schedules

As a completely new airport facility, WSI does not have access to historic operations and daily aircraft movement profiles to extrapolate into future years of operation. Consequently, Western Sydney Airport Company Limited (WSA Co), as the airport lessee company for WSI, has provided projected demand schedules – or 'forecast schedules' for aircraft movement – for the 3 assessment years.

All forecast schedules were developed as accurately as possible by WSA Co and are considered sufficient for the purpose of this assessment. They are considered the most reliable source at this time given WSA Co, as the ALC, is the owner of the airport lease granted by the Australian Government, and responsible for the development and operation of WSI.

The forecast schedules form the basis of modelling undertaken to inform the assessment of issues such as aircraft noise, air quality and greenhouse gas emissions for the EIS.

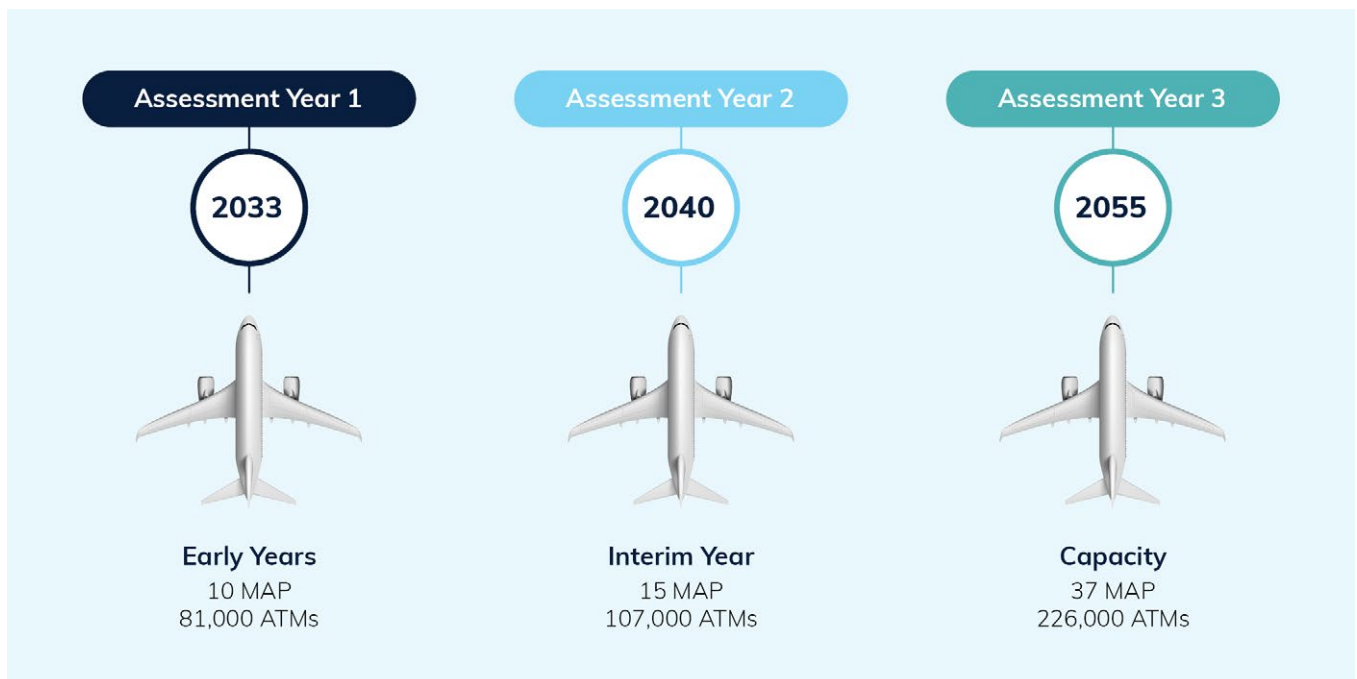


Figure S.13 Volume of passenger and air traffic movements over single runway operations

Aircraft fleet mix

Approximately 80 per cent of aircraft at WSI are anticipated to be narrow-body (single aisle, twin-engine) jets, with the remainder consisting of wide-body (twin aisle, twin-engine) jets and non-jet (turbo-prop) aircraft. The proportion of wide-body jets operating in the fleet mix at WSI is expected to increase by approximately 18 per cent between 2033 and 2055 (from 13 per cent to 31 per cent of all movements).

Figure S.14 represents typical airframes expected to operate at WSI and their potential operating ranges.

Air traffic control procedures

The project includes the development of a set of air traffic control procedures for WSI. These procedures would be used by air traffic control to manage runway operations.

The air traffic control procedures, and the documentation to be made available to pilots and/or air traffic control have been presented in the EIS and include:

- Aeronautical Information Package
- standard instrument arrivals (STAR) and standard instrument departures (SID)
- standard clearances and coordination
- weather criteria for visual and instrument landings
- noise abatement procedures
- criteria for selecting the operating runway (or the 'nominated' runway)
- airport specific separation requirements for arriving and departing aircraft
- airport specific sequencing requirements
- intersection departures.

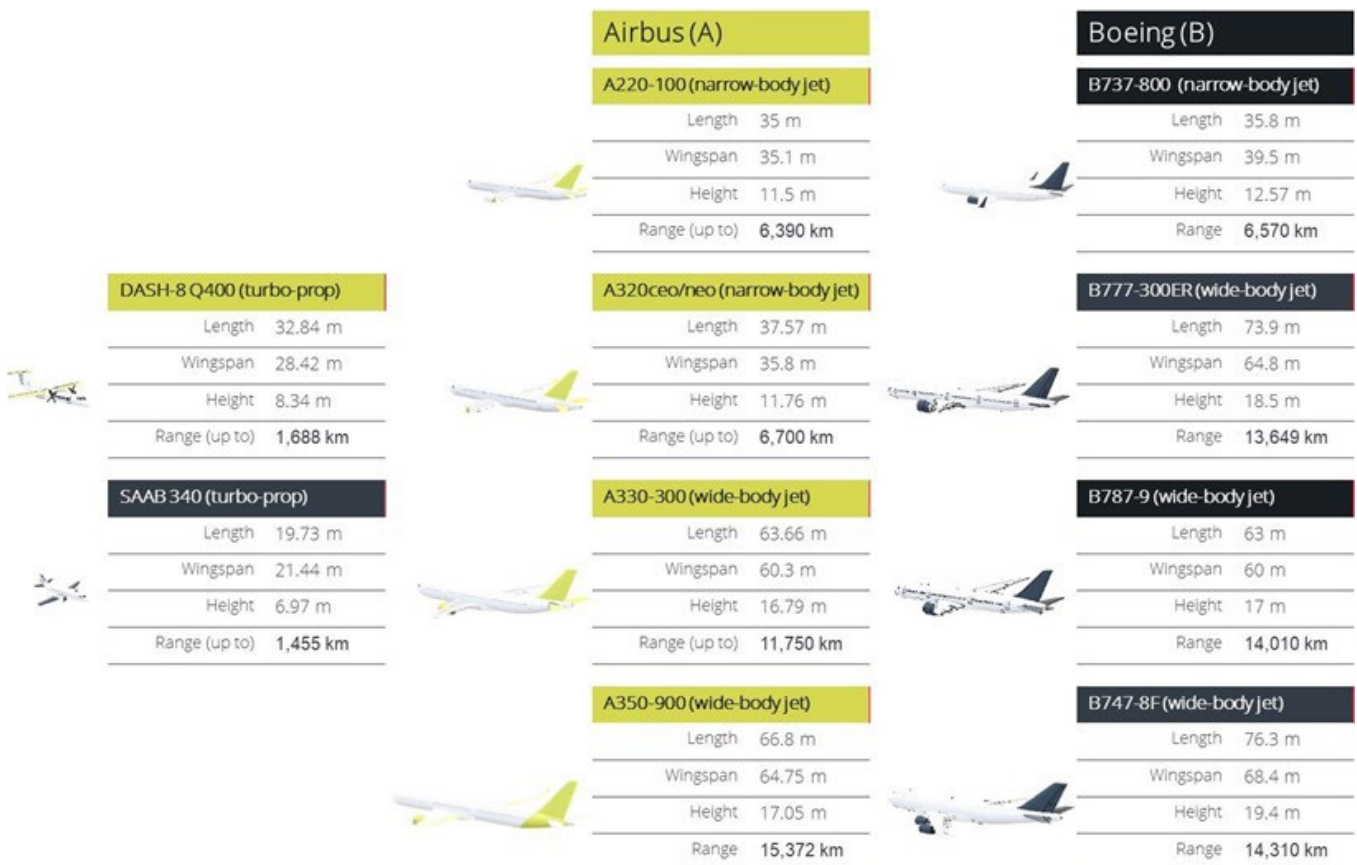


Figure S.14 Typical airframes expected to operate at WSI and their potential operating ranges

Runway modes of operation

Runway modes of operation refer to the direction in which aircraft take off and land. The runway modes of operation for WSI have been identified, including operating modes for both day and night. The choice of a runway mode of operation is primarily informed by the weather (especially wind direction and wind speed). Other factors include the runway surface status, aircraft performance profile and capability, air traffic demand and airspace management procedures and potential impacts on surrounding communities, such as noise.

Depending on the prevailing wind conditions at WSI, the 2 principal runway modes of operation (for day and night) are:

- Runway 05 – all aircraft would be directed to approach WSI to land from the south-west and directed to take off to the north-east, before redirecting towards their ultimate destination

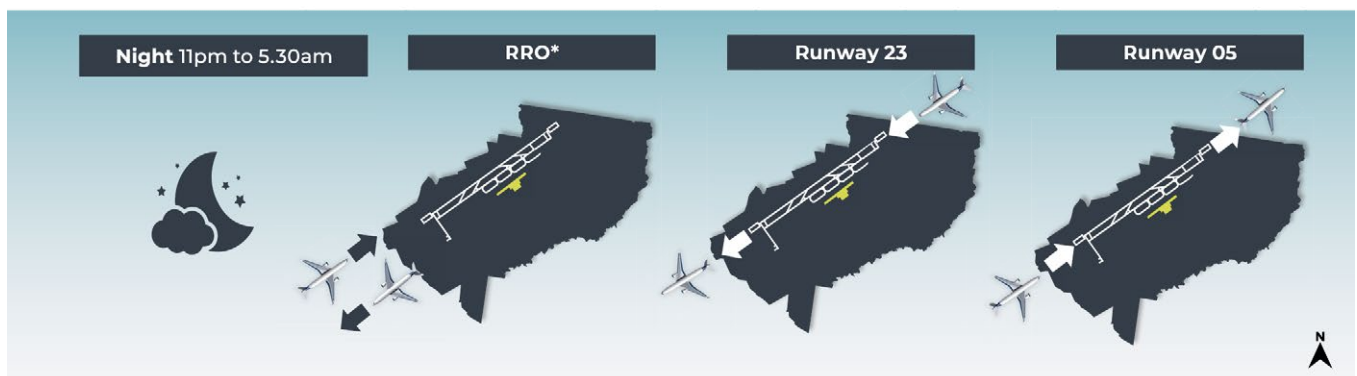
- Runway 23 – all aircraft would be directed to approach WSI to land from the north-east and take-off to the south-west, before redirecting to their ultimate destination.

A third operating mode, head-to-head or Reciprocal Runway Operations (RRO), is an additional mode that would be used when weather and traffic conditions permit. This would involve all take-offs and landings in opposing directions, to and from the south-west of WSI. The RRO mode of operation would not be the only night time operational mode, but could be used for WSI as an additional operating mode when it is safe to do so, specifically when the Sydney (Kingsford Smith) Airport curfew period is in effect.

The runway modes of operation for WSI are depicted in Figure S.15. These include those for day and night.



WSI Night (11pm to 5.30am) runway modes of operation



Note: RRO is suitable only at night (11 pm to 5:30 am) when air traffic demand levels and weather conditions permit

Figure S.15 WSI runway mode selection

Preferred runway modes of operation

Preferred runway modes of operation are where a particular runway mode is favoured over other modes where wind conditions and traffic demand allows.

Operationally there is no major difference between the runway directions at WSI. Both provide similar length, similar climb gradient requirements for departing aircraft, similar approach angle and length of final approach for landing aircraft and similar movement capacities in either direction.

There are benefits associated with certain flight paths that reduce the number of dwellings subject to overflights, providing opportunities for respite and sharing of aircraft noise, both during the day and night.

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 (or the RRO-NAP) would be prioritised (when weather conditions are suitable and air traffic volumes are low enough to permit safe operations), followed by Runway 23. 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 noise impact assessment considers 3 potential preferred runway mode scenarios, identified as 'No preference', 'Prefer Runway 05', and 'Prefer Runway 23'. These scenarios are explained in greater detail in Chapter 11 (Aircraft noise).

Flight paths

Based on the different runway modes of operation, different flight paths would be adhered to within the airspace surrounding WSI. Once in flight, aircraft are subject to dispersion, which influences where the aircraft is in relation to the flight path, hence the flight paths are depicted as a flight path corridor (Figure S.14 to Figure S.18). The corridor shows the flight path widening to notionally 2 km either side of the nominal centreline of the flight path, transitioning to 5 km as the aircraft join the enroute flight network.

Flight paths for the operation of WSI are divided into day flight paths, night flight paths and RRO flight paths. The general description of each of these are summarised below. Further detailed descriptions of these flight paths is provided in Section 7.5 of the EIS.

Flight altitude

Within the 45 nm (83 km) study area boundary, aircraft are expected to operate up to approximately 20,000 ft (6 km) and higher. The altitude and dispersion of aircraft are presented in coloured overlays on the flight path figures presented in Figure S.14 to Figure S.18 and used throughout the EIS. The 2-dimensional charts with altitude and dispersion developed for this project are common and accepted practice (including for Australian Airport Master Plans).

