Chapter 14 Land use

This chapter provides an overview of the existing planning framework and land uses in the vicinity of WSI and assesses the potential impact to existing and future land use that may occur during operation of the project.

The refinements to the preliminary flight path design since the exhibition of the Draft EIS would not change the conclusions of the land use assessment as presented in this chapter and the supporting technical paper. Further detail is provided in Appendix G (Assessment of the refinements to the project) of the EIS.

The study area for the assessment comprises the land surrounding WSI where aircraft movements would have an impact on land uses through implementation of planning restrictions on future development.
The Obstacle Limitation Surface (OLS) has been identified as the most suitable boundary to assess potential impacts and forms the basis of the study area.

The study area encompasses an area of Western Sydney, where growth is being driven by major infrastructure growth areas and land use initiatives. Western Sydney International and Aerotropolis will be the key catalyst for driving further growth and development in the region.

Key land uses within the study area, subject to this assessment include residential, agricultural, recreational, industrial, commercial, health and education. Defence Establishment Orchard Hills (DEOH) (aside from WSI itself) is the dominant Commonwealth Land parcel within the study area and is located to the north of WSI.

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 including (but not limited to) measures for managing impacts of aircraft noise, managing risks of intrusion into protected airspace and managing risks of wildlife strike near airports.

The assessment of land use impacts is based on the potential for 3 key aspects of the project and how they affect key land uses in the study area:

- aircraft noise, and the impact they could have on existing land use and future planning or approvals
- the potential for restricted development due to protected airspace (OLS and PANS-OPS)
- wildlife buffers and framework for how to manage the risk of wildlife strike on aircrafts in the vicinity of WSI.

The NSW planning framework takes a precautionary approach to residential land use in regard to WSI operations and has adopted an approach which relies on ANEC/ANEF contours and *Australian Standard AS 2021:2015 Acoustics – Aircraft Noise Intrusion Building Siting and Construction* (AS 2021:2015) to inform planning decisions for residential land uses in areas affected by aircraft noise.

The *State Environmental Planning Policy (Precincts – Western Parkland City) 2021* (NSW) (Western Parkland City SEPP) 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.

Under existing use rights established in the *Environment Planning and Assessment Act 1979* (NSW) (EP&A Act) and its regulations, it remains possible to enlarge or modify an existing use with the approval of the relevant consent authority. Any such development would need to give consideration of AS 2021:2015.

A small additional area of land in the vicinity of WSI is predicted to be within the 20 ANEC contour for the assessed noise scenarios, when reviewed in comparison to the published ANEC mapping within the Western Parkland City SEPP.

WSI's protected airspace was prescribed by declaration on 19 October 2017. Land use controls associated with OLS ensure that developments around airports do not impede on airspace and that planning authorities consider airspace requirements when determining applications surrounding WSI. Future developments with the potential to exceed the OLS must be referred to WSI's operator and the Department of Infrastructure, Transport, Regional Development, Communications and the Arts (DITRDCA) for review prior to the development being approved to proceed.

The PANS-OPS surface is generally above the OLS and is designed to safeguard an aircraft from collision with obstacles when the aircraft's flight may be guided solely by instruments, in conditions of poor visibility. A PANS-OPS for WSI will be prepared once flight paths have been finalised.

NASF Guideline C provides a framework for how to manage the risk of wildlife strike on aircrafts. That framework has been incorporated into the Western Parkland City SEPP and Aerotropolis Precinct Plans. Land use planning around WSI has incorporated the implementation of wildlife buffer zones to mitigate risks of wildlife hazards. There are a range of existing land uses within the study area which have the potential to attract wildlife. These existing land uses can continue in the future due to existing use rights however mitigation of potential wildlife risks may be required in consultation with WSI and NSW Department of Planning, Housing and Infrastructure (DPHI). Any new development classed as 'relevant development' under the SEPP and within the 13 kilometre (km) wildlife buffer of WSI will be subject to the wildlife management controls contained within the Western Parkland City SEPP.

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 (formally Department of Infrastructure and Regional Development) 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.

Further, project-specific mitigations have been identified, including continuing liaison between DITRDCA, State government agencies and relevant local councils to ensure applicable environmental planning instruments have regard to any changes to WSI's protected airspace and noise exposure contours.

14.1 Introduction

This chapter considers land use and planning impacts resulting from the project on current and future land uses. The assessment focusses on potential land use implications associated with airspace movements as well as land use impacts as a result of safeguarding measures for WSI overflight operations, having regard to the design of the proposed airspace. A detailed land use and planning assessment has been carried out for the project and is provided in Technical paper 6: Land use and planning (Technical paper 6).

In terms of the land use impacts associated with the broader development of WSI (including land use within the WSI, and impacts associated with ground-based airport activities), the 2016 EIS remains the relevant source of information.

14.2 Legislative and policy context

The Australian airspace is governed by Commonwealth legislation, specifically the *Airspace Act 2007* (the Airspace Act), the *Civil Aviation Act 1988* (the Civil Aviation Act), and their associated regulations, whereas the on-ground development of certain airports and protection of the airspace is primarily governed by the *Airports Act 1996* (the Airports Act) (and its regulations). Further information on these Acts and supporting regulations is provided in Chapter 5 (Statutory context).

New South Wales planning laws do not apply in relation to the management of controlled airspace. They also do not apply to the assessment of a plan for aviation airspace management by virtue of Section 160(5) of the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act). However the NSW Government and local councils are responsible for setting strategic land use direction and land use controls and as such, consideration has been given to relevant NSW legislation and environmental planning instruments where considered appropriate (such as land use beyond the WSI boundary).

The National Airports Safeguarding Framework (NASF) has been developed by the National Airports Safeguarding Advisory Group to provide guidance on planning requirements for development that affects aviation operations (such as aircraft noise, intrusions into prescribed airspace, and wildlife management). This is discussed further in Section 14.3.2.2.

The NASF has been implemented primarily through the land use controls provided in the Western Parkland City SEPP.

The NSW planning framework takes a precautionary approach to residential land use development in regard to WSI operations and has adopted a policy which relies on ANEF contours and AS 2021:2015 (Standards Australia, 2015) to inform planning decisions for residential land uses in areas affected by aircraft noise. AS 2021:2015 is discussed further in Section 14.3.2.4.

A summary of the legislative framework which guides land use planning in the project is provided in Technical paper 6.

14.3 Policy relevant to land use planning

14.3.1 Protected airspace

The airspace at and around airports is protected under Part 12 of the Airports Act and the Airports (Protection of Airspace) Regulations 1996 (APAR). International standards have been adopted which define 2 sets of invisible surfaces above the ground around an airport. The airspace above these surfaces forms WSI's protected airspace. These 2 surfaces are the Obstacle Limitation Surface (OLS) and Procedures for Air Navigational Services—Aircraft Operations (PANS-OPS) surface.

The OLS is intended to provide protection for aircraft flying into or out of WSI when the pilot is flying by sight. The PANS-OPS surfaces are intended to safeguard an aircraft from collision with obstacles when the aircraft's flight may be guided solely by instruments, in conditions of reduced visibility.

14.3.1.1 Obstacle Limitation Surface (OLS)

Structures and other activities that intrude into protected airspace have the potential to impact safe aviation operations at airports. As such, land use controls associated with Obstacle Limitation Surface (OLS) ensure that developments around airports do not impede on airspace and that planning authorities consider airspace requirements when determining applications surrounding WSI.

Western Sydney International's (WSI) protected airspace was prescribed by declaration on 19 October 2017 under the provisions of the Airports Act and the APAR. Declaration of the OLS enabled local councils and land use planning authorities to incorporate the protected airspace as appropriate in their land use planning instruments. Regardless, intrusions into prescribed airspace that do not have prior approval under the APAR or present an unacceptable impact on airport operations are not permitted.

A consent authority is required to consult with WSA Co as part of its assessment of a development application for development that intrudes into the WSI prescribed airspace. In addition, separate approvals under the APAR are required for activities that intrude into airspaces that is prescribed for WSI. Those activities, referred to as 'controlled activities' are listed in section 182 of the Airports Act and include:

- permanent structures, such as buildings or antennas plumes intruding into prescribed airspace
- temporary structures such as cranes intruding into prescribed airspace (information for crane operators)
- any activities causing intrusions into prescribed airspace through glare from artificial light or reflected sunlight, air turbulence from stacks or vents, smoke, dust, steam or other gases or particulate matter.

Some proposed permanent and temporary structures around WSI may be temporarily exempt until 2026 (prior to WSI becoming operational). These are:

- buildings, structures or things that penetrate the OLS but are no taller than 10 m above ground level
- temporary penetrations less than 12 months in duration
- activities authorised in the Airport Plan.

The OLS map for the WSI is shown on Figure 14.1. DITRDCA is in the process of engagement with State government agencies and local councils as part of the process of declaring a new OLS under the APAR.

14.3.1.2 Procedures for Air Navigation Services – Aircraft Operations (PANS-OPS)

The PANS-OPS surface is generally above the OLS and is designed to safeguard an aircraft from collision with obstacles when the aircraft's flight may be guided solely by instruments, in conditions of poor visibility.

Under the Airports Act and the APAR airport operators must refer short-term PANS-OPS infringements (less than 3 months) to DITRDCA for approval. Long term intrusions of the PANS-OPS surface are prohibited.

A PANS-OPS for WSI will be prepared once flight paths have been designed and finalised.

14.3.1.3 Maximum building heights

Building height controls within the study area (and generally) are outlined in the relevant LEPs unless otherwise specified within an overriding SEPP.

Principle development standards within LEPs generally seek to establish maximum height limits for building based on broad principles such as maximising urban form, minimise shadowing, protecting views and supporting the existing and desired future character of the locality. LEPs also provide 'height of building' maps which outline heights that are not to be exceeded for varying land use zones. For example, development consent may be granted for residential purposes, in the appropriate land zoning if a dwelling does not exceed 9.5 m in height above ground level (existing).

The Western Parkland City SEPP contains provisions related to building height for specific growth precincts outlined within the SEPP including areas (Aerotropolis Precinct and Oran Park and Turner Road Precinct) within the study area.

Notwithstanding the above maximum building height controls, all buildings and structures, including equipment used during construction (such as cranes) are required to be contained within OLS limits established under the Western Parkland City SEPP.

14.3.2 Aircraft noise guidelines

Land use planning is an effective means to ensure that the activities nearby airports are compatible with aviation activities. Its main goal is to minimize the population affected by aircraft noise by introducing land use planning measures, such as land use zoning around airports.

Within the study area, expanding residential and other noise sensitive development of land surrounding WSI has the potential to create increased conflicts between airport operations and the community.

There are several key international and Australian publications which provide strategic guidance on land use management in the proximity to aviation activities.

14.3.2.1 International Civil Aviation Organization – Guidance on the Balanced Approach to Aircraft Noise Management

The International Civil Aviation Organization (ICAO) is a specialised agency of the United Nations that coordinates the principles and techniques of international air navigation, and fosters the planning and development of international air transport to ensure safe and orderly growth.

ICAO *Doc 9829 Guidance on the Balanced Approach to Aircraft Noise Management* (ICAO, 2010) provides guidance on alleviating the problem of noise in the vicinity of airports. The Balanced Approach consists of identifying the noise problem at an airport and then analysing the various measures available to reduce noise through the exploration of 4 elements - reduction at source, land use planning and management, noise abatement operational procedures and operating restrictions (ICAO, 2010). The guidance outlines that there are substantial benefits to be gained from the correct application of land use planning techniques in the development of airports. The guidelines outline preventative measures that should be considered (where possible) including:

- locate new airports at an appropriate place, such as away from noise-sensitive areas
- take the appropriate measures so that land use planning is taken fully into account at the initial stage of any new airport or of development at an existing airport
- define zones around airports associated with different noise levels considering population levels and growth as well as forecasts of traffic growth and establish criteria for the appropriate use of such land, taking account of ICAO guidance
- enact legislation, establish guidance or other appropriate means to achieve compliance with those criteria for land use
- ensure that reader-friendly information on aircraft operations and their environmental effects is available to communities near airports.

The guidelines also state that airport authorities should work closely with local planning authorities responsible for land use management to educate them regarding the noise impact of aviation operations and encourage these authorities to develop and implement land use planning control measures in affected areas (ICAO, 2010).

14.3.2.2 National Airports Safeguarding Framework

The National Airports Safeguarding Framework (NASF) provides guidance on planning requirements for developments that could potentially affect aviation operations. The framework aims to improve community amenity by minimising aircraft noise-sensitive developments near airports; and improve safety outcomes by ensuring aviation safety requirements are recognised in land use planning decisions through guidelines being adopted by jurisdictions on various safety-related issues. This includes building activity around airports that might penetrate operational airspace and/or affect navigational procedures for aircraft. The NASF is a national land use planning framework that aims to:

- improve community amenity by minimising aircraft noise-sensitive developments near airports
- improve safety outcomes by ensuring aviation safety requirements are recognised in land use planning decisions through guidelines being adopted by jurisdictions on various safety-related issues.

The NASF establishes land use planning controls to protect aviation operations that extend beyond the Aerotropolis boundary. The NASF Guidelines are used by relevant planning authorities to help inform land use planning decisions and by proponents to prepare applications on land impacted by aviation safeguarding controls.

The NASF currently comprises 9 guidelines:

- Guideline A: Measures for Managing Impacts of Aircraft Noise
- Guideline B: Managing Risks of Building Windshear and Turbulence at Airports
- Guideline C: Managing Risks of Wildlife Strike in the Vicinity of Airports
- Guideline D: Managing Risks Associated with Wind Turbines
- Guideline E: Managing Risks of Distractive Lighting in Vicinity of Airports
- Guideline F: Managing Risks of Intrusion into Protected Airspace
- Guideline G: Protecting Aviation Facilities – Communications, Navigation and Surveillance
- Guideline H: Protecting Strategically Important Helicopter Landing Sites
- Guideline I: Managing the Risks in Public Safety Areas at the ends of Runways.

14.3.2.3 Aviation Safeguarding guidelines

The Aviation Safeguarding Guidelines – Western Sydney Aerotropolis and surrounding areas (October 2021) (NSW DPE, 2022a) provide guidelines for managing land use impacts related to aircraft noise and were developed by the former DPE (now DPHI) with input from DITRDCA. The guidelines seek to ensure planning authorities consider the aircraft noise guidelines and noise exposure contour maps when undertaking land use planning for the Aerotropolis and surrounding areas of influence.

The NSW Government supports the NASF with the exception of Guideline A and uses the existing policy of DPHI which relies on ANEF contours and AS 2021:2015. The NSW Government has endorsed the use of ANEF for land use planning, not the N-above contours (NSW DPE, 2022a).

Until the ANEF contour is approved for WSI, the Western Parkland City SEPP ANEC contour (based on the runway direction and proposed flight paths) is to be used to inform land use planning. The ANEC presented in the Western Parkland City SEPP represents the long-term development of WSI, including parallel runways and facilities for up to 82 million passengers annually (nominally occurring in 2063).

Planning instruments such as Western Parkland City SEPP and LEPs contain controls to ensure that incompatible development (particularly noise sensitive development, such as schools and hospitals etc) is not approved in the vicinity of WSI, specifically within ANEC 20. As such, planning authorities may not grant consent to development unless it is demonstrated to be in accordance with AS 2021:2015 based upon the ANEC contours in the Western Parkland City SEPP.

14.3.2.4 AS 2021:2015 Acoustics – Aircraft noise intrusion – Building siting and construction

AS 2021:2015 (Standards Australia, 2015) provides guidance on the siting and construction of new buildings with regard to aircraft noise intrusion. The assessment of potential aircraft noise exposure at a given site is based on the ANEF contours. AS 2021:2015 also provides guidelines for determining the type of building construction necessary to provide a given noise reduction.

All levels of Government give effect to AS 2021:2015 in land use planning for new development in environmental planning instruments, and as a necessary consideration in building siting and design as part of the assessment of new development applications within the vicinity of airports.

The AS 2021:2015 provides details on the uses which are acceptable in the different ANEF contours as described in Table 14.1.

Table 14.1 AS 2021:2015 – Acceptability Based on ANEF Zones (in conjunction with Table 3.3 of AS 2021:2015)

Building type	ANEF zone of site		
	Acceptable	Conditionally acceptable	Unacceptable
House, home unit, flat, caravan park	Less than 20 ANEF[1]	20–25 ANEF[2]	Greater than 25 ANEF
Hotel, motel, hostel	Less than 25 ANEF	25–30 ANEF	Greater than 30 ANEF
School, university	Less than 20 ANEF[1]	20–25 ANEF[2]	Greater than 25 ANEF
Hospital, nursing home	Less than 20 ANEF[1]	20–25 ANEF	Greater than 25 ANEF
Public building	Less than 20 ANEF[1]	20–30 ANEF	Greater than 30 ANEF
Commercial building	Less than 25 ANEF	25–35 ANEF	Greater than 35 ANEF
Light industrial	Less than 30 ANEF	30–40 ANEF	Greater than 40 ANEF
Other industrial	Acceptable in all ANEF zones		

Notes from AS 2021:2015:

1. The actual location of the 20 ANEF contour is difficult to define in aircraft flight paths.
2. Within 20 ANEF to 25 ANEF, some people may find that the land is not compatible with residential or educational uses. Land use authorities may consider that the incorporation of noise control features in the construction of residences or schools is appropriate.