The flight paths have vertical separation at cross-over points which cannot be discerned from these 2-dimensional images. The difference in flight path altitude at a distance from WSI is indicated by the fading of the flight path colour shading from dark (lower altitude) to light (higher altitude).

Day flight paths

Day time flight paths (operating between 5:30 am to 11 pm (local time)) would be dependent on the selection of Runway 05 or Runway 23 operating direction for arrivals and departures. This would be weather dependent and largely governed by prevailing wind direction and speed.

The day arrival and departure flight paths for Runway 05 and Runway 23 (including their indicative altitudes) are shown on Figure S.16 to Figure S.17 respectively.

Night flight paths

The selection of hours 11 pm to 5:30 am for the WSI night period is based on additional airspace availability during the Sydney (Kingsford Smith) Airport curfew (11 pm to 6 am). This allows greater flexibility in the WSI flight paths, for which a suite of proposed night flight paths have been developed, including those proposed for the RRO mode. These WSI night flight paths vary to those of the WSI day period.

The night arrival and departure flight paths for Runway 05 and Runway 23 (including their indicative altitudes) are shown on Figure S.18 to Figure S.19 respectively.

Night flight paths – RRO

The additional airspace available during the 11 pm to 5:30 am period has enabled the development of a RRO mode at WSI.

When suitable weather and flight operation conditions permit (i.e. sufficiently low flight traffic etc), the RRO flight paths would land on Runway 05 from the south-west and depart from Runway 23 towards the south-west. The RRO flight paths would vary from the night flight paths described above. RRO flight paths would be used during suitable conditions to minimise overflight of more densely populated areas of the Sydney Basin during night time periods. As part of the RRO mode of operation, an additional RRO noise abatement procedure (RRO-NAP) option would also be available during certain additional conditions. The RRO-NAP would be a supplementary procedure to minimise community overflight when traffic allows by redistributing traffic and reducing the number of flights that overfly communities along the lower parts of the Great Western Highway corridor around Faulconbridge and Linden.

The night arrival and departure flight paths for RRO (including their indicative altitudes) are shown on Figure S.20 to Figure S.21 respectively.

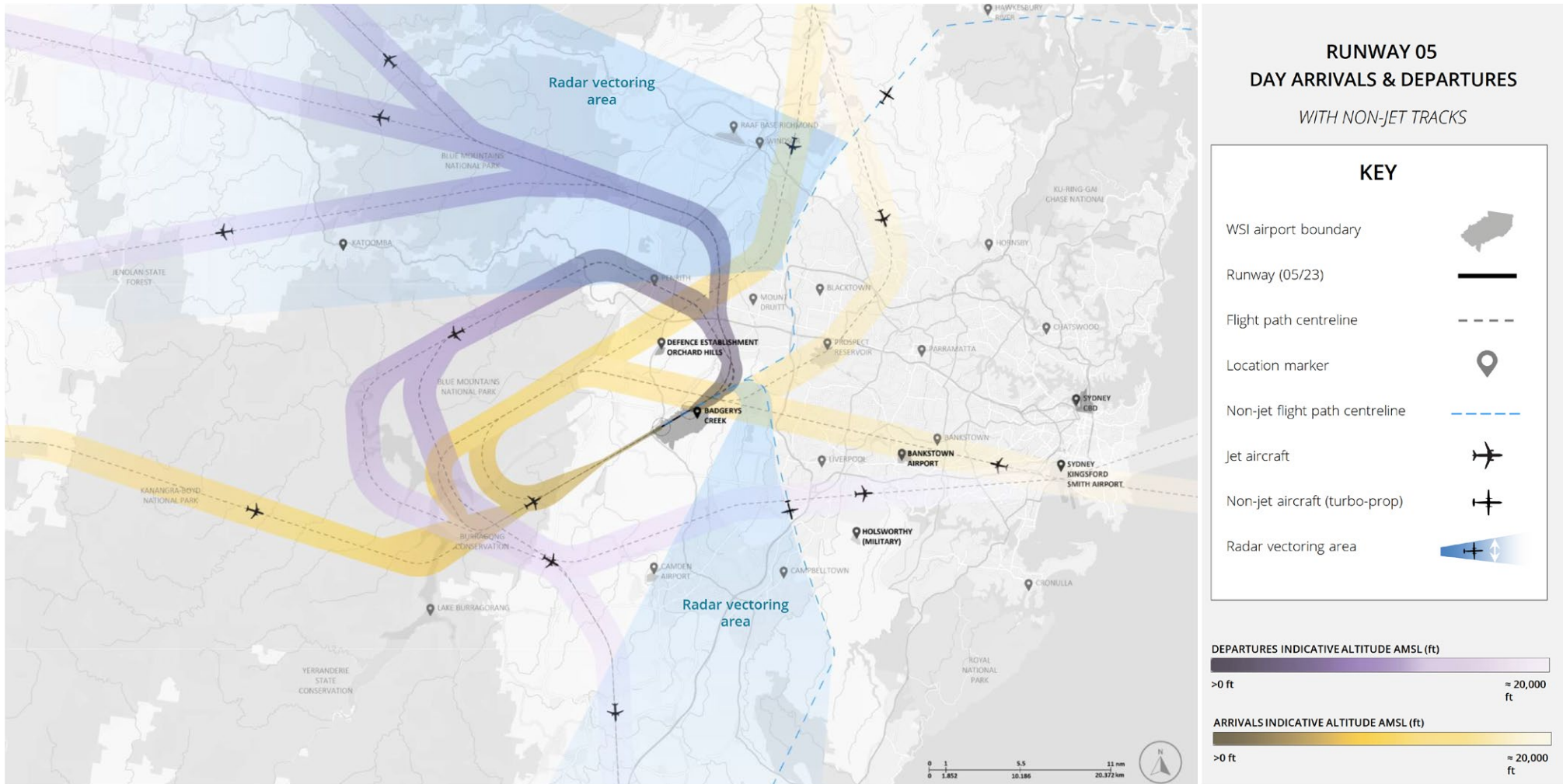
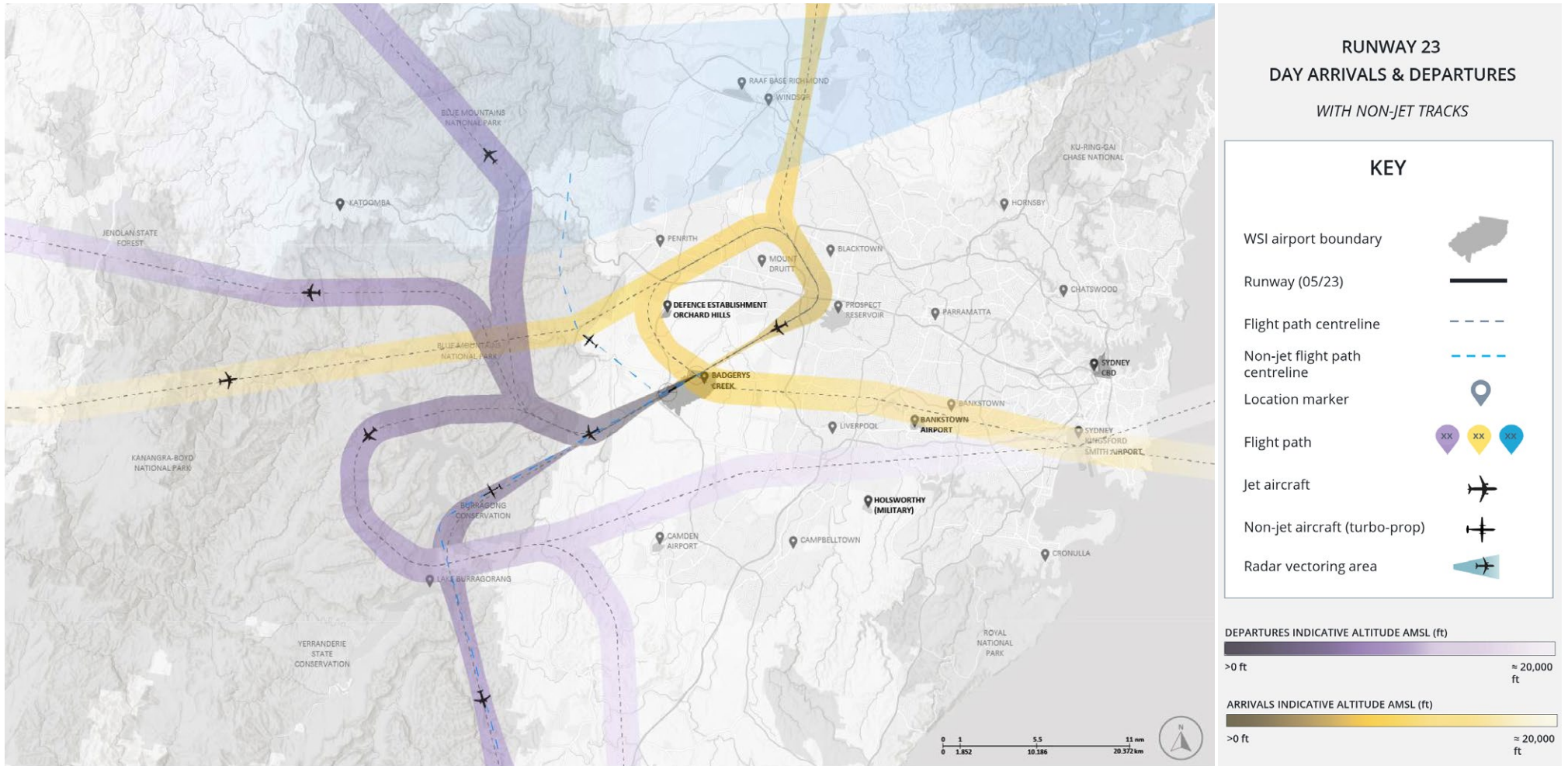
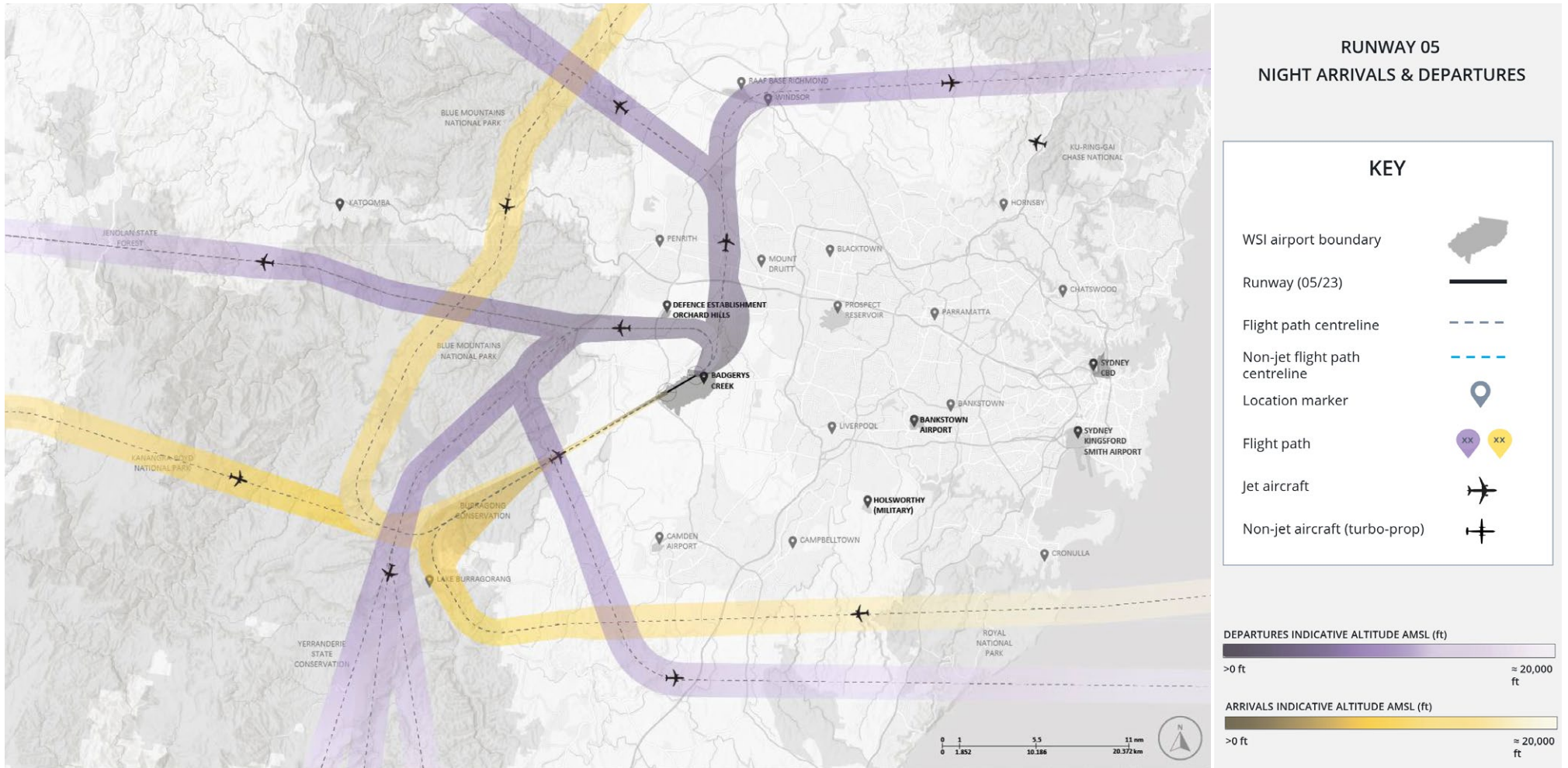


Figure S.16 Proposed flight paths for Runway 05 (day)



Note: Since exhibition of the Draft EIS, a minor refinement to the north-west departure flight path for Runway 23 (Day) to provide a more westerly alignment north of Linden has been incorporated into the project and is reflected in the above image.