Section 4.65 of the NSW EP&A Act includes 'existing use rights' protections in which landowners are allowed to continue the use of their land if that use was lawfully commenced at the time of the rezoning under the SEPP or the use has not been abandoned. It is possible to enlarge, expand or intensify, alter, or extend an existing use but only with the approval of the relevant consent authority.

14.4 Methodology

14.4.1 Study area

The land use and planning study area (study area) for the project comprises the land surrounding WSI where aircraft movements would have an impact on land uses related to the following aspects:

- Aircraft noise, which can potentially impact the range of land uses that can be undertaken in future (specifically residential and other noise-sensitive land uses). The extent of land affected by noise is considered for the purposes of this assessment to be land within the Western Parkland City SEPP ANEC 20 contour – a boundary beyond WSI within which noise levels would place a material impact on land use.
- Aviation safety, which requires restrictions in certain development for aviation safety purposes, such as limits on building heights and restrictions on activities that increase the risk of bird strike. These airspace protection controls are established for the project by the OLS and the implementation of wildlife buffer zones.

While each type of impact are relevant, the ANEC 20 contour and wildlife buffer is wholly contained within the OLS and as such the OLS has been applied as the study area. The study area for the land use assessment is shown on Figure 14.1.

14.4.2 Approach

The assessment of the potential impacts on land use and planning involved:

- a review of the following legislation, policies, guidelines and assessments relevant to the project and/or the study area:
  - Commonwealth and NSW planning legislation
  - key strategic planning polices and documents to identifying future land uses, planning controls and developments
  - relevant technical papers supporting this EIS
- assessment of the potential impacts to existing land uses including those that would need to be acquired to operate the project
- assessment of the potential impacts of the project on future land uses
- identifying mitigation measures to minimise the potential impacts of the project on existing and future land uses.

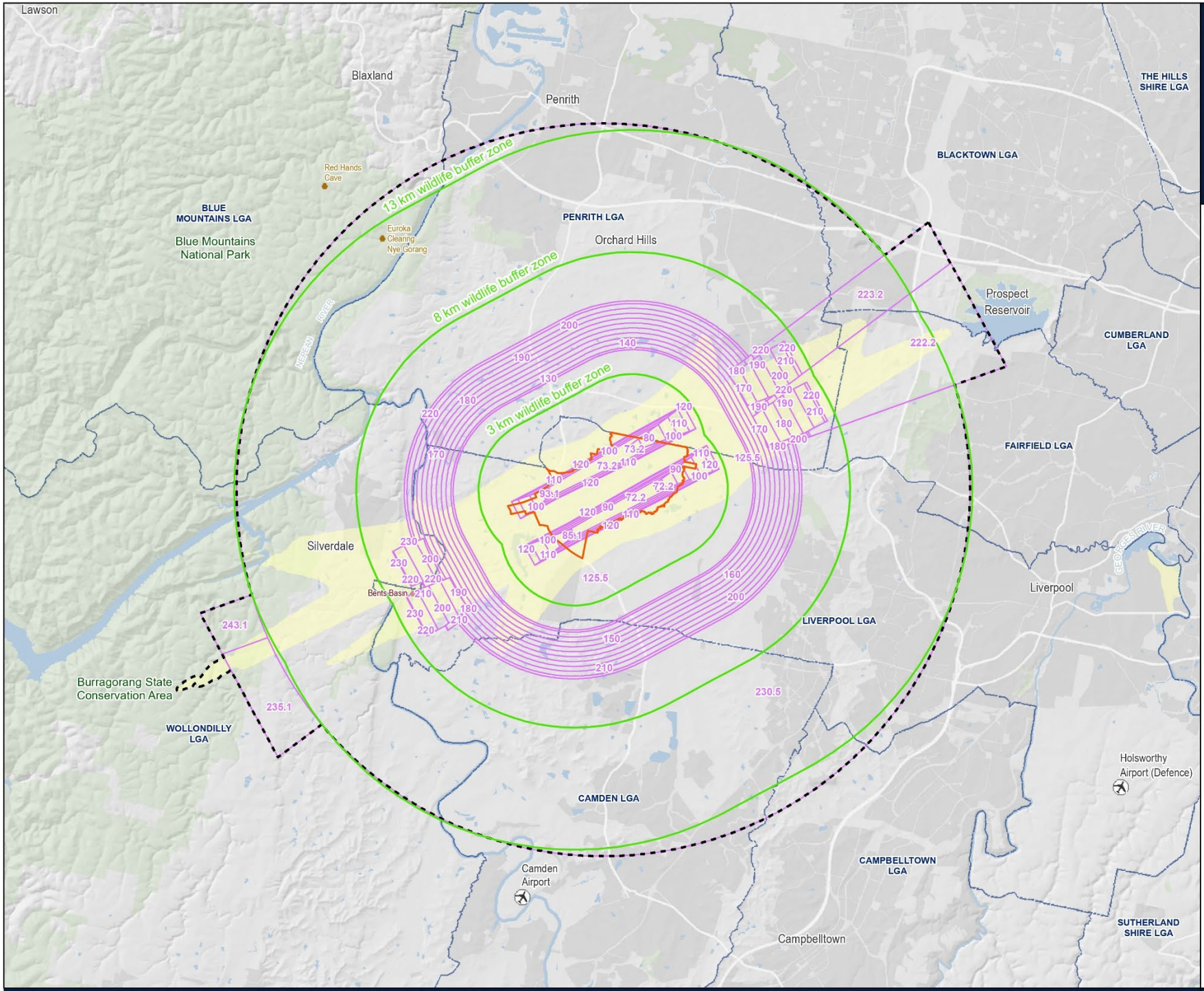


Figure 14.1

Land use study area (incorporation OLS and ANEC)

Legend

- Western Sydney International (Nancy-Bird Walton) Airport land boundary
- Land use study area
- Local Government Area
- Wildlife buffer zones
- State Environmental Planning Policy (Precincts - Western Parkland City) 2021 Obstacle Limitation Surface
- Aboriginal Places raised during consultation (NPW Act)
- Site of Aboriginal significance

State Environmental Planning Policy (Precincts – Western Parkland City) 2021 Noise Exposure Concept (units)

- ANEC 20 and above

Coordinate system: GDA 1994 NSW Lambert

Scale ratio correct when printed at A3

1:150,000 Date: 16/07/2024

14.5 Existing environment

14.5.1 Regional context

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 study area encompasses a large area of Western Sydney, traversing parts of the Liverpool, Penrith, Wollondilly, Fairfield, Blacktown, Camden and Blue Mountains local government areas (LGAs). Large population centres within these LGAs, such as Penrith and Liverpool are experiencing significant population growth that is being driven by major infrastructure and land use initiatives. Western Sydney International and Aerotropolis will be the key catalyst for driving further growth and development in the region.

In addition to WSI and the Aerotropolis, the region supports a diverse and competing range of current and proposed land uses. Growth areas, urban renewal corridors, economic corridors and large infrastructure projects are planned or currently under construction.

North of WSI, land use is primarily a mix of urban residential, commercial and industrial uses with scattered areas of rural and agricultural areas. The Greater Penrith to Eastern Creek Investigation Area (GPEC) incorporates approximately 19,000 hectares (ha) from the Nepean River in the west to the M7 Motorway in the east and is comprised of parts of the Blacktown and Penrith LGAs. The GPEC area was identified in the Greater Sydney Region Plan as an area for growth and change due to its access to infrastructure and services associated with WSI.

Adjacent to GPEC is the Western Sydney Employment Area (WSEA). The WSEA was established to supply employment land close to major road transport and the Aerotropolis and to provide jobs for Western Sydney.

The Defence Establishment Orchard Hills site (located about 5 km to the north of WSI) is primarily used for defence purposes, however plays an important conservation role with much of the vegetation on the site protected as an offset to the impacts of WSI. Commercial and industrial hubs are located at Erskine Park, Eastern Creek, St Marys and Wetherill Park.

To the west of WSI, rural land uses such as primary production and agriculture along with large rural residential properties are the primary land use.

The South West Growth Area (SWGA) lies directly to the south of WSI. This area comprises approximately 10,000 ha adjoining the Western Sydney Aerotropolis and aims to connect new suburbs with WSI and the broader WSEA to the north.

East of WSI, land uses progressively change from a mix of rural residential and agriculture (near WSI) to higher density residential, manufacturing and industrial land uses (within the Liverpool LGA) near Hoxton Park, Prestons and Liverpool. The large Western Sydney Parklands provides a green, recreational corridor stretching from the M7 Motorway in the north to Bringelly Road in the south.