Figure S.17 Proposed flight paths for Runway 23 (day)



Note: Since exhibition of the Draft EIS, the Required Navigation Performance – Approval Required approach for Runway 05 (night) south of Linden has been removed from the project and is reflected in the above image.

Figure S.18 Proposed flight paths for Runway 05 (night)

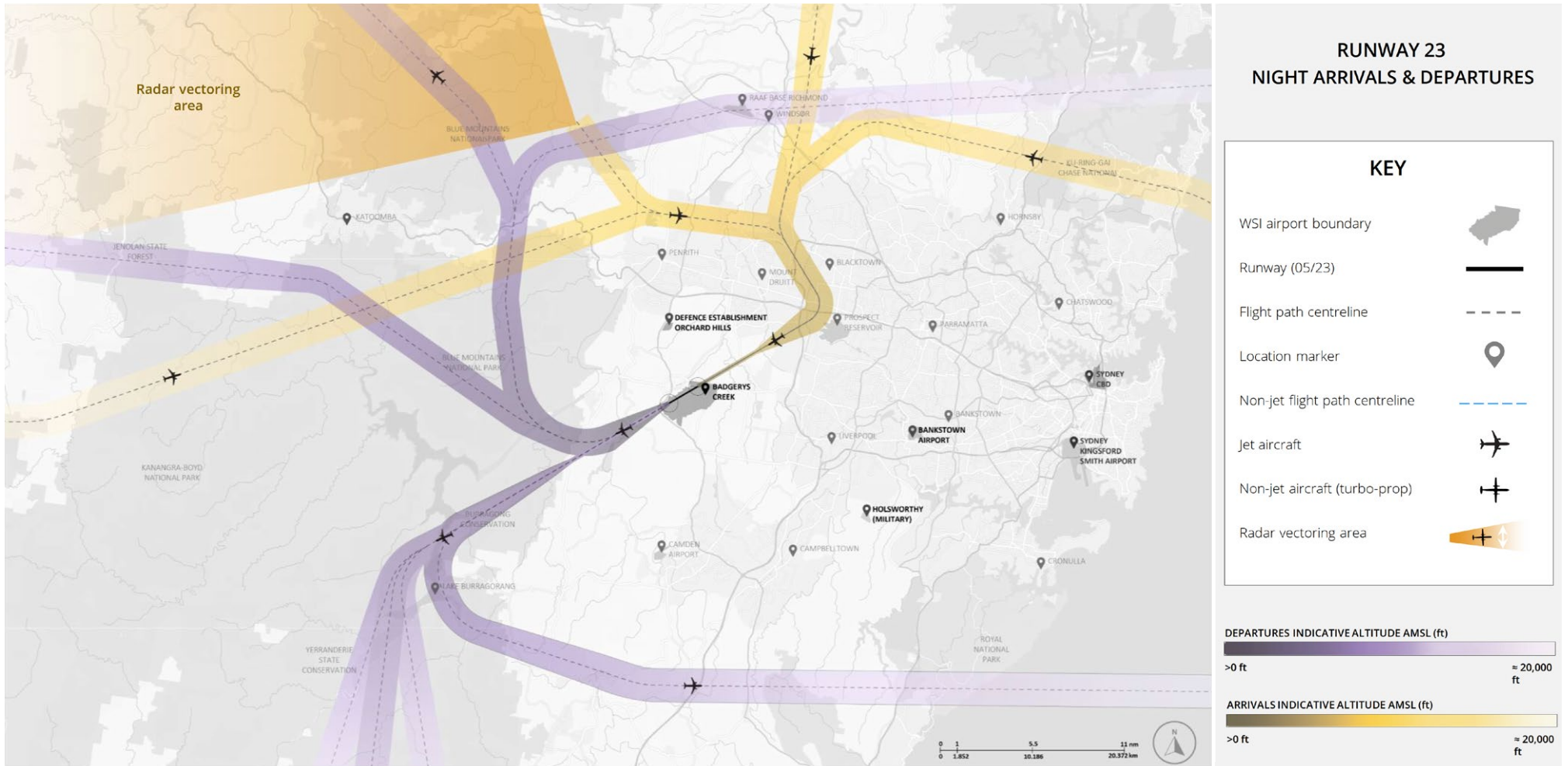
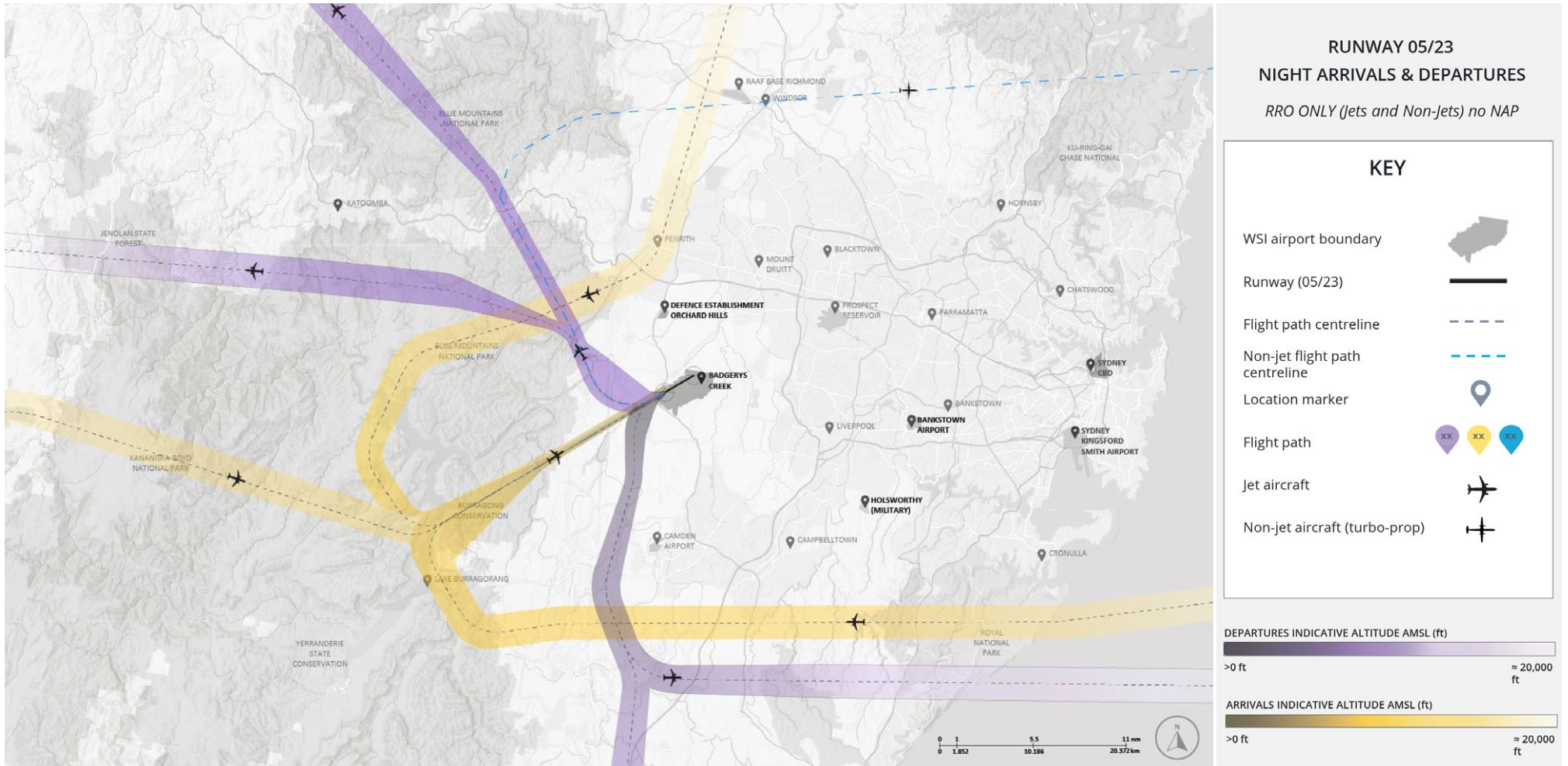


Figure S.19 Proposed flight paths for Runway 23 (night)



Note: Since exhibition of the Draft EIS, a minor refinement to the arrival flight path to Runway 05 from the east during the RRO mode of operation to provide a more southerly alignment has been incorporated into the project as well as the reallocation of jet aircraft on the northeast departure flight path to the southeast departure flight path. This is reflected in the above image

Figure S.20 Reciprocal Runway Operations (night)

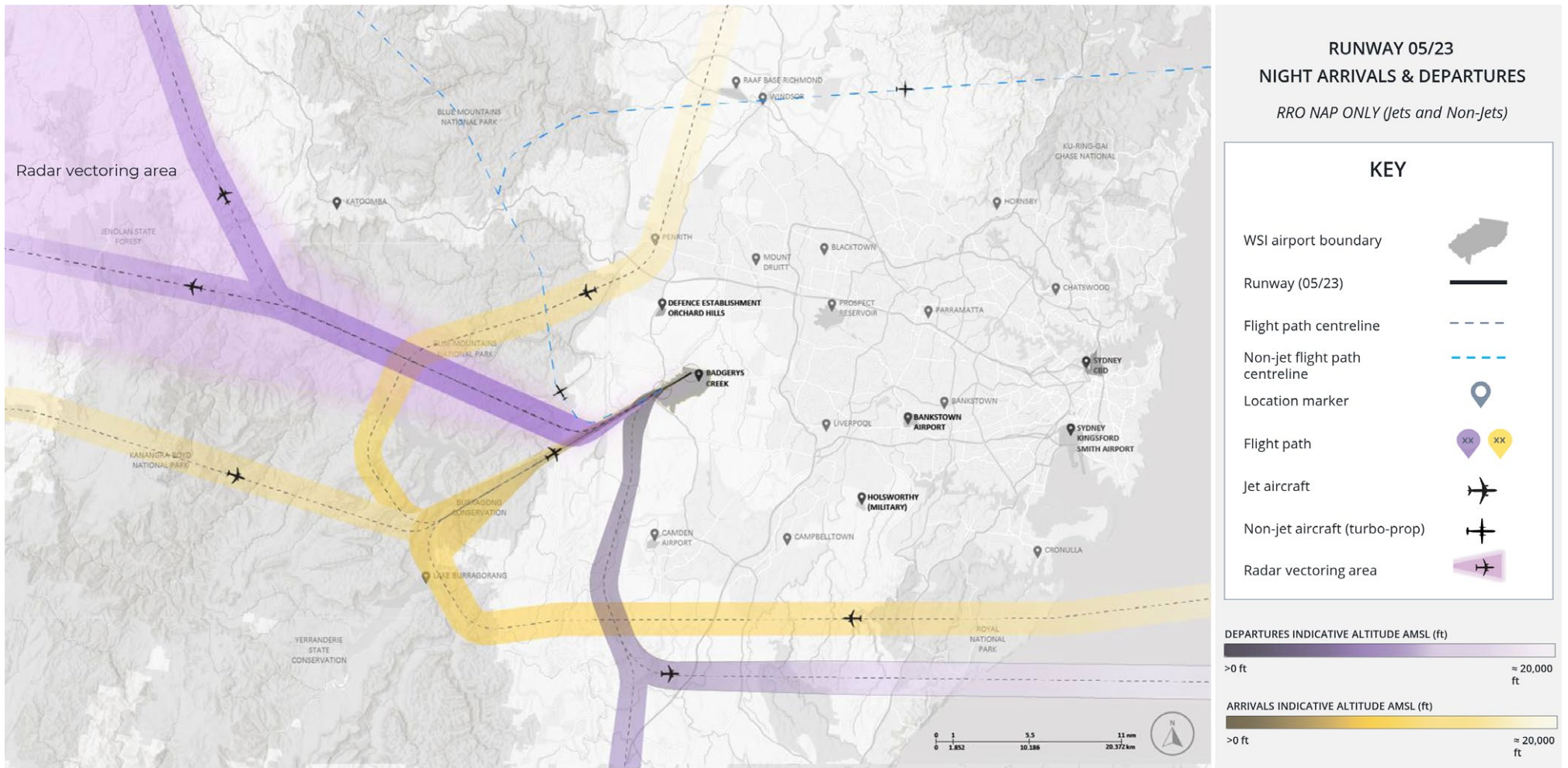


Figure S.21 Reciprocal Runway Operations Noise Abatement Procedure (night)

Off-procedure manoeuvring operations

The 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 so that operational predictability and safe separation from other aircraft is maintained. Further afield and under certain circumstances, some aircraft would operate away from published flight paths and may fly over areas that do not normally experience regular aircraft overflight. This may be at the request of a pilot or initiated by air traffic control. Indicative areas for such operations are presented in the EIS.

Facilitated changes (prior to WSI opening)

Changes to the Sydney Basin airspace 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. These are referred to as facilitated changes and are required prior to the opening of WSI in 2026. The facilitated changes have been minimised to the extent practicable and have been considered in terms of safety, national security (Defence), efficiency, equity of airspace access, existing aircraft operating standards, and impacts on surrounding communities and environment.

The changes are limited to affecting only those flight paths to and from Sydney (Kingsford Smith) Airport,

Bankstown Airport, Camden Airport and RAAF Base Richmond that currently use the airspace that would be required for WSI operations (principally in the west and north-west of the Sydney Basin). This includes flying training areas associated with Bankstown and Camden Airports, and a low level transit route that would be repositioned to the west of WSI.

All changes other than flying training areas will be confirmed as part of the WSI airspace change proposal. The final proposed design and ultimate procedures for flying training areas will not be confirmed until completion of a separate airspace change proposal.

Further details regarding the proposed facilitated impacts for the project is provided in the EIS.

Community and stakeholder engagement

Community and stakeholder engagement throughout the flight path design process is important so that community and key stakeholders are informed about the process, proposed changes, impacts and mitigation measures. An Engagement Plan aligning with International Association for Public Participation (IAP2) values guided engagement during the development and exhibition of the Draft EIS.

The Engagement Plan defines 6 principles generated in response to insights received through stakeholder interviews, desktop research and lessons learnt from similar projects – refer Figure S.22

Principles



Prioritise the most heavily impacted



Tailor communications and engagement to different audiences



Take people on the design journey



Be direct



Simplify the complex



Respond to new information as it emerges

Figure S.22 Engagement principles

A significant amount of community and stakeholder engagement was carried out in advance of exhibition of the Draft EIS. The engagement approach was designed to inform community and key stakeholders about the project and its processes, encourage participation in the process and allow the development of the Draft EIS to benefit from community and key stakeholder knowledge and understanding of specific needs.

Pre-exhibition engagement involved:

- briefings for all levels of government
- briefings for aviation, peak-bodies, environment, tourism and Greater Blue Mountains area interest and community groups
- engagement with First Nations people, including engagement with 13 First Nations groups including Traditional Owners and Local Aboriginal Land Councils (LALCs) from the Dharug, Dharawal and Gundungurra nations
- community engagement including through FOWSA, with residents, businesses and landowners potentially impacted by flight paths and with relevant Chambers of Commerce
- establishment of a dedicated project enquiry telephone number and email address
- community information stalls information brochures, media releases and public notices
- an online community portal containing a range of resources and information
- the online Aircraft Overflight Noise Tool which was developed to help the community and local stakeholders view the preliminary flight paths in more detail.

Following the release of the online Aircraft Overflight Noise Tool, a suite of supporting information and engagement activities were held with key stakeholder groups (including Local Councils, local Members of Parliament, Aviation Bodies, Aboriginal and heritage representatives and members of the community). These activities were an opportunity to outline what the online Aircraft Overflight Noise Tool is, noise impacts and how they are shown, sensitive areas and residential impacts.

Updated communication materials have been shared online to focus on the preliminary flight paths and noise assessments. As of 7 August 2023, more than 230,000 visits have been made to the online Aircraft Overflight Noise Tool. A letter box drop within the 12 Local Government Areas was undertaken to notify more than 900,000 residential and businesses that the preliminary flight paths had been released and how to find out more information.

Engagement with First Nations knowledge holders and stakeholders was undertaken to understand cultural values, the places associated within them and concerns about the potential impacts of the project. The outcomes of this consultation have been used to inform the assessment of the project. Engagement is ongoing and will consider recommendations for broader engagement.

Throughout this consultation, a broad range of issues have been identified. The issues raised by government agencies, authorities, stakeholders and the community are outlined in the EIS, along with a cross-reference to where they are addressed in the EIS.

Engagement during and post exhibition of the Draft EIS

During the exhibition of the Draft EIS, another 64,000 visits were made to the online Aircraft Overflight Noise Tool. A letterbox drop within 26 LGAs was undertaken to notify approximately 1.6 million residents. Community information and feedback sessions were also held by either DITRDCA or Airservices Australia. Notices were also published in one national newspaper, 2 state newspapers and 7 local newspapers.

In August 2024, DITRDCA completed additional targeted engagement with affected communities on 2 proposed refinements to the project. This involved community information and feedback sessions, comprising one online and 5 in-person sessions. Feedback was received at these sessions alongside feedback received via email or the Project 1800 line.



Part C – Environmental impact assessment

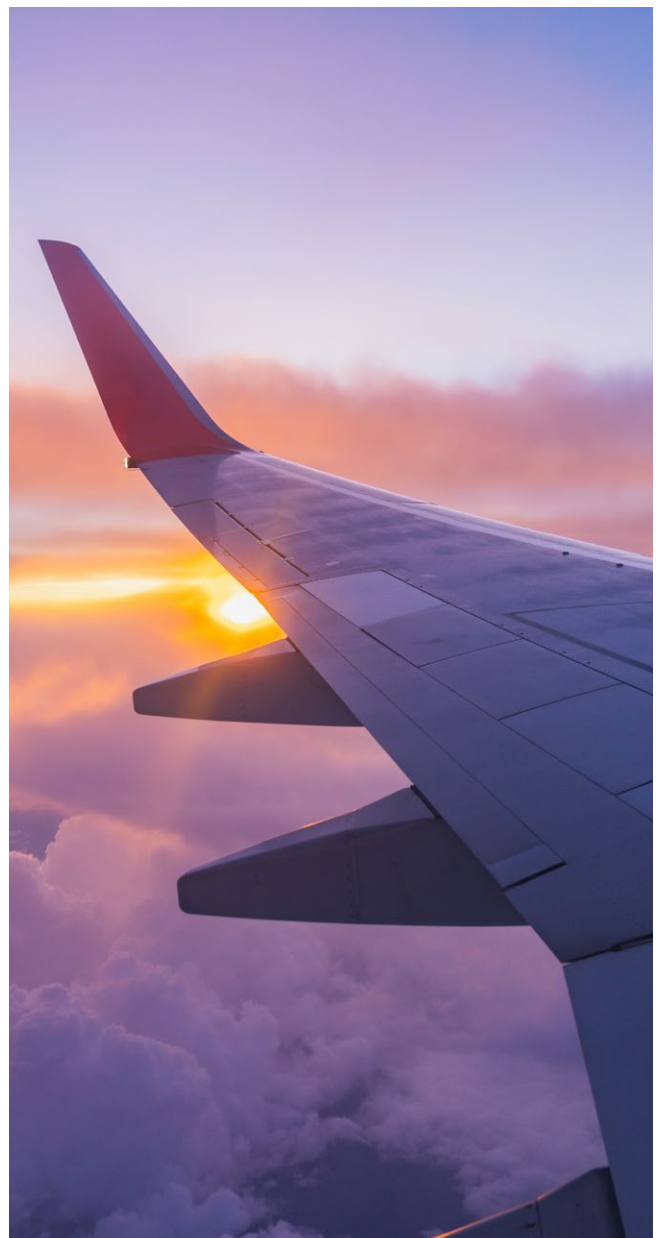
Part C of the EIS presents the impact assessment for the project. It outlines the approach to assessment and describes the results of the assessment of key environmental issues identified by the EIS Guidelines. Each assessment includes information on the existing environment, potential operational impacts and the proposed approach to mitigation and management.

Approach to impact assessment

The impact assessment for the EIS was undertaken to address the relevant requirements of the Airports Act and the EPBC Act, and meet the requirements outlined in the Australian Minister for the Environment and Water's EIS Guidelines, as well as being consistent with the EPBC Act Significant Impact Guidelines (DEWHA, 2013). The approach to the assessment involved:

1. understanding the environmental conditions today (baseline)
2. identifying key potential impacts and risks
3. determining the assessment type (for example, compliance versus a significance assessment)
4. assessing the original 'pre-mitigated' impact (where mitigation is inherent in the design)
5. determining if mitigation is required to manage any identified impacts.

A separate World Heritage impact assessment considering specific impacts to the GBMA was prepared in line with the *Guidance and Toolkit for Impact Assessments in a World Heritage Context* (UNESCO, 2022a) and the *IUCN World Heritage Advice Note: Environmental Assessment & World Heritage* (IUCN, 2013) (to meet the requirements of the EIS Guidelines).



Assessment years

The assessment of potentially significant impacts required a comparison to be made between the likely environmental conditions that will result under the project (that is, due to the introduction of new flight paths, airspace management concepts and procedures to facilitate aircraft arriving and departing WSI's single runway system) relative to existing conditions. For the EIS, particular years were selected as points in time for assessing any future significant environmental impacts in the short and long-term. These years are all related to single runway operations. The reasons for their selection are given below:

- **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** – 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. This year is assessed only for aircraft noise to provide further information on the change in aircraft noise over time.
- **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.

Summary of key impact assessment findings

Key environmental issues have been examined throughout the design and development of the project. Consultation has been carried out with relevant stakeholders to identify key potential impacts at an early stage. Where possible, the proposed flight paths have avoided and minimised impacts as part of the project design and development. The assessment has been carried out to meet the Australian Minister for the Environment and Water's EIS Guideline assessment requirements. A summary of the key findings of the environmental assessment of the project is provided in the following sections.

Aircraft noise

Aircraft noise impacts were assessed to reflect the expected growth of single runway operations in 2033, 2040 and 2055. Three runway operating scenarios were modelled. In designing the flight paths for WSI, safety of operations is the most important consideration. The preliminary airspace design process considered, to the extent practical, noise mitigation and environmental impacts associated with single runway operations. 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 the single runway approaches capacity in 2055:

- between 7,000 to 12,200 residents may experience 5 or more aircraft noise events above 70 dB(A) over a 24-hour period, which can lead to an indoor sound level of 60 dB(A) when windows are opened – enough to disturb conversation. The composite scenario N70 (24-hour) noise contours comprised of the 3 operating scenarios plus unidirectional scenarios for 2055 assessment year is shown in Figure S.20
- between 23,500 to 84,500 residents may experience 2 or more aircraft noise events above 60 dB(A) over the night time period (11 pm to 5:30 am). The lower end of this range could be achieved through the use of RRO (when available), while the higher end is based on a scenario without RRO at night
- between 114,000 to 155,000 residents may experience 10 or more noise events above 60 dB(A) over a 24-hour period. By 2055, N60 contours extend well beyond the runway ends, north towards Penrith, north-east towards St Marys and north, west and south-west into the Blue Mountains National Park.

The number of residents affected by different levels of aircraft noise depends on the runway operating scenario adopted. Comparison of the 3 primary runway operating 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.

The ANEC extends along the standard instrument arrival and departure routes and would generally remain within the existing published ANEC contours for WSI. The results show that less than 1,000 people may be living within the 20 ANEC contours by 2055, an increase from approximately 250 people in 2033, regardless of the operational scenario. While there are very few residents within the 25 ANEC contours, mostly in Greendale, the 20 ANEC contours could progressively include the community of Twin Creeks and (currently) rural portions of the suburb of Kemps Creek.

The use of an alternative suite of proposed WSI day and night flight paths results in a level of respite and noise being shared to some areas impacted by the proposed higher traffic volumes of WSI day operations and a significant reduction in dwelling and population counts during WSI night operations, particularly when the RRO mode can be applied.

Residential and rural-residential areas to the immediate north-east and south-west of WSI, located on an extended runway alignment, and close to the proposed arrival flight paths and initial departure turns, would be subjected to a significant and unavoidable level of noise exposure.

The refinements to the preliminary flight path design since the exhibition of the Draft EIS would generally be negligible to minor for most of the refinements. The introduction of the RRO noise abatement procedure (RRO-NAP) and the reallocation of jet aircraft from Runway 23 Departure Northeast Night (RRO) flight path departures to the Runway 23 Departure Southeast Night (RRO) flight path would result in a noticeable change to the N60 Night contours (as presented in the Draft EIS). However, these changes would have minimal impact to the N60 24-hour and N70 24-hour contours.

Approaches to mitigating aircraft noise focus on reducing noise emissions from the aircraft, planning flight paths and airport operating modes in a way that minimises potential noise and environmental impacts, and implementing land use planning or other controls to ensure future noise-sensitive uses are not located in noise-affected areas.

NSW Government planning controls have been in place for several decades and have, to an extent, prevented incompatible noise sensitive developments around WSI.