A summary of key planning strategies and corridors in the Western Sydney region are shown on Figure 14.2.

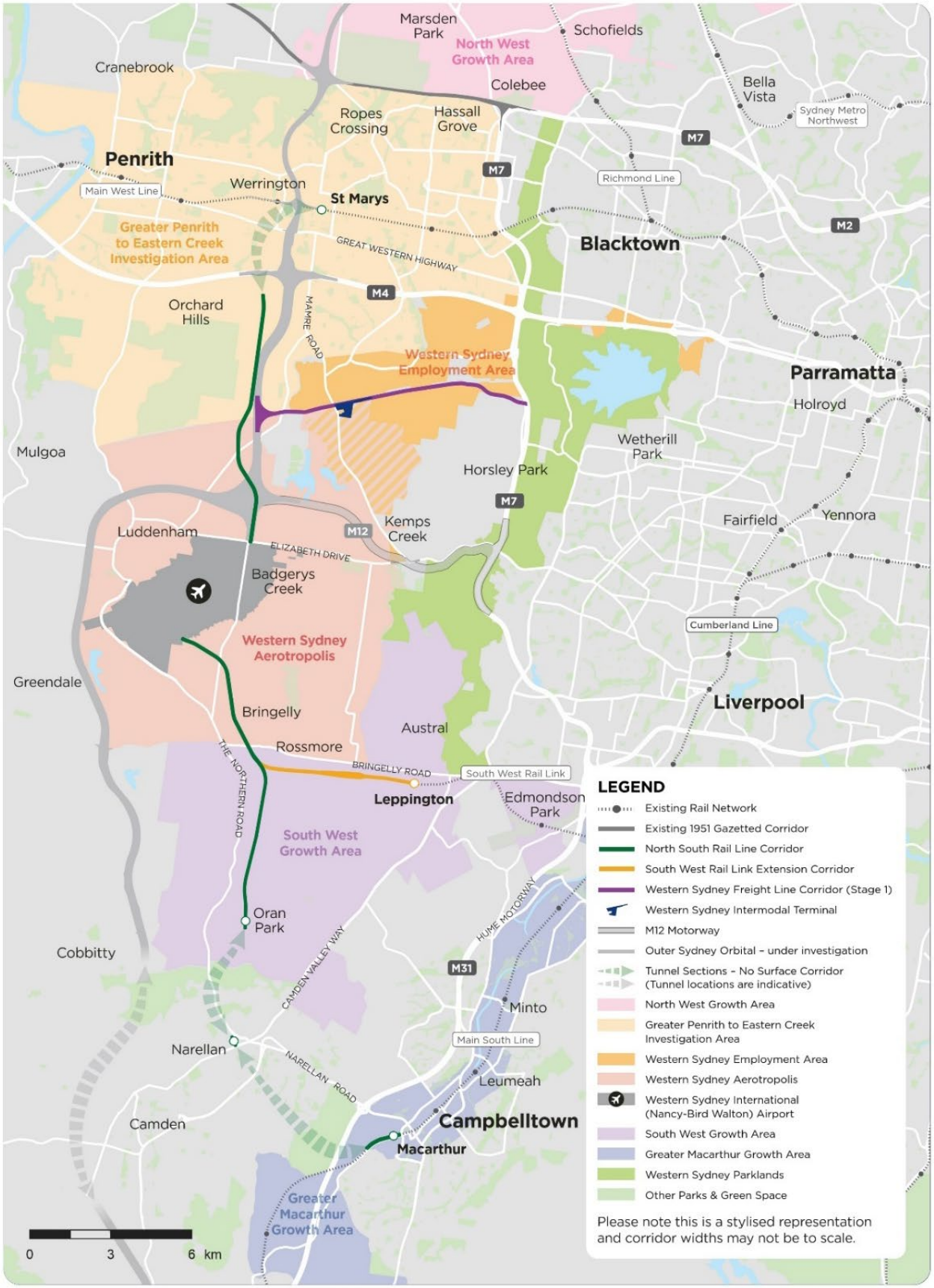


Figure 14.2 Regional context and strategic planning (source: Transport for NSW, 2020a)

14.5.2 Residential land use

The major urban and residential centres of Liverpool, Camden and Campbelltown all sit outside of the study area and land uses within those centres are not discussed in this assessment. Penrith's southern suburbs of South Penrith, Jamison Town, Glenmore Park and Regentville represent some of the highest density residential areas within the study area, with residential development in a linear corridor along the Great Western Highway and the Main Western Railway. Other key residential areas within the study area, to the north of WSI include St Marys, St Clair and Erskine Park. The residential community of Twin Creeks Golf and Country Club is located directly north of WSI and includes about 200 residential dwellings.

The villages of Luddenham, Wallacia and Mulgoa are located immediately west of WSI, generally straddling the Northern Road between Park Road and Adams Road, and Mulgoa Road, north and south of the intersection of Park and Silverdale Roads. Further to the west of WSI in the Wollondilly LGA, Silverdale and Warragamba are small villages with primarily low density and large lot residential areas.

Developing residential areas in the SWGA such as Oran Park and Leppington sit in the south of the study area in the Camden LGA and are experiencing rapid growth in conjunction with increased transport infrastructure. Beyond the residential areas discussed above, the study area contains large rural areas that serve as locations for people to live in a rural-residential or bushland setting (Greater Sydney Commission, 2018a).

14.5.3 Agricultural land use

Western Sydney has an important historical attachment to agricultural and horticultural land uses associated with Australia's early agricultural industries, including the wool industry, and its role in early colonial settlement. Significant agricultural land use is still present in the study area.

Agricultural uses in the study area support a broad range of activities including (but are not limited to) grazing, dairy, production of eggs and poultry, cut flowers, turf and mushroom farms to name a few. Agricultural industries also provide produce, employment and tourism opportunities to communities within the study area.

The landscape to the north-west of WSI includes the Mulgoa Valley and Wallacia Significant Rural Landscape (Penrith City Council, 2020), characterised by its predominantly rural landscape and undulating agricultural land. Luddenham Village is surrounded by agricultural production areas. The southern part of the study area, between WSI and Bringelly Road includes large lot rural residential and small lot agricultural uses.

14.5.4 Recreational land use

A small part of the Greater Blue Mountains Area (GBMA) sits within the study area, which is a World Heritage Area and National Heritage area. The GBMA was inscribed on the UNESCO World Heritage List in 2000 and its biodiversity values are complemented by numerous other values, including wilderness, recreation and natural beauty. Technical paper 14: Greater Blue Mountains World Heritage Area, has been prepared to address the requirements relating to impacts that may occur to or on the GBMA and provided further detail on the existing recreational and tourism values of the GBMA.

Western Sydney Parklands is located to the north-east and east of WSI, stretching for 27 km over 3 LGAs (Blacktown, Liverpool and Fairfield), creating a large area of recreational and open space for western Sydney. Under the *2030 Plan of Management* (Western Sydney Parklands, 2018), the parklands will remain mostly bushland (40 per cent), with 30 per cent set aside for recreation and tourism facilities and 5 per cent designated for urban farming.

The Wianamatta - South Creek corridor, to the east of WSI provides a significant green corridor to local communities in the study area. Approximately 5 km north of WSI is the Twin Creeks Golf and Country Club, a 340-ha estate comprising an 18-hole golf course, function centre and a restaurant. Other golf courses located in the study area include Wallacia Panthers Country Club, Penrith Golf Course and Camden Lakeside Golf Course. Bents Basin State Conservation Area (located in Silverdale and Greendale) is a popular swimming hole with a camping area and an education centre used by local school groups. The Silverdale Rifle Range is located approximately 6 km to the south-west of the Airport Site. Numerous small, local, recreation assets such as parks, playgrounds, skate parks and picnic areas are also located within the urban parts of the study area. Key recreational land uses are shown on Figure 14.3.

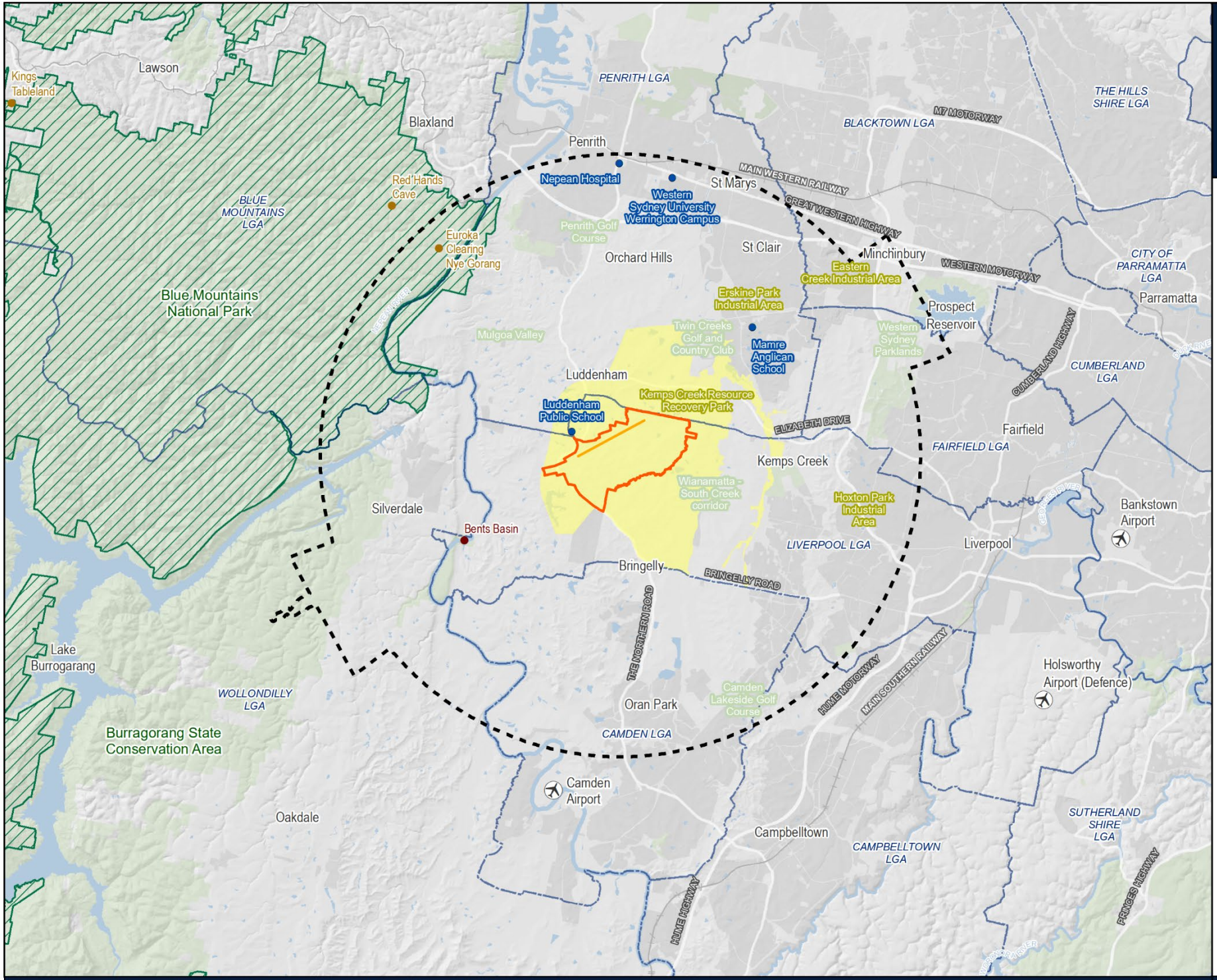


Figure 14.3

Existing land uses in the study area

Legend

- WSI Runway
- Western Sydney International (Nancy-Bird Walton) Airport land boundary
- Land use study area
- Aerotropolis Precinct Plan
- Local Government Area
- Greater Blue Mountains World Heritage Area
- Aboriginal Places raised during consultation (NPW Act)
- Site of Aboriginal significance

0 2.5 5 km

Coordinate system: GDA 1994 NSW Lambert

Scale ratio correct when printed at A4

1:250,000 Date: 16/05/2023

14.5.5 Industrial and commercial land uses

The study area includes expansive industrial and commercial land uses to the north and east of WSI, supporting a range of industrial activities including advanced manufacturing, trade and freight logistics. The industrial hubs located at Erskine Park, Eastern Creek and Hoxton Park are significant contributors to the economic outcomes of Western Sydney.

There are extractive industries based on construction material resources in the study area, with major concentrations of construction sand around Londonderry and the Hawkesbury River, as well as clay and shale resources for brick and tile manufacture, particularly around Horsley Park (Greater Sydney Commission, 2018a).

The Kemps Creek Resource Recovery Park is located immediately to the north of WSI.

An array of small-medium commercial enterprises are scattered throughout the study area including shopping precincts, commercial agribusiness services, hospitality services and retail. The location of key industrial and commercial uses within the study area are shown on Figure 14.3.

14.5.6 Health and education

The Penrith health and education precinct is the major cluster of health and educational land uses in the study area and is based around Nepean Hospital, the Western Sydney University Werrington Campus and Nepean College of TAFE Allied Health Facility.

Education and health facilities such as high schools, primary schools, specialist and general practitioner surgeries are located throughout the study area, generally in proximity to residential areas. A complete list of health and education facilities is provided in the study area is provided in Technical paper 6.

Luddenham Public School (Primary), is the nearest education land use, located adjacent to WSI within Luddenham Village. The school consists of 3 multi-aged classes accommodating the 53 students (as of 2021). Holy Family Catholic Primary School is also located in Luddenham and has 230 students (as of 2022). Both schools are located within the Western Parkland City SEPP ANEC 20 contour. Key health and education facilities in the study area are shown on Figure 14.3.

14.5.7 Transport infrastructure

Western Sydney International is the catalyst for much of Western Sydney's planned road and public transport projects. Strategic planning for WSI and the Aerotropolis has been prepared concurrently with the NSW Government's *Future Transport Strategy 2056* and Infrastructure NSW's *State Infrastructure Strategy 2018–2038* to integrate land use, transport and infrastructure across the region.

Existing major transport infrastructure in the study area includes:

- The M4 Western Motorway and the Great Western Highway which run east-west in the north of the study area
- The M7 Motorway which runs north-south in the east of the study area
- The Northern Road (A9) (currently being upgraded) which runs north-south, past WSI from the M4 Western Motorway to Camden Valley Way
- Elizabeth Drive, which runs east-west from Luddenham to the M7 Motorway
- Bringelly Road, which runs east-west from The Northern Road (Bringelly) to Camden Valley Way
- Main Western Rail Line, which connects Sydney and the Blue Mountains
- South West Rail link, currently terminating at Leppington.

In addition, there are a large network of State, Regional and Local Roads connecting suburbs and communities within the study area.

14.5.8 Commonwealth land

The Commonwealth Government acquired approximately 1,780 ha of land at Badgerys Creek for the proposed Western Sydney Airport in the 1980s and 1990s and all land within the Airport Site boundary will be used for airport operations.

Defence Establishment Orchard Hills (DEOH) is a large (about 1,740 ha) Commonwealth Government (Department of Defence) land holding located about 4 km to the north of WSI. The site provides storage, maintenance and disposal of explosive ordnance along with ordnance training to meet Service capabilities. The DEOH, while primarily used for defence purposes, plays an important conservation role with much of the vegetation on the site protected as an offset to the impacts of WSI.

The DEOH is vegetated with remnants and regenerating areas of Cumberland Plain Woodland, listed as a critically endangered ecological community at both State (Cumberland Plain Woodland in the Sydney Basin Bioregion) and Commonwealth levels. The DEOH acts as a refuge and reservoir of regional conservation significance for species that are dependent on low levels of agricultural and urban development. The Heritage Management Plan for the DEOH site outlines management guidelines related to both natural and historic heritage values.

Holsworthy Military Reserve and the Defence Royal Australian Air Force (RAAF) bases at Richmond and Glenbrook sit beyond the study area for this assessment.

14.6 Future land use

Significant strategic planning is underway within Western Sydney, with much of the study area going to experience substantial transformation and growth over the coming decades. Key planning initiatives that will drive development in the study area and how they are related to the project are outlined below.

14.6.1 Western Sydney Aerotropolis

The Western Sydney Aerotropolis is a 11,200-ha area surrounding WSI. The Aerotropolis will become a hub of industry and innovation, attracting local and global companies drawn to the Western Parkland City and WSI. Western Sydney Aerotropolis is made up of several precincts (refer Figure 14.4) including:

- Aerotropolis Core
- Bradfield Centre
- Badgerys Creek and adjoining areas of Wianamatta-South Creek
- Northern Gateway
- Agribusiness
- Luddenham Village.

The supporting Western Sydney Aerotropolis Precinct Plan (NSW DPE, 2023) is in force under the provisions of the Western Parkland City SEPP. The Precinct Plan provides the place-based objectives and requirements to guide future development in the Aerotropolis in a consistent and sustainable manner over time. The Precinct Plan outlines specific objectives for ensuring that development is responsive to the WSI's operational constraints including aircraft noise and OLS.