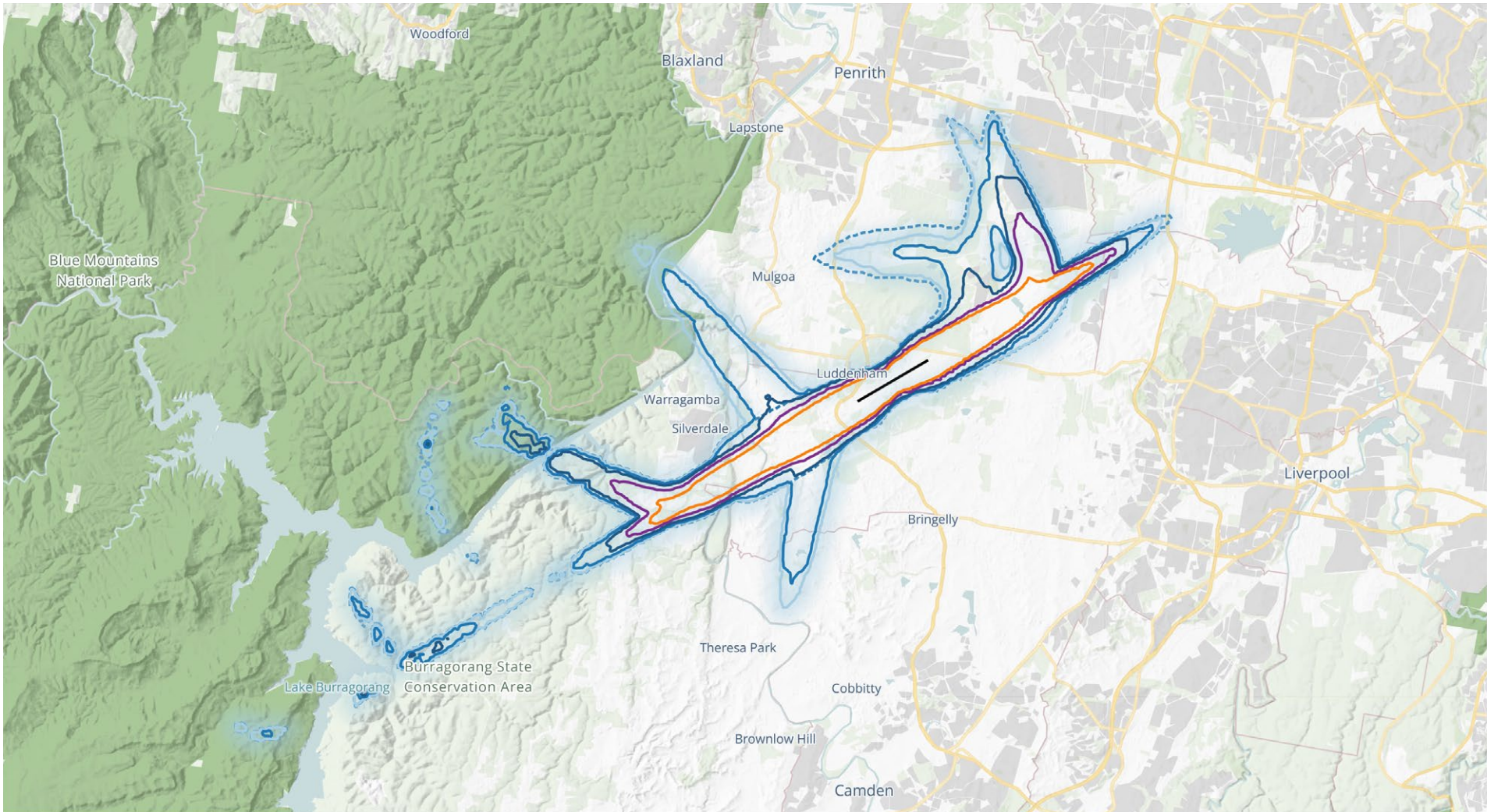
It is expected that future land use planning around WSI would be influenced by final long term ANEF contours, once flight paths and operating modes are finalised and approved. Subject to relevant considerations such as aircraft safety, all practicable opportunities for mitigating noise impacts will be considered in finalising the flight paths and aircraft operating procedures for the proposed airport.

Various operating strategies for managing aircraft noise will have differing impacts on different populations, particularly at night, when greater airspace flexibility and lower demand permits the use of different runway modes of operation and flight paths. This could be achieved by prioritising, when operationally possible, night-time flights over areas of low density rural land and natural areas to the south-west, west and south of WSI. It is noted that these areas could be more noise sensitive than urban areas experiencing similar levels of noise exposure due to existing low ambient noise levels.

DITRDCA has finalised the NIPA policy in relation to aircraft overflight noise for buildings outside the Airport Site. The NIPA policy details the eligibility requirements for inclusion and is based on the aircraft noise results from this assessment. Table S.1 shows the eligibility criteria for existing properties and associated metric for the NIPA policy. Further information on the eligibility criteria is provided in the EIS.

Eligibility criteria		Inclusions	Exclusions
Acquisition	Noise treatment		
ANEC 40 (automatic eligibility)	ANEC 20	Noise sensitive areas within residential buildings, including bedrooms, living areas and workspaces	Unapproved buildings and structures
ANEC 20 (case by case where noise reduction target cannot be efficiently met)		Noise sensitive areas within public buildings (educational facilities, child care facilities, health care and clinical facilities, places of worship)	Buildings with pre-existing obligations to undertake noise treatment works to achieve building compliance Commercial and industrial buildings
Noise reduction target			
Reduce the level of aircraft noise experienced inside an eligible building (in noise-sensitive spaces), during the forecast worst-case aircraft noise events, to 50 dB(A).			
The 50 dB(A) noise reduction target is non-binding and treatment plans to achieve the target will be based on desktop analysis of forecast noise. In some cases, the 50 dB(A) may not be able to be cost effectively achieved, however best endeavours will be taken in aiming to achieve this outcome, in which instance, noise treatment works will aim to provide a noticeable aircraft noise reduction, specific to building type, use and location.			
Note: The ANEC 20 and 40 contours used to determine NIPA policy eligibility are the composite contours, reflecting all runway modes, for the 2040 forecast year. The ANEC 20 and 40 contours are illustrated in Figure S.24.			

Table S.1 Eligibility criteria for the NIPA policy



PAL 3 (2055)
 N70 - 24 Hours
 Composite Scenario

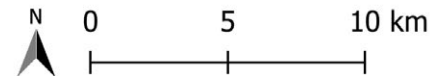


Figure S.23 N70 noise contours – 24-hours – composite scenario – 2055



Figure S.24
ANEC contours for NIPA eligibility

- Legend**
- WSI Runway
 - ▭ Western Sydney International (Nancy-Bird Walton) Airport land boundary
 - Aboriginal Places raised during consultation (NPW Act)
 - Site of Aboriginal
- 2040 ANEC composite**
- ▭ ANEC 20 - residential & non-residential amelioration eligibility contour
 - ▭ ANEC 25
 - ▭ ANEC 30
 - ▭ ANEC 35
 - ▭ ANEC 40
 - ▭ ANEC 40 - acquisition eligibility contour



0 1 2 km
 Coordinate system: GDA 1994 NSW Lambert
 Scale ratio correct when printed at A4
 1:100,000 Date: 6/08/2024

Data sources: © DITROC, DCS, Geoscience Australia, Esri, HERE, Garmin, © OpenStreetMap contributors, and the GIS user community. Source: Esri, Maxar, Earthstar Geographic, and the GIS User Community.

© WSP Australia Pty Ltd ("WSP"). Copyright in the drawings, information and data recorded ("the information") is the property of WSP. This document and the information are solely for the use of the authorized recipient and the documents may not be used, copied or reproduced in whole or part for any purpose other than that which it was supplied by WSP. WSP makes no representation, undertaking, warranty and accepts no responsibility to any third party who may use or rely upon this document or the information. NSW Civil and Consumer Services Act 2010 (NSW). © APPROVED FOR AND ON BEHALF OF WSP Australia Pty Ltd.



Air quality and greenhouse gas

The air quality and greenhouse gas (GHG) assessment adopted the 2033 and 2055 reference years for the project. For each reference year, 3 runway operating scenarios (No preference, Prefer Runway 05 and Prefer Runway 23) were assessed.

The local air quality assessment indicated the predicted levels would be below criteria for all air pollutants assessed in 2033 and 2055, except for PM_{2.5} (particles with a diameter of 2.5 micrometres or less) and NO₂ (nitrogen dioxide) during 2055 at several receivers located to the immediate north-west of the runway. The elevated PM_{2.5} levels are attributed to existing elevated background levels, and the effect of the project would be intangible and insignificant.

Whilst the project would contribute significantly to 1-hour average NO₂ levels at the nearest receivers to the north-west of the runway, the predicted levels of NO₂ are slightly above the more stringent, recently updated Environmental Protection Authority (EPA) criteria for only a portion of the hours throughout the year. The elevated NO₂ levels would only occur at a few locations immediately adjacent to WSI. As the predicted results are conservative (i.e., overestimate the impacts) and given improvements in fuel efficiency over time (for aircraft and motor vehicles), it is reasonable to conclude that no significant impacts would arise. The intensification of residential receivers in this location would be limited as the land is zoned Agribusiness and largely falls within the ANEC 20 contour and above, thus excluding residential development.

The regional air quality assessment identified a similar small scale of NO₂ impacts consistent with the local assessment. Levels were predicted levels above the new EPA criteria in close vicinity to WSI in 2055, representing a small localised potential impact. The predicted impacts for NO₂ are small, infrequent and highly localised. PM_{2.5} impacts arise due to elevated background pollutant levels. An improvement in the predicted maximum ozone impacts relative to the 2016 EIS has been calculated. 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 concentrations.

With respect to potential greenhouse gas emissions, the most emissions-intensive flights are those operating regular passenger transport services to medium and long haul destinations. In 2033 and 2055, these services accounted for only 27 and 23 per cent of projected total

air traffic movements but were responsible for more than half of all full-flight emissions of CO₂e (carbon dioxide equivalent). Emissions of CO₂e from domestic aviation are projected to grow steadily between 2033 and 2055, as activity continues to grow generally in line with population.

Overall, the emissions of CO₂e attributed to WSI from main engine use by aircraft operating along WSI's flight paths in either 2033 or in 2055 are not considered to result in significant impacts or inhibit the achievement of net zero economy targets set by the Australian or NSW Government for 2050.

Emissions from aircraft movements are predominantly due to the engine emissions, which are required to meet Australian (and international) performance specifications. Measures to help reduce emissions from aircraft operations generally involve procedures and techniques to optimise the vertical profiles of aircraft climbing or descending to an airport. Beyond those measures, no project specific air quality or greenhouse gas emissions mitigations are proposed.

Aircraft hazards and risk

A range of potential hazards associated with the operation of WSI's flight paths have been considered, including the risks associated with aircraft crashes to people and critical infrastructure, risks due to fuel jettisoning and objects falling from aircraft, risks to buildings due to wake vortex, and risks to aircraft due to wildlife strike and meteorological conditions.

A hazard analysis process was used as the basis for risk assessment, derived from the NSW Government's Hazardous Industry Planning Advisory Papers (HIPAP), with guidance from aviation-specific risk assessment processes produced by CASA and International Civil Aviation Organization (ICAO). For individual fatality risk due to an aircraft crash, a risk of 1 in 100,000 per annum is considered to be a low risk that is a generally acceptable level of exposure for members of the public, provided that the risk is managed to be as low as reasonably practicable. For most residential properties, the risks would be negligible. This reflects the position of the runway and the design of the flight paths. In 2055, a small number of people (5) are within the 1 in 100,000 per annum risk contour and 108 people are located between the 1 in 100,000 per annum and 1 in 1,000,000 per annum risk contour. As the number of people exposed to risks increase, the risks are classified as moderate based on the criteria applied.

Societal risk 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 Sydney, the flight path design has minimised these risks, as far as is practicable.

Critical infrastructure, such as hospitals, transport links, water storage and the Defence Establishment Orchard Hills, are located in the vicinity of the Airport Site. The typical event frequencies and scale of fatalities associated with aircraft crashes are consistent with risks that would be considered acceptable. Operation of flight paths over the GBMA presents a very low risk of introducing fire through aircraft accidents.

Other aspects considered include the following:

- risks due to fuel jettisoning and objects falling from aircraft, or risks to buildings due to wake vortex are concluded to be low or remote events. In particular, fuel jettisoning is a relatively uncommon, non-standard operational requirement that would have no ground level impacts if carried out in accordance with appropriate procedures *Aeronautical Information Publication Australia, Part 2 - En route* (Airservices Australia, 2022)
- wildlife strike risk mitigation for WSI that would deliver an acceptable level of safety is achievable, provided that a site-specific wildlife management program is implemented
- compared with other airports that operate with an acceptable level of safety, there are no exceptional meteorological conditions at WSI that might lead to significant risks to operational safety. The risks to safety and operational efficiency from meteorological hazards can be mitigated by provision of improved forecasting.

Operations at WSI and the associated airspace in the Sydney Basin are being introduced within a well-established regulatory and management framework that places importance on safety. This is underpinned by key requirements that risks should be 'as low as reasonably practicable' and meet appropriate levels of safety. Assessment of the residual risks associated with WSI operations indicate that those key requirements would be met.

Risk mitigation is provided by a wide variety of measures adopted across the aviation industry that will apply to operations at WSI. Project specific mitigations have been developed, including Airservices Australia continuing to address hazard identification and risk mitigation during the remainder of the design process and prioritise on-going safety performance monitoring. Other project specific mitigations include contingency planning to respond to the impacts of crash events and wildlife strike measures to monitor and control the presence of birds and other wildlife on or in the vicinity of WSI.

Land use

There are several International and Australian publications and policies which provide strategic guidance on land use management in proximity to airport operations. The National Airports Safeguarding Framework (NASF) in particular, provides guidance on planning requirements for developments that could potentially affect aviation operations.

Land use 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. DITRDCA liaised with State government agencies and relevant local councils concerning the adoption of the necessary guidelines into the applicable environmental planning instruments. 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.

Land use planning controls include the State Environmental Planning Policy (Precincts – Western Parkland City) 2021 (NSW) (Western Parkland City SEPP), which outlines that no new noise sensitive development (including residential development) will be permitted within the ANEC 20 and above contours (except in limited circumstances for certain applications for dwelling houses and subdivision that were permissible prior to the SEPP coming into effect). The consent authority for any such development would need to be satisfied that indoor noise levels set in AS 2021:2015 are met. This does not prohibit the enlargement or modification to an existing use.

The predicted composite ANEC presented in the EIS differs in some locations and an additional area of land in the vicinity of WSI is predicted to be within the 20 ANEC contour, when reviewed in comparison to the published ANEC mapping within the Western Parkland City SEPP. This includes areas within Erskine Park, Eastern Creek and to the south of Wallacia, which are currently zoned 'general industrial' (Penrith Local Environmental Plan 2010) and 'primary production' (Liverpool Local Environmental Plan 2008) and include a small number of semi-rural residential dwellings and around 5 residential dwellings located within the Twin Creeks Golf and Country Club. The ANEC contour for WSI will be prepared during the detailed airspace design phase.