Planning for the Luddenham Village precinct is ongoing and the NSW Government released the Luddenham Village Interim Strategy in 2022 (NSW DPE, 2022b). The interim strategy will inform the Luddenham Village Plan which will outline land use planning provisions and controls (including development within the ANEC 20 contour) relating to Luddenham Village and will be incorporated into the Aerotropolis Precinct Plan.

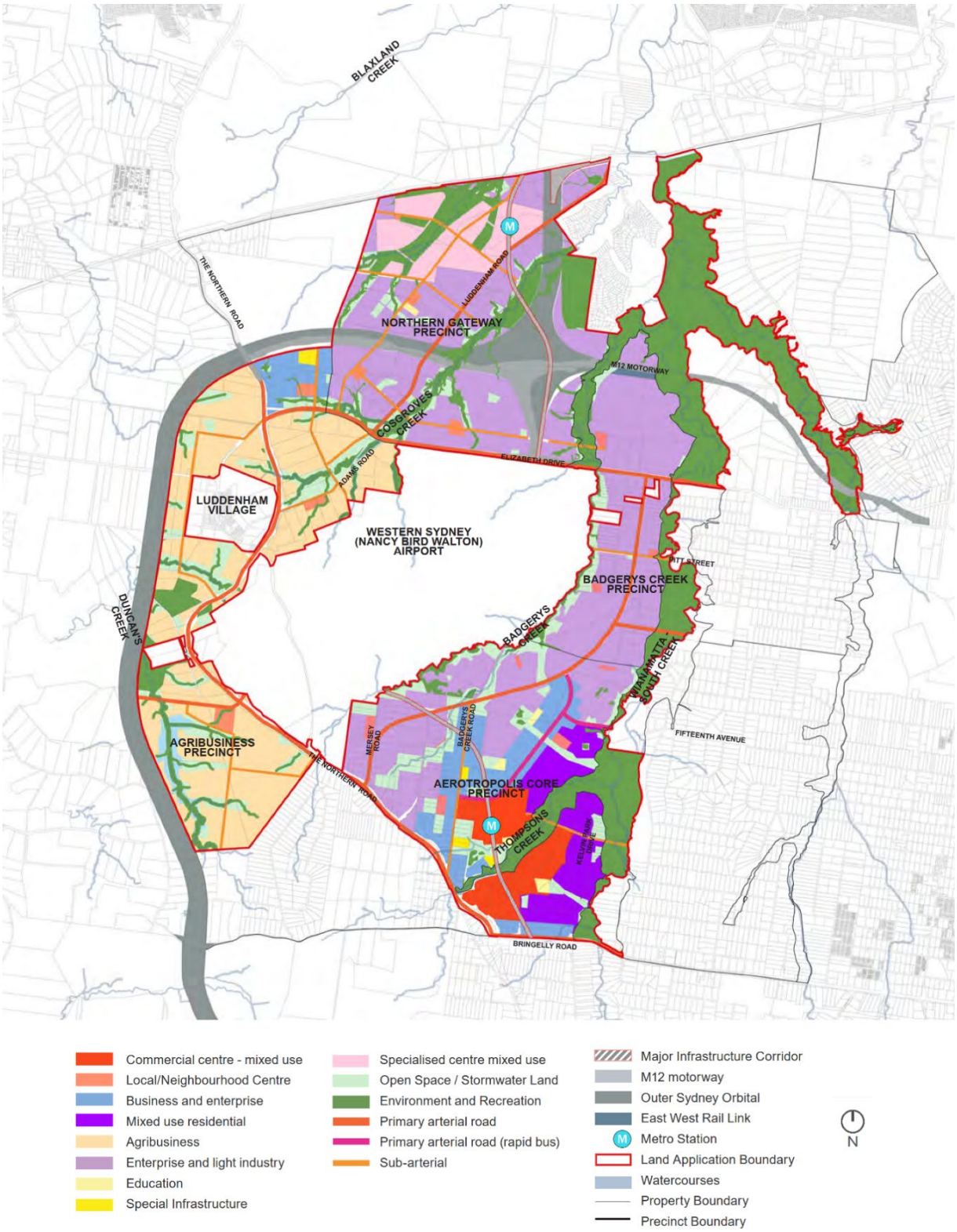


Figure 14.4 Aerotropolis land use and structure plan (Source: NSW DPE, 2023a)[2]

---

[2] Additional Metro stations located within the WSI (Airport Terminal and Airport Business Park) have been approved since the development of this figure and are not represented

14.6.2 Greater Penrith to Eastern Creek Investigation Area

Greater Penrith to Eastern Creek Investigation Area (GPEC) spans approximately 19,000 ha from the Nepean River in the west to the M7 Motorway in the east and is comprised of parts of the Blacktown and Penrith LGAs.

The draft GPEC Strategic Framework (the draft Strategic Framework), released for public exhibition in late 2022, identified 6 key precincts for growth up to 2056, being Orchard Hills, St Marys, Penrith centre, Kingswood and Werrington, Mount Druitt and Rooty Hill, and Luxford. This aligns with areas where there is capacity for future housing and urban renewal, and supports growth aligned to investment in transport infrastructure. The majority of the growth would be in the form of urban renewal around major transport infrastructure.

The draft Strategic Framework will guide future detailed planning for the area and supports local planning to achieve a shared vision for the GPEC area, by guiding precinct planning and planning proposals, and informing new or revised local planning controls like LEPs and DCPs. Once finalised, a Ministerial direction will require future planning to be consistent with the Strategic Framework (e.g. LSPSs, planning proposals and precinct plans).

14.6.3 South West Growth Area

The SWGA lies directly to the south of WSI (refer to Figure 14.2). This area comprises approximately 10,000 ha adjoining the Aerotropolis and aims to connect new suburbs with WSI and the Aerotropolis to the north. The SWGA is comprised of 14 precincts and several sub precincts. To date, 9 precincts have been rezoned with a focus on providing new residential areas to support Western Sydney's growth. The NSW Government updated the Structure Plan for the SWGA in December 2022 to reflect current planning for the area (including the Aerotropolis). The SWGA Structure Plan is outlined in Technical paper 6.

14.6.4 Infrastructure

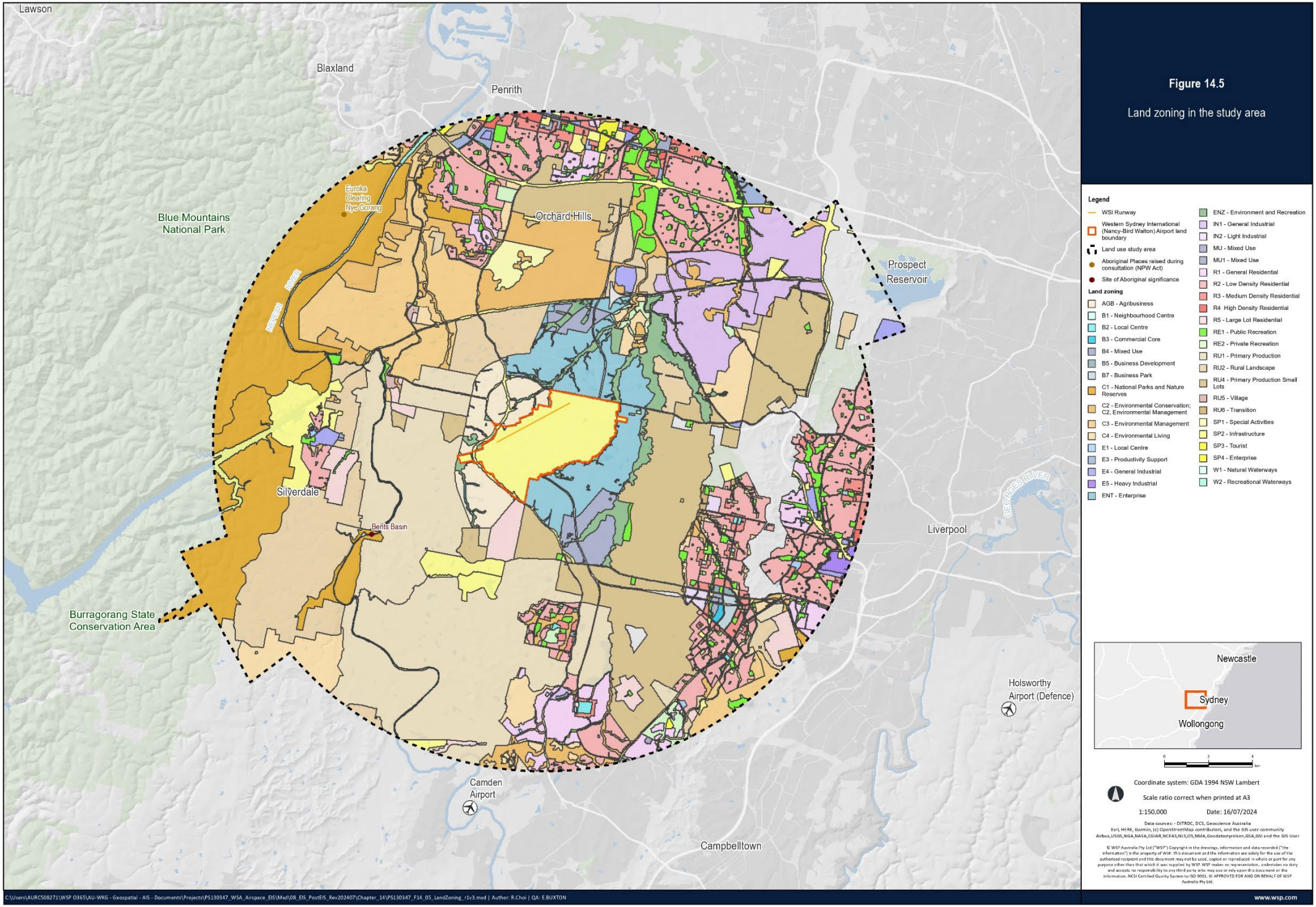
A number of large-scale transport and infrastructure projects and initiatives are in varying stages of strategic planning (as yet not funded or committed to) or construction within the study area. Further planning and assessment of these projects will need to be integrated into land use planning within the study area and consider the requirements of WSI and the project.