Until an ANEC contour is prepared and approved for WSI, the prescribed WSI ANEC is to be used to inform land use planning. Any changes to relevant planning instruments as a result of adopting an ANEC could see planning conditions imposed on these additional areas.

Landscape and visual amenity

The landscape and visual amenity study area includes several important environmental, cultural and historic places and routes, which have varying levels of sensitivity. Key receptors that have an elevated landscape character or visual sensitivity include the GBMA itself, many scenic lookouts, campgrounds and day use areas or protected areas, scenic and tourist drives and other heritage places. The assessment considered the landscape and visual impacts of the project in 2033 and 2055 in areas close to WSI (being within 15 km) and the Blue Mountains.

Based on similar topography, vegetation type and cover, land use and built form (existing and emerging), 12 landscape character zones were considered within Western Sydney. Generally, the landscape character of Western Sydney would be transformed by changes facilitated and planned for through a number of strategic planning projects. While there would be some landscape character and visual impacts to the areas within 15 km, these would generally be of a moderate or lower impact level. The level of landscape character impact on the Luddenham village and agricultural landscape character zone would increase from moderate in 2033 to high-moderate in 2055 due to the proximity of the runway and increase in flights arriving and departing the runway.

Eight viewpoints were considered within Western Sydney. Viewpoints from the public domain that would experience visual impacts ranging from moderate to high-moderate, include those with elevated vantage points with views to recreational areas (George Maunder Lookout at Prospect Reservoir and Warragamba Dam Lookout) and/or locations in close proximity to WSI (Kemps Creek and Luddenham village).

Three landscape character zones within the Blue Mountains landscape were assessed:

- high-moderate landscape character impact in 2033 and 2055 on the Blue Mountains iconic features landscape character zone
- 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
- moderate-low landscape character impact in 2033 and 2055 on the Blue Mountains township spine landscape character zone.

While the introduction of multiple high altitude and low frequency flights would result in a low magnitude of change to each of the landscape character zones, the variation in landscape sensitivity influences the resulting level of impact.

Of the 8 views assessed in the Blue Mountains, there would be:

- high-moderate visual impact in 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
- moderate visual impact in views from Burragorang Lookout, The Rock Lookout, Wynnes Rocks Lookout and Clearys Memorial Lookout, with the visual impact from Burragorang Lookout increasing to high-moderate in 2055 due to the increase in flight frequency at relatively low altitudes
- moderate-low visual impact in the view from the Hawkesbury Lookout. This view has an urban outlook and a moderate sensitivity, allowing it to absorb the aircraft activity with less of an impact.

From campgrounds and day-use areas within the Blue Mountains there would be a moderate visual impact in 2033 and 2055, as views of aircraft overhead would not be highly visible. If seen overhead, they would detract from the amenity of views.

There would be a moderate-low visual impact experienced in the views from scenic routes within the Blue Mountains, including the Great Western Highway and Bells Line of Road, during 2033 and 2055. These impacts would be intermittent and experienced particularly in locations where the flights pass over and across these views.

The project would not directly alter any natural landscape feature on the ground. The contribution of the sky to landscape character and its appreciation in views make the sky, in some locations, a landscape feature. This includes locations in the Blue Mountains and where the naturalness of the sky contributes to landscape character. There is a real chance or possibility that the project would substantially alter the appreciation of the sky in views from the following viewpoints:

- south of Katoomba (represented in this assessment by the view from Echo Point)
- from lookouts along the Grose Valley (represented by the assessment of the view from Walls Lookout).

This alteration would be intermittent, would not be permanent and is reversible.

The design of the flight paths has aimed to minimise landscape and amenity impacts, to the maximum extent practical while still achieving safe and efficient operations. Based on the nature of the potential impacts, no reasonable or feasible project specific mitigations are considered to be available that would reduce the potential landscape and visual impacts from the project.



Biodiversity

There are a wide variety of habitats that support biodiversity values in the biodiversity study area, including the GBMA and other large tracts and isolated pockets of native vegetation (predominantly Dry Sclerophyll Forests), wildlife corridors and wetlands. These provide habitat for EPBC Act listed threatened species including 92 fauna species such as the Regent Honeyeater, Swift Parrot and Grey-headed Flying-fox, and 79 migratory species including migratory shorebirds. Fifty-eight wildlife attractants (such as permanent basins, ponds, non-native ecosystems, waste management facilities, Flying-fox camps and Ibis colonies) were identified within a 30 km buffer of the WSI runway boundary.

The key potential impacts on biodiversity values and measures to address them are:

- direct impacts from wildlife strike leading to mortality. Impacts associated with wildlife strike are likely to be intermittent during WSI's operation but this would not significantly affect the viability of local populations of any species. Flying-foxes are particularly susceptible to wildlife strike. There would be no other direct impacts on biodiversity values
- indirect impacts including potential changes to noise, light, water quality, air quality and ecosystems associated with aircraft overflight:
 - noise can impact behavioural changes and communication interference in wildlife. Most noise related impacts on biodiversity would be concentrated in proximity to WSI (where the highest noise impacts are) and to a lesser degree areas where aircraft are at higher altitudes at distances from WSI. 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
 - light spill and pollution can have adverse impacts on wildlife including behavioural and physiological changes which make them more prone to predation or wildlife strike. 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

- emissions from aircraft operating along the flight paths may result in local and regional reductions in air quality. Habitats for wildlife in proximity to WSI 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
- deposition of aircraft pollutants and subsequent potential impacts on water quality are unlikely and negligible
- fuel dumping (jettisoning) has the potential to introduce harmful contaminants into the sensitive environments within the study area such as native terrestrial and aquatic ecosystems, if not appropriately managed. Fuel dumping can be carried out safely and without any impacts at ground level when appropriate procedures are followed. Fuel jettisoning would only occur in accordance with the AIP ENR (Airservices Australia, 2022).

In addition, the project:

- is unlikely to have a significant impact on Commonwealth heritage places listed under the EPBC Act
- is unlikely to have a significant impact on threatened or migratory species listed under the EPBC Act or on native plants and animals
- would not breach or raise inconsistencies with any of Australia's obligations under the various biodiversity related international agreements to which it is a signatory
- is unlikely to compound impacts on biodiversity associated with the 2019-2020 bushfires.

The project is not likely to have significant impacts (residual or otherwise) on biodiversity. As the project is not likely to have significant impacts, the project is not obligated to provide offsets in accordance with the EPBC Act Offsets Policy.

Heritage

There are a significant number of items, places and areas within the heritage study area, with around 13,500 Aboriginal heritage sites/places and around 19,000 listed historical sites/areas. For Aboriginal heritage, this is likely to be an underestimate given the lack of systematic survey for sites within protected areas (such as the GBMA). Engagement with First Nations knowledge holders and stakeholders has assisted in identifying areas of particular high cultural value. For historic heritage, there are several World Heritage Areas (notably the GBMA), 19 National Heritage items, and numerous State and local heritage items. Of these places, most occur at a distance greater than 10 km from WSI.

The proposed flight paths would fly over a large number of significant sites and places, noting existing flight paths already traverse the airspace above these sites and places. Many types of heritage places are considered robust in the face of impacts such as air pollution, noise and visual impacts. In most cases aircraft would be at such a distance as to render the impact from these factors as minimal. The places closest to WSI are likely to experience higher impacts.

There is general acknowledgement that air pollution can be detrimental to sandstone heritage buildings and Aboriginal rock art, however there has been little direct research on sites within or close to Sydney. It is impossible to evaluate the risk presented by these processes, or to identify and quantify any resulting damage due to a lack of previous research and comparative data, as well as the difficulty in differentiating aircraft emission derived deterioration from other anthropogenic pollution sources (such as acidity, nutrients and dust). Increased emissions to these environments may potentially result in some impact, though the likelihood of this is considered to be minimal.

The project would not physically impact or restrict use of an Aboriginal heritage site or place, though noise and visual intrusion can impact cultural values. Noise has the potential to disrupt cultural practices at site, which could lead to its use being discontinued. WSI flight paths could potentially result in detrimental indirect impacts to the cultural values of sites connected to the Emu in the Sky constellation at Faulconbridge and Emu Cave Aboriginal Place.

Due to the position of flight paths, frequency of overflight and the predicted noise levels, the project

would significantly impact the Aboriginal cultural values of Bents Basin, Linden Ridge sites, and the Shaws Creek – Yellomundee Aboriginal Place, which are places of cultural importance with values associated with peace, tranquillity and connection to nature. Impacts to other key sites of cultural significance identified through engagement would have low to moderate impacts due to noise and/or visual intrusion.

Mitigation measures have been developed that require the DITRDCA to ensure that the detailed design of flight paths considers Aboriginal places and sites of high cultural value, where safe and feasible. There is the likelihood that many other Aboriginal sites are located in protected valleys within the GBMA that are overflowed by WSI aircraft. Due to the complexity of terrain height and orientation of rock shelters in the rugged sandstone country, it is not possible to predict to what extent this will be an issue for many of the unknown sites.

Other mitigation measures include 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.

Many historic properties are located in town centres. The flight path design principles seek to avoid population centres and the flight paths design has sought to protect such places from significant impacts, although in some cases aircraft may still be visible in the distance or would be heard. It is inevitable that some properties would suffer some impact from noise given that in many cases to the west and south-west of WSI the properties are located in rural contexts. This includes properties within Mulgoa, Luddenham and Wallacia.

Outside the GBMA, there is no discernible impact on the cultural values of nationally listed places. Of the 89 places on the Commonwealth Heritage list, only 2 are within close proximity to WSI and/or are likely to be adversely impacted by the flight paths; Orchard Hills Cumberland Plain Woodland, and Shale Woodland Llandilo.

At greater distances from WSI, noise and visibility of aircraft begins to diminish, and emissions are likely to disperse and be less concentrated. Some cultural values remain sensitive to additional aircraft noise, while 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.



Social

An assessment has been undertaken to understand the social changes resulting from the project. The assessment has been based on the NSW Department of Planning and Environment's (DPE) Social Impact Assessment Guideline for State Significant Projects 2023 and considers the actual and perceived impacts of the project in 2033 and 2055. The assessment has been informed by community engagement.

The assessment considered the social impacts of the project in 2033 and 2055 in areas close to WSI (being within 10 km) and at a regional level (encompassing Blacktown, Blue Mountains, Camden, Fairfield, Hawkesbury, Liverpool, Penrith and Wollondilly local government areas).

The actual or perceived impacts of the project on a broad range of potential social and community issues, including changes to community composition, inequality and vulnerability, way of life, Indigenous and non-Indigenous culture, health and wellbeing, livelihoods and decision-making systems have been assessed.

Operations at WSI and the associated airspace in the Sydney Basin sit within a well-established regulatory and management framework. Mitigation measures outlined in this EIS, and the existing controls (specific to WSI or more broadly to the management of federally leased airports) will generally reduce the significance of potential social impacts from a High significance rating to Medium or Low significance.

Following implementation of the flight paths, only one social impact is anticipated to remain with a High significance rating, being a potential increase of inequality for vulnerable groups located in areas within ANEC 20, N60 and N70 contours for both the 2033 and 2055 scenarios. All other potential social impacts have a Medium or Low impact within the local and regional study areas for the 2033 and 2055 assessment years.

To further manage social impacts associated with the project, the WSI Community Aviation Consultative Group (CACG) will 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.

Economic

Demand for aviation services is predicted to continue to increase to service Sydney's ongoing growth in population and business activities. Any shortage in capacity to meet the rising demand will affect future economic growth, productivity, employment, lifestyle and amenity of the Sydney Basin. The project is an integral part of WSI, ensuring that the benefits of WSI are realised. These benefits will grow commensurate with the forecast increase in passenger demand over time.

Overall, WSI (and the associated flight paths that allow for its operation) will be a major catalyst for investment and jobs growth in the Western Sydney region and will deliver benefits to the Australian economy more broadly. WSI will provide direct connections across the world, allowing for opportunities to enhance Western Sydney's connection to other parts of the world economy. The operation of WSI will allow for improved access to tourism opportunities, providing better accessibility to destinations across Western Sydney and the Greater Blue Mountains. New or upgraded transport infrastructure that would be built to service WSI would provide benefit to local communities.

It is estimated that WSI itself will generate a significant number of jobs for Western Sydney and contribute significantly to gross regional product. Ernst and Young (2016) concluded as part of the 2016 EIS that airport operations would directly generate around 8,730 jobs in 2031 increasing to 61,500 jobs by 2063. It is noted that these jobs would be generated by WSI itself and not specifically by the flight paths, however, the project is an essential part of the overall operation of WSI.

The project, in conjunction with the broader development of WSI, has the potential to affect the tourism industry both positively (through increased tourist access) and adversely (if it results in loss of amenity at sensitive land uses). For example, the closer proximity and ready access to an international airport to the Greater Blue Mountains is expected to provide a boost to this industry. Flight paths have the potential to negatively affect the amenity of tourist experiences in the area, either through the visual location of aircraft or the noise they will generate. The increased access to key tourist destinations, in particular for tourists visiting areas such as the Greater Blue Mountains, is considered to outweigh the potential adverse amenity impact of the flight paths.

WSI and the proposed flight paths would impact the use of the airspace. Currently the area is used by Bankstown and Camden airports for flying training, emergency services and other operations. As a result of the facilitated changes required to accommodate WSI, greater distances would need to be travelled to reach new flying training areas resulting in increased 'transit' flight durations, extended training schedules and increased costs including increased flying training times and increased fuel and maintenance costs. The cost of this was estimated at around \$15 million in 2026 increasing at a rate of around one per cent per annum.