Key transport infrastructure projects in the region include:

- North South Rail Link between Cudgegong Road and St Marys and Badgerys Creek Aerotropolis and Macarthur
- Western Sydney Airport – Badgerys Creek Aerotropolis to Parramatta train link
- Leppington to Western Sydney Airport –Badgerys Creek Aerotropolis train link
- Outer Sydney Orbital road and freight rail
- Sydney Metro City & Southwest extension between Bankstown and Liverpool
- M5 Motorway extension between Liverpool and the Outer Sydney Orbital
- upgrades to The Northern Road, Bringelly Road and the M12 Motorway.

14.6.5 Land zoning

Land zoning within NSW identifies the type of land uses that are permitted (with or without consent) or prohibited in each zone on any given land as designated by the relevant NSW environmental planning instrument under the Environmental Planning and Assessment Act (NSW) (EP&A Act). Each zone will typically have a series of objectives outlined in the planning instrument, which provide for the desired outcomes of development that will occur within the zone and therefore set the future land use in the study area. Land zoning within the study area is shown on Figure 14.5.


Lawson
Blaxland
Penrith
Blue Mountains National Park
Euroka Clearing
Nye Gorang
Orchard Hills
Prospect Reservoir
NEPEAN RIVER
Silverdale
Bents Basin
Liverpool
GEORGES RIVER
Burragorang State Conservation Area
Holsworthy Airport (Defence)
Camden Airport
Campbelltown
Figure 14.5
Land zoning in the study area
Legend
WSI Runway
Western Sydney International (Nancy-Bird Walton) Airport land boundary
Land use study area
Aboriginal Places raised during consultation (NPW Act)
Site of Aboriginal significance
Land zoning
AGB - Agribusiness
B1 - Neighbourhood Centre
B2 - Local Centre
B3 - Commercial Core
B4 - Mixed Use
B5 - Business Development
B7 - Business Park
C1 - National Parks and Nature Reserves
C2 - Environmental Conservation; C2, Environmental Management
C3 - Environmental Management
C4 - Environmental Living
E1 - Local Centre
E3 - Productivity Support
E4 - General Industrial
E5 - Heavy Industrial
ENT - Enterprise
ENZ - Environment and Recreation
IN1 - General Industrial
IN2 - Light Industrial
MU - Mixed Use
MU1 - Mixed Use
R1 - General Residential
R2 - Low Density Residential
R3 - Medium Density Residential
R4 High Density Residential
R5 - Large Lot Residential
RE1 - Public Recreation
RE2 - Private Recreation
RU1 - Primary Production
RU2 - Rural Landscape
RU4 - Primary Production Small Lots
RU5 - Village
RU6 - Transition
SP1 - Special Activities
SP2 - Infrastructure
SP3 - Tourist
SP4 - Enterprise
W1 - Natural Waterways
W2 - Recreational Waterways
Newcastle
Sydney
Wollongong
0
2
4
km
Coordinate system: GDA 1994 NSW Lambert
Scale ratio correct when printed at A3
1:150,000
Date: 16/07/2024
Data sources: - DITRDC, DCS, Geoscience Australia
Esri, HERE, Garmin, (c) OpenStreetMap contributors, and the GIS user community
Airbus,USGS,NGA,NASA,CGIAR,NCEAS,NLS,OS,NMA,Geodatastyrelsen,GSA,GSI and the GIS User
© 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 authorised recipient and this document 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, undertakes no duty and accepts no responsibility to any third party who may use or rely upon this document or the information. NCSI Certified Quality System to ISO 9001. © APPROVED FOR AND ON BEHALF OF WSP Australia Pty Ltd.
C:\Users\AURC508271\WSP O365\AU-WKG - Geospatial - AIS - Documents\Projects\PS130347_WSA_Airspace_EIS\Mxd\08_EIS_PostEIS_Rev202407\Chapter_14\PS130347_F14_05_LandZoning_r1v3.mxd | Author: R.Choi | QA: E.BUXTON
www.wsp.com

14.7 Assessment of impacts

Potential impacts to existing and future land uses associated with airspace operations extend well beyond the WSI boundary. The assessment of impacts to land use has been limited to land surrounding WSI (the study area) where aircraft movements may have an impact on land uses. Key land use impacts that could arise from the project are related to:

- aircraft noise contours (ANEC), and the impact they could have on existing land use and future planning or approvals
- the potential for restricted development due to protected airspace (OLS and PANS-OPS)
- wildlife buffers and framework for how to manage the risk of wildlife strike on aircraft in the vicinity of WSI.

The project does not include any physical infrastructure or construction work and as such, the following assessment is limited to operational impacts only.

Facilitated impacts associated with the project are assessed in Chapter 21 (Facilitated impacts).

14.7.1 Aircraft noise contours

Aircraft noise in the vicinity of flight paths is an unavoidable consequence of aircraft operations at WSI. Areas subject to flight paths would experience varying levels of aircraft noise, depending on a range of operational and meteorological factors. Potential impacts related to aircraft noise including noise exposure forecasts associated with aircraft operations, is provided in Technical paper 1: Aircraft noise.

14.7.1.1 Residential

The NSW planning framework takes a precautionary approach to residential land use development in regard to WSI operations and has adopted an approach which relies on ANEF contours and AS 2021:2015 to inform planning decisions for residential land uses in areas affected by aircraft noise. Until the ANEF contour is approved for WSI, the long-term, dual-runway ANEC contour presented as the Noise Exposure Contour Map in the Western Parkland City SEPP is to be used to inform land use planning (NSW DPE, 2022a).

Residential dwellings are currently located within the prescribed ANEC 20 contour and are in:

- Luddenham Village, generally south-east of Blaxland Avenue
- the eastern fringes of Silverdale
- Twin Creeks Golf and Country Club
- scattered rural-residential properties within the suburbs of Luddenham, Badgerys Creek and Greendale.

Existing residential land uses within the ANEC 20 contour can continue in the future due to existing use rights. The Western Parkland City SEPP also includes provisions for new residential dwellings associated with existing residential areas or land already approved for residential development. Clause 4.17 *Aircraft noise* states:

> *(4) development consent may be granted to development for the purposes of dwelling houses on land that is in an ANEF or ANEC contour of 20 or greater if—*
>
> *(a) immediately before the commencement of this Chapter—*
>
> *(i) there were no dwellings on the land, and*
>
> *(ii) development for the purposes of dwelling houses was permitted on the land, and*
>
> *(b) the consent authority is satisfied that the development will meet the indoor design sound levels.*
>
> *(4A) Subsection (2) does not apply to development for the purposes of subdivision of land in an ANEF or ANEC contour of 20 or greater if the development application was made before 1 October 2020.*

With regard to future residential development, the Western Parkland City SEPP outlines that no noise sensitive development (including residential development) will be permitted within the ANEC 20 and above contours. For example, dual occupancies, secondary dwellings and the subdivision of land for residential purposes that have not already been approved, will not be permitted.

If a development site is found to be 'conditionally acceptable' (as per Table 3.3 of AS 2021:2015) this typically means that any proposed buildings could require an improved level of building fabric above standard or light-weight materials to achieve internal noise goals set by AS 2021:2015 and development consent may be granted for those purposes if the consent authority is satisfied that the development will meet the indoor design sound levels as detailed in AS 2021:2015 (refer acceptability based on ANEF zones in Table 14.1) and outlined in Table 14.3.

Table 14.2 Residential indoor design sound levels for determination of aircraft noise reduction (AS 2021:2015)

Building type (and activity)	Indoor design sound level (dB(A))
Houses, home units, flats, caravan parks	
• Sleeping areas, dedicated lounges	50
• Other habitable spaces	55
• Bathrooms, toilets, laundries	60

The *Western Sydney Aerotropolis Precinct Plan* identifies the suitability of precincts for residential land uses within the Aerotropolis due to aircraft noise and Airport operational constraints.

The ANECs presented in this EIS are a forecast of future aircraft noise exposure for a range of planning concepts and show the concentration of noise around WSI for single runway operations only. This is different to the ANEC in the Western Parkland City SEPP and used as the basis of this assessment. As outlined in Section 14.3.2.3, the ANEC presented in the Western Parkland City SEPP represents the long-term development of WSI.

It is important to note that the ANEC figures for the Stage 1 Development of WSI are not intended to guide future land use planning and are provided primarily for comparative purposes and to provide comprehensive information about predicted noise exposure. Any change to current land use planning instruments would be based on longer-term forecasts of noise exposure and an ANEF developed for the long-term WSI development strategy including a parallel runway system.

A comparison of forecast ANEC 20 contours for the key operating scenarios against the Western Parkland City SEPP ANEC 20 contour is shown on Figure 14.6. The 2 project operating scenarios considered were the composite scenario for:

- 2033 – when single runway operations handle up to 10 million annual passengers and around 81,000 air traffic movements per year by 2033
- 2055 – when single runway operations approach capacity at around 37 million annual passengers and around 226,000 air traffic movements per year in 2055.

These scenarios were chosen as the composite noise contours associated with scenarios No preference, Prefer Runway 05 and Prefer Runway 23 (refer to Chapter 11 (Aircraft noise)) provide a level of confidence around the likely ‘worst case’ annual average of the potential operating scenarios for noise exposure of communities in the vicinity of WSI.

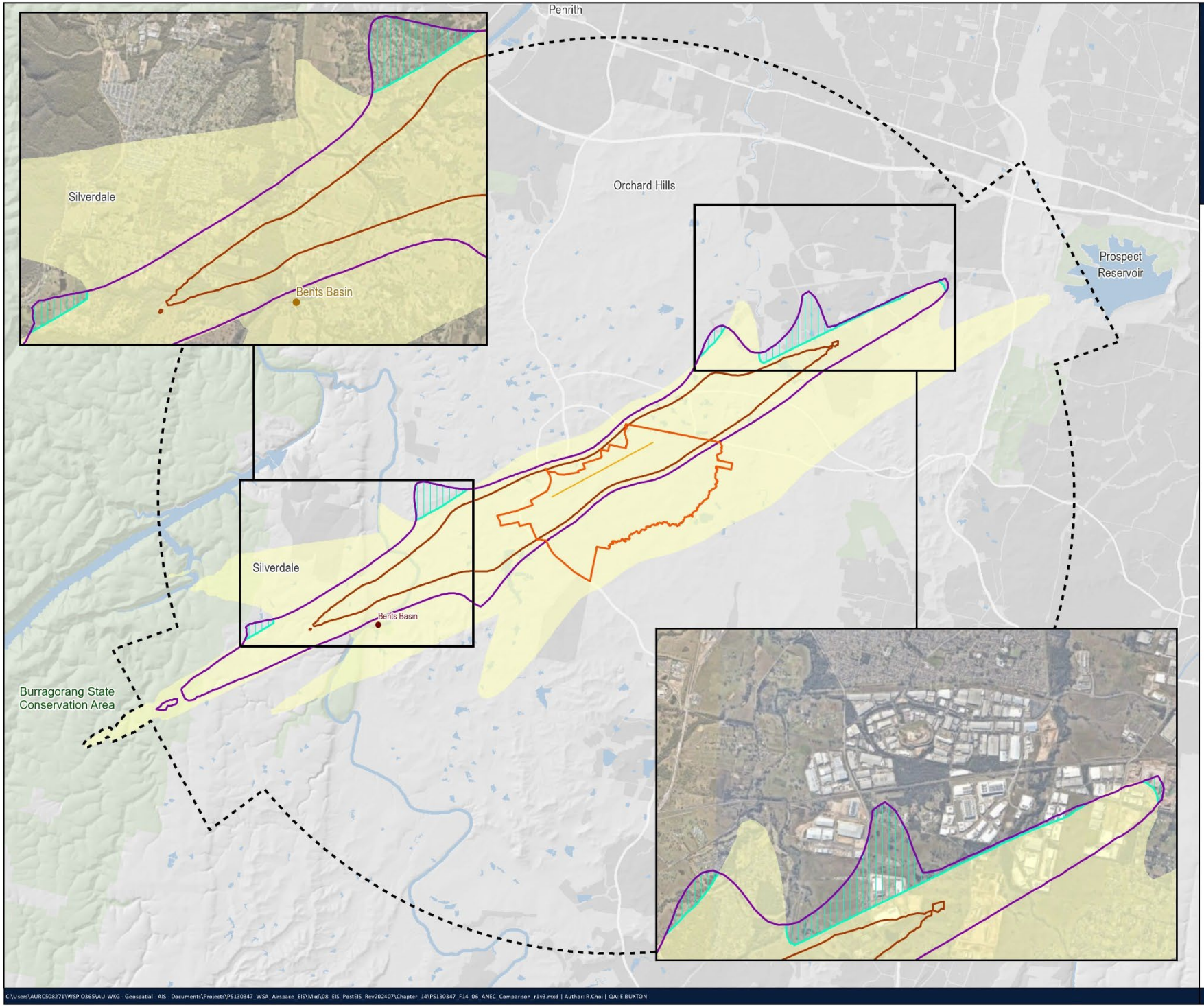


Figure 14.6

Comparison of ANEC contours

Legend

- WSI Runway
- Western Sydney International (Nancy-Bird Walton) Airport land boundary
- Land use study area
- Potential additional area impacted by ANEC 20
- Aboriginal Places raised during consultation (NPW Act)
- Site of Aboriginal significance

State Environmental Planning Policy (Precincts – Western Parkland City) 2021 Noise Exposure Concept (units)

- ANEC 20 and above

2033 ANEC composite

- 20

2055 ANEC composite

- 20

Coordinate system: GDA 1994 NSW Lambert

Scale ratio correct when printed at A3

1:120,000 Date: 16/07/2024

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

Comparison of the 2 contours against the SEPP contour shows the following:

- The ANEC 20 contour for 2033 sits wholly within the prescribed ANEC 20 contour. Based on this contour, no additional land would be subject to planning restrictions based on aircraft noise from scheduled flight operations between 2026 and 2033.
- The ANEC 20 contour for 2055 extends slightly beyond the prescribed ANEC 20 contour in several locations in the vicinity of Erskine Park, Eastern Creek and to the south of Wallacia. These areas are currently zoned 'general industrial' (Penrith City Council, 2010) and 'primary production' (Liverpool City Council, 2008) and include a small number of semi-rural residential dwellings and around 6 residential dwellings located within the Twin Creeks Golf and Country Club (refer to Figure 14.6). The ANEF contour for WSI will be prepared during the detailed airspace design phase. Until an ANEF 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 ANEF could see planning conditions imposed on these additional areas.

14.7.1.2 Agricultural

Much of the study area currently comprises agricultural uses and is characterised by predominantly a rural landscape and undulating agricultural land.

There are no specific provisions for protecting agricultural land uses from aircraft noise in the Western Parkland City SEPP. Additionally, AS 2021:2015 also does not have specific guidance for agriculture, however the standards do identify that light industrial use (which could include some agricultural activities) is acceptable in ANEF 30 and below. Residential dwellings on agricultural land, however, would need meet the requirements of Clause 14.7 of Western Parkland City SEPP (as relevant) and the indoor design sound levels as detailed in the AS 2021:2015 (refer to Table 14.2).

As such, aircraft noise from WSI would not have any specific planning or land use impacts on existing agricultural areas.

The *Western Sydney Aerotropolis Precinct Plan* identifies the Agribusiness Precinct to the west of WSI and surrounding Luddenham Village. The Agribusiness Precinct is proposed to increase agricultural and agribusinesses uses, building on successful agricultural operations and developing new agribusiness opportunities while protecting and embracing important vegetation within the landscape (NSW DPE, 2023a).

14.7.1.3 Recreation

The