Operation of the project may result in potential loss in property values for residential properties that may be more adversely impacted by the operation of the flightpaths. Total impact has been estimated at around \$56 million loss in total residential values in 2033, increasing to a cumulative value of around \$148 million by 2055 (measured in 2022 dollars). While the impact appears high, it is important to realise that residential values in Western Sydney have increased considerably over the past 10 years. Dwellings within the N70 contour (and outside the ANEC 20) are expected to have a low level of impact resulting in a loss in residential values of 3 per cent average. In all likelihood this loss would be 'made good' by 6 months growth in real capital gain.

Project-specific mitigations have been identified, including continuing consultation with aerodrome operators and airspace users during the ongoing airspace design for WSI to consider the impacts to operators at Bankstown and Camden airports. Consultation with emergency services operators regarding priority of airspace in order to minimise risks and associated economic costs will continue.

Human health

The assessment of human health impacts evaluated the potential health impacts to the existing (and future) communities resulting from the project. In considering the potential impacts, the assessment focused on community health impacts resulting from changes in air quality, noise, and other hazards and risks associated with the operation of aircraft from WSI.

The assessment did not identify any significant risks associated with air quality changes because of the project. Impacts to community health due to exposure to air emissions from the project in areas close to WSI would be low, and in most cases, considered to be negligible. Of the impacts identified, the potential impact to community health would occur as a result of exposure to increases in NO₂ within areas in the immediate vicinity of WSI. These potential impacts are considered to be limited and the potential impact on respiratory health issues for the community is considered to be low. It is noted that the areas where elevated exposures have been identified are anticipated to be rezoned in the future such that residential land use would no longer be relevant.

Emissions to air derived from the operation of aircraft are expected to have a negligible impact on water

quality in Prospect Reservoir or rainwater tanks in the community. Potential impacts on these water supplies would be so low they would not be measured. No risks to community health due to air emissions on a regional level were identified.

Aircraft noise from the project has the potential to result in significant increases in sleep disturbance, noise annoyance and to a lesser degree, cognitive impairment for children (assessed in terms of learning delays). These potentially significant impacts would occur at a number of locations located close to the runway, or below the immediate arrival and departure flight paths. Not all the locations identified as potentially significant are used for residences, schools or childcare centres and have been used as an indicator of where issues may arise. Most of the impacts that are considered to be significant are located within the published ANEC 20 contour or the predicted 2055 ANEC contour for the project. Controls are currently in place to prevent future noise sensitive development within these areas, including new residential developments, schools and childcare centres.

DITRDCA and WSA Co will continue to liaise with State and local government agencies to ensure applicable environmental planning instruments have regard to ANEC forecasts produced for the project, where differences occur to the predicted ANEC presented in this EIS.

By 2055, there would be 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 identified may be influenced by community adjustment to the presence of aircraft noise in the environment. These changes may remain of significance to some members of the community.

For most refinements to the preliminary flight paths, these generally do not occur over populated areas and/or increase the distance to or altitude above populated areas and would not change the conclusions of the overall health assessment. The introduction of the RRO noise abatement procedure (RRO-NAP) and the reallocation of jet aircraft from Runway 23 Departure Northeast Night (RRO) flight path departures to the Runway 23 Departure Southeast Night (RRO) flight path would however result in a change in some noise impacts at night. This change in night-time noise impacts would result in some sensitive receivers no longer exceeding thresholds for L_{max} or L_{night}, however overall, the changes would be small and would not result in changes to the overall conclusions presented in the Draft EIS in terms of sleep-disturbance.

Existing strategic planning in the vicinity of WSI has considered and incorporated the operational needs of WSI into land use planning. In conjunction with the mitigation measures outlined throughout the EIS, the risks to community safety and health are considered low and acceptable. There are no project specific mitigations for human health (these are covered by the aircraft noise, land use planning and hazard and risk mitigation measures).



Matters of National Environmental Significance

The EPBC Act provides the national framework for protecting and managing nationally (and internationally) important flora and fauna, ecological communities and heritage places (including World heritage) that are collectively defined under the EPBC Act as 'matters of national environmental significance' (MNES). The primary focus of the consideration of MNES was with respect to impacts on the World Heritage and National Heritage values and other values of the GBMA and National Heritage place.

The Greater Blue Mountains was inscribed on the World Heritage List in 2000 for both its fauna and flora values. This listing formally recognises the Outstanding Universal Value of the Greater Blue Mountains under the World Heritage Convention. At its closest point, the GBMA is around 4 nm (7 km) from WSI. The GBMA comprises one of the largest and most intact regions of protected bushland in Australia and is noted for its representation of the evolutionary adaptation and diversification of the eucalypts in post-Gondwana isolation on the Australian continent (UNESCO 2022).

The assessment of the potential impacts of the project on MNES was undertaken via an initial screening of all MNES, followed by assessment of MNES identified as potentially impacted by the project.

Four matters of MNES were identified as relevant to the project, being potential impacts to:

- a World Heritage property
- a National Heritage place
- listed threatened species or communities
- listed migratory species.

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 Values of the site and contribute to its World Heritage status.

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 biological diversity of the property. The project would not contribute to indirect impacts associated with the loss, degradation or damage, notably altered, modified, obscured or diminished World Heritage value.

Given the nature of the project, complete avoidance of potential impacts on the GBMA and MNES would not be possible. The design of the proposed flight paths is such that impacts expected to result from the project would have 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.

Facilitated impacts

The preliminary airspace design for WSI was required to avoid any impact on the ability of Sydney (Kingsford Smith) Airport to operate all existing runway modes. There would be no impact on the Sydney (Kingsford Smith) Airport curfew between 11 pm and 6 am (local time).

Through the preliminary design process, some changes were identified to maintain the safety assurance of flight operations in the Sydney Basin, while meeting the requirements of efficiency, capacity and environment. These changes are minor in nature, but include changes to some of the existing departures and arrivals at Sydney (Kingsford Smith) Airport, as well as changes to Instrument Flight Rules (IFR) and Visual Flight Rules (VFR) operations at Bankstown and Camden Airports, RAAF Base Richmond, and changes to lower level transit flights in the Sydney Basin.

Impacts would vary according to the proposed change. Changes involving more significant lateral changes in flight paths or the narrowing of flight paths for Sydney (Kingsford Smith) Airport for jet aircraft would result in changes in the area or population within N60 or N70 contours. In the case of Runway 25 departures (jets) they are infrequent and only used around 4 per cent of the year.

Changes to IFR procedures for Bankstown Airport would likely be used by around 145 movements per day. These

areas are already subject to over flight by Bankstown Airport aircraft, however certain areas would be subject to an increase in the frequency and concentration of overflight, particularly arriving aircraft.

Existing flying training areas would be reduced as a result of the WSI airspace, and new possible training areas have been identified. Flying training activity is highly variable and potential overflight noise impacts from this activity cannot be accurately quantified. VFR flight operations would be constrained by WSI and RAAF Base Richmond, both laterally and vertically. VFR flight operations constitute a low number of aircraft and similar aircraft already fly over these areas. Aircraft would be flying at lower altitudes which may result in higher noise levels and more visible aircraft.

All other changes to overflights associated with flying training would involve low numbers of aircraft daily and would result in minimal changes from a noise or visual perspective.

The introduction of single runway operations at WSI and the adjustments required to Sydney Basin operations to facilitate flight paths and airspace structures will be introduced in 2026 on a scheduled Aeronautical Information Regulation and Control (AIRAC) date prior to the official opening of WSI in 2026. Introduction at this time will allow pilots and air traffic control to update their systems and become familiar with changes to current procedures before WSI commences operations and will minimise the likelihood of conflicts or incidents in the Sydney Basin airspace. Changes to flying training areas would be subject to a separate change proposal.

Cumulative impacts

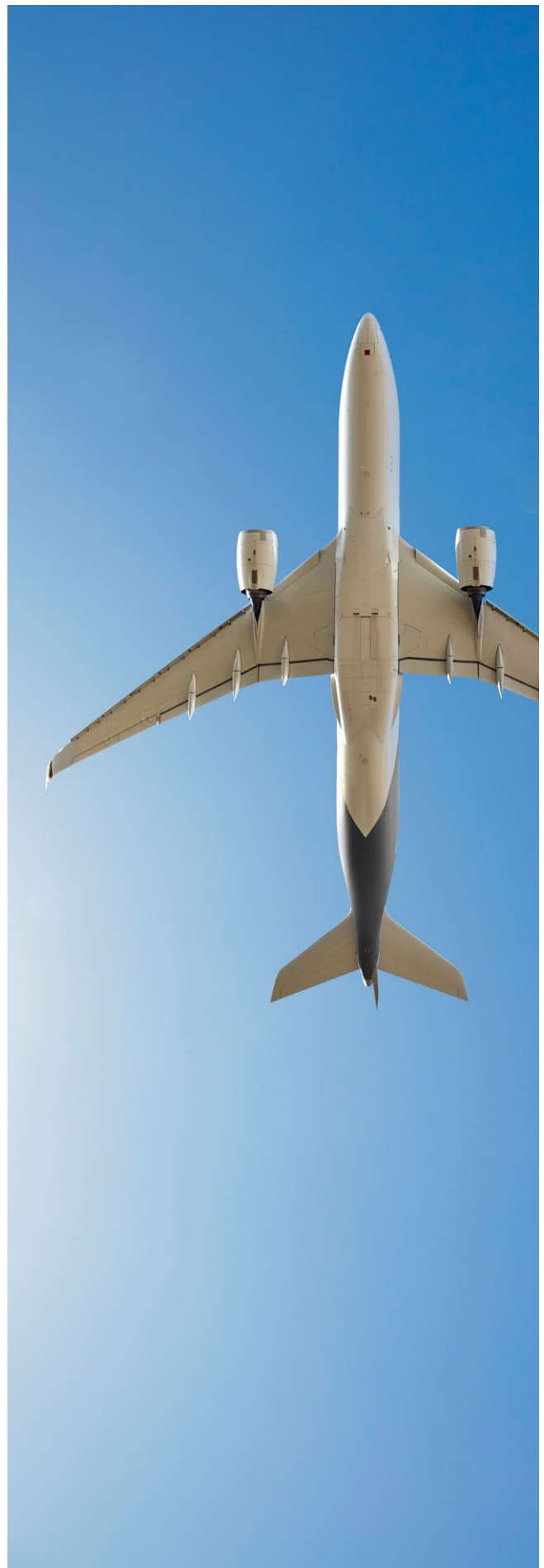
Cumulative impacts are a result of incremental, sustained and combined effects of human action and natural variations over time and can be both positive and negative. The assessment considers potential impacts associated with the project in conjunction with other known and proposed developments.

The assessment of cumulative impacts has been undertaken in accordance with the EIS Guidelines and has adopted an approach based on the NSW *Cumulative Impact Assessment Guidelines for State Significant Projects*.

The assessment of cumulative impacts has considered each of the environmental aspects requiring assessment in the EIS Guidelines. In many cases, the quantitative assessment of issues is difficult, due to the large study area, the indirect nature of potential impacts and the lack of sufficient baseline data relative to some impacts.

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.

A range of cumulative impacts have the potential to occur as a result of the project's location, in proximity to current and future large-scale infrastructure projects, strategic growth areas and economic corridors associated with rapid development in Western Sydney. The cumulative effects of noise impacts from WSI in conjunction with other airspace operations would likely manifest as a



greater number of noticeable events over a given period of time. Aircraft operating from WSI concurrently with aircraft from other Sydney Basin airports has the potential to increase overall noise exposure to communities directly overflown and/or in the vicinity to other existing flight paths.

The cumulative impact of aircraft noise at locations where there are intersecting or parallel flight paths is widespread. At these locations, cumulative noise impacts from over flights are likely to be most significant. The application of WSI's flight path design principles along with the necessary separation between flight paths would inherently reduce potential cumulative impacts. Due to the low number of WSI flight paths relative to existing flight paths, and complexity of flight paths within the Sydney Basin, the cumulative impact of introducing WSI flight path noise is not considered high.

The air quality assessment included consideration of background air quality levels (including emissions from other existing sources in the region) and found all pollutants were below regulatory criteria for 2033, with only minor short term exceedances for nitrogen dioxide in 2055. 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. The assessment found that the cumulative greenhouse gas impacts associated with the project and related projects and developments are not considered to be significant.

Potential cumulative impacts on biodiversity related to wildlife strikes could result from the project operating in conjunction with other existing airports in the study area. A prediction of the cumulative impact on biodiversity of wildlife strikes was undertaken by comparing strike rates at other airports but does not account for the site specific variables at each airport, including the quality of wildlife management programs applied at each airport. The cumulative impact on biodiversity as a result of wildlife strikes by aircraft operating in the Sydney region is considered low.

The assessment of cumulative aircraft related hazards and risks identified that WSI would introduce new elevated crash risks into areas that are currently subject to entirely negligible risk from existing operations. It would introduce a very small additional crash risk into areas that are currently subject to potential risk from existing operations.

Potential cumulative impacts to landscape character and visual amenity would include changes to landscape character and views in the vicinity of WSI resulting from over flights in conjunction with future large-scale infrastructure projects. There would be the potential for cumulative effects on the landscape character zones across the Blue Mountains, which are subject to increasing air traffic from both WSI and other airports within the Sydney basin.

Despite the low estimates of the proportional contribution of WSI airspace emissions to the totality of air pollution within the Sydney airshed, there is the potential that increased emission levels could have a negative impact on Aboriginal rock art sites and on some historical buildings over time. There is currently no comparative data or research to test this possibility. Despite this, it can be expected that additional emissions add to the general impact on heritage items and there is growing evidence that the deterioration will be accelerated by other anthropogenic factors such as climate change.

Positive and negative changes to composition of the community surrounding WSI may occur once the flight paths are operating in conjunction with other developments. Access to transport, social and other infrastructure would have positive cumulative impacts on the social and economic wellbeing of the community. Incremental increases in noise, alterations to air quality and light exposure may result in adverse effects to wellbeing, and 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.

Part D – EIS synthesis

This final part of the EIS provides a consolidated summary of the key potential impacts, a description of the proposed approach to environmental management, and a compilation of the mitigation measures for the project. It provides a conclusion which provides the justification for the project, considering the compliance with principles of Ecologically Sustainable Development and the objects and principles of the EPBC Act.

Environmental management framework

An overarching environmental management framework (EMF) has been developed that identifies how environmental, social and sustainability issues will be managed for the project. The EMF outlines the policies, legislation, commitments and activities which will guide improved environmental outcomes associated with implementation and operation of WSA airspace and coordinate with WSI's ground based operations.

The project's EMF consists of:

- relevant legislation that regulates the Australian airspace
- Condition 16 of the Airport Plan and the future airspace design principles set out in 2.2.5 of the Airport Plan and developed as part of the preliminary design phase
- regulatory oversight by DITRDCA
- Airservices Australia's existing Environmental Management System
- the EIS management measures
- existing policies, procedures and plans developed for WSI

The implementation of environmental management measures during further design development, implementation and operation of the project would minimise any potential adverse impacts on the surrounding environment.

Mitigation and management of impacts

Each of the impact assessments have, where reasonable and feasible, identified project specific measures to mitigate impacts during operation of the project. The mitigation measures are supported by proposed monitoring/research programs where relevant.

As the project does not include any physical infrastructure or construction work, the mitigation measures would only apply to the proposed flight paths and new controlled airspace for the single runway operations at WSI.

The mitigation measures and monitoring programs should be considered in the context of supporting the range of mitigation and management measures described for operation of WSI in the *Western Sydney Airport – Environmental Impact Statement (2016 EIS)*.

Table S.2 provides a compilation of the measures to minimise and mitigate the potential impacts of the project as identified for each environmental aspect assessed in the EIS. The mitigation measures are supported by proposed monitoring/research programs outlined in Table S.3.

Table S.2 Summary of proposed mitigation measures

ID No.	Issue	Mitigation measure	Owner	Timing
Aircraft noise				
N1	Noise insulation and property acquisition	DITRDCA will implement the NIPA policy which will apply to eligible properties that are significantly impacted by aircraft overflight noise from WSI.	DITRDCA	Pre-operation (Detailed design, 2024–2026) and Operation (Implementation, 2026 – conclusion of program)
N2	Noise abatement	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) following a draft proposal developed by the Expert Steering Group in response to feedback on the Draft EIS.	Airservices Australia/ DITRDCA	Pre-operation (Initial proposal as part of the final EIS, with any further refinements in detailed design, 2024–2026) and Operation (Implementation, 2026–ongoing)
N3	Communication	WSA Co will establish a CACG to ensure appropriate community engagement on airport planning and operations. This will ensure community and industry have a forum for the groups best positioned to identify, share and test solutions or measures including relevant national or international best practice initiatives.	WSA Co	Pre-operation (At the conclusion of detailed design, 2024–2026)
N4	Noise complaints	The Airservices Australia Noise Complaints and Information Service will handle complaints and enquiries about aircraft noise and operations associated with the project to help identify issues of community concern and provide opportunities for improvement.	Airservices Australia	Operation (Implementation, 2026–ongoing)
N5	Aircraft noise	The Aircraft Noise Ombudsman (ANO) provides independent reviews of aircraft noise-related activities to ensure appropriate governance and oversight of operations. The ANO is also available to make targeted reviews on specific issues as they are identified or arise.	Airservices Australia	Operation (Implementation, 2026–ongoing)
N6	Flight path design	Airservices Australia will undertake a post-implementation review (PIR) of the flight path design and implementation.	Airservices Australia	Operation (2026 - within 2 years of implementation)
Air quality and greenhouse gas				
No project specific air quality or greenhouse gas emissions mitigations are proposed.				
As this assessment did not identify any significant change in the approved ground level impacts per the 2016 EIS, no additional monitoring for aircraft emissions is required.				

ID No.	Issue	Mitigation measure	Owner	Timing
Aircraft hazards and risk				
HR1	Airspace conflicts	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.	Airservices Australia	Pre-operation (Detailed design, 2024–2026)
HR2	Contingency planning	WSA Co will implement contingency planning to respond to the impacts of crash events as per Part 139 Aerodromes Manual of Standards 2019.	WSA Co	Operation (Implementation, 2026–ongoing)
HR3	Aircraft fuel jettisoning	Airservices Australia will apply existing procedures to deal with aircraft fuel jettisoning occurrences as per AIP ENR.	Airservices Australia	Operation (Implementation, 2026–ongoing)
HR4	Local meteorological hazards	Automated Thunderstorm Alert Service (ATSAS) will be implemented by the Bureau of Meteorology (BoM) to provide improved thunderstorm forecasting. Implementation of a Doppler LIDAR, if required, will support the identification of turbulence and wind shear (subject to the conclusions of an appropriate cost-benefit study).	WSA Co (in coordination with BoM)	Operation (Implementation, 2026–ongoing)
HR5	Wildlife strike	WSA Co will monitor and control the presence of birds and other wildlife on or in the vicinity of WSI in accordance with Civil Aviation Safety Regulations (CASR) Part 139 MOS requirements and National Airports Safeguarding Framework (NASF) Guideline C (See Table 24.2).	WSA Co	Operation (Implementation, 2026–ongoing)
HR6	Wildlife strike	WSA Co will liaise with planning authorities on matters related to the development of, or modifications to, off-airport land uses that have the potential to attract hazardous numbers or types of wildlife.	WSA Co	Pre-operation (Detailed design, 2024–2026) and Operation (Implementation, 2026–ongoing)
HR7	Wildlife strike	WSA Co will establish a WSI Wildlife Hazard Management Committee (WHMC) that will likely comprise Western Sydney local government representatives, NSW Department of Planning and Environment and other relevant aviation stakeholders.	WSA Co	Operation (within 6 months of Implementation, 2026–ongoing)

ID No.	Issue	Mitigation measure	Owner	Timing
HR8	Wildlife strike	<p>The WHMC will contribute to the preparation of regional species management programs (including Australian White Ibis) as required. Regional species management plans will build on any existing management programs (e.g. the Canterbury-Bankstown Council Australian White Ibis Management Program). The regional programs will aim to:</p> <ul style="list-style-type: none"> • reduce species impacts on aviation and the community in general • provide advice to landowners on how they can contribute to species management programs on non-council land • establish measurable targets for species management • maintain the long-term sustainability of the local species populations. 	WSA Co	Operation (Implementation, 2026–ongoing)

Aircraft hazards and risk

LUP1	Aircraft noise	DITRDCA and WSA Co will liaise with State and local government agencies to ensure applicable environmental planning instruments have regard to ANEC forecasts produced for the project.	DITRDCA and WSA Co	Pre-operation (Detailed design, 2024–2026) and Operation (Implementation, 2026–ongoing)
LUP2	Protected airspace	DITRDCA will 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.	DITRDCA	Pre-operation (Detailed design, 2024–2026) and Operation (Implementation, 2026–ongoing)
LUP3	Wildlife buffers	WSA Co will liaise with State and local government agencies to establish mechanisms that will identify land uses and prevent the creation of land uses that would cause hazardous wildlife attraction within the wildlife buffers.	WSA Co	Pre-operation (Detailed design, 2024–2026) and Operation (Implementation, 2026–ongoing)
LUP4	Wildlife buffers	WSA Co will negotiate with State and local government agencies and land owners if required on agreed action plans for monitoring and, where necessary, reducing wildlife attraction to areas in the vicinity of WSI.	WSA Co	Operation (Implementation, 2026–ongoing)

Landscape and visual amenity

Based on the nature of the potential impacts, no reasonable or feasible project specific mitigations are considered to be available that would reduce the potential landscape and visual impacts that have been identified as a result of the project.

ID No.	Issue	Mitigation measure	Owner	Timing
Biodiversity				
Project specific mitigation measures related to wildlife strike are presented as HR5 to HR8. There are no other project specific mitigations related to biodiversity.				
Heritage				
H1	Aboriginal heritage	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.	DITRDCA	Pre-operation (Detailed design, 2024–2026)
H2	Heritage	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 Greater Blue Mountains Area. The research program will be designed and implemented in consultation with Heritage NSW and include participation of local First Nations stakeholders.	DITRDCA/ Airservices Australia/ WSA Co	Pre-operation (Detailed design, 2024–2026) and Operation (Implementation, 2026–ongoing)
H3	Heritage consultation	WSA Co will establish a CACG for WSI which will facilitate consultation with stakeholders and community on a range of matters including heritage issues.	WSA Co	Pre-operation (Detailed design, 2024–2026)
Social				
S1	Social impacts	The WSI CACG will 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.	WSA Co	Pre-operation (Detailed design, 2024–2026)
S2	First Nations employment	WSA Co will implement a program to ensure opportunities for First Nations employment.	WSA Co	Operation (Implementation, 2026–ongoing)
Economic				
E1	Existing airspace users	DITRDCA will continue to consult with aerodrome operators and airspace users at Bankstown and Camden Airports regarding airspace requirements in order to minimise risks and associated economic costs.	DITRDCA	Pre-operation (Detailed design, 2024–2026)
E2	Emergency services	DITRDCA and Airservices Australia will continue to consult with emergency services operators regarding priorities of airspace in order to minimise risks and associated economic costs.	DITRDCA and Airservices Australia	Pre-operation (Detailed design, 2024–2026) and Operation (Implementation, 2026–ongoing)
Human health				
Mitigation measures related to Aircraft noise are presented as N1 to N7 and mitigations related to aircraft hazards and risk are presented as HR1 to HR7. There are no other project specific mitigations related to human health.				

Table S.3 Proposed monitoring programs

ID No.	Issue	Mitigation measure	Owner	Timing
Aircraft noise				
M1	Aircraft noise	<p>Airservices Australia will install a system of permanent and temporary noise monitoring terminals at suitable locations and incorporated into the Airservices Australia NFPMS network and reporting systems. The interface will allow community and other stakeholders to see where aircraft fly and explore historical trends and patterns.</p> <p>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.</p> <p>This system will operate 24-hours-a-day, 7-days-a-week, collecting data from every aircraft operating to and from WSI.</p> <p>Noise monitoring will consider the requirements of the WSI Stage 1 Development Noise OEMP.</p>	Airservices Australia	Operation (Implementation, 2026–ongoing)
M2	Wildlife strike	<p>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:</p> <ul style="list-style-type: none"> • identify wildlife hazards which must be assessed to reduce potential risk to aircraft operations • be conducted in accordance with relevant Commonwealth and State guidelines and standards including any recovery plans for threatened species • carried out under the direction of a suitably qualified person • 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 • identify locations where reasonable and feasible mitigation measures to manage wildlife strike risk are required • be reviewed annually to determine its effectiveness. 	WSA Co	Operation (Implementation, 2026–ongoing)



Conclusion

This EIS has been prepared to address the requirements of Condition 16 of the Airport Plan and support the request to the Australian Minister for the Environment and Water for advice in accordance with Section 160 of the EPBC Act. Advice from the Minister is required prior to any approval of the airspace and flight paths.

The project has been developed by an Expert Steering Group led by the Australian Government DITRDCA, including Defence, Airservices Australia, and CASA and is an integral part of WSI, ensuring that the benefits of WSI are realised.

The project will achieve the overall objectives for WSI by enabling single runway operations to commence through the introduction of new flight paths and a new controlled airspace volume. The preliminary airspace and flight paths have 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.

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.

WSI would provide direct connections to the world, allowing opportunities for residents and the community to enhance Western Sydney's connection to world economies. Tourism is expected to be boosted, with WSI providing improved accessibility to destinations across Western Sydney and the Blue Mountains. New or upgraded transport infrastructure that would be built to service WSI would provide benefit to local communities.

Extensive stakeholder and community consultation and engagement has been carried out as part of the EIS, including dedicated engagement to support the release of the online Aircraft Noise Tool as well as exhibition of the Draft EIS. Engagement also included consultation with First Nations representatives and communities within the surrounding Local Government Areas. Feedback received throughout the engagement

process and during exhibition of the Draft EIS was used to inform the current project design (including a series of design refinements to the preliminary flight paths) and, where applicable, will inform the ongoing detailed design process.

The EIS found that impacts associated with the operation of the WSI flightpaths would have adverse impacts in relation to aircraft noise. Noise will result in changes in amenity and impacts on Aboriginal Places and sites of high cultural value.

A suite of mitigation measures has been developed to further minimise and mitigate operational impacts, where safe and feasible. There are a range of operational measures that will mitigate the impacts of aircraft noise. Also, there are land use planning controls in place to safeguard the operations of WSI while protecting future communities from aircraft noise. The NIPA has been established to ameliorate residual noise impacts where applicable.

While mitigation measures would serve to minimise impacts, residual impacts would remain for communities 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 consequences of not proceeding with the ongoing design development would compromise the success of WSI.

The project has been evaluated as consistent with the objects of the EPBC Act and principles of ecological sustainable development defined under the EPBC Act. DITRDCA, Airservices Australia and WSA Co are committed to managing the potential impacts to the environment through commitments to mitigation measures to reduce remaining residual impacts. Future design phases would continue to ensure a rigorous approach to the finalisation and implementation of the airspace and flight path design.



Australian Government

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

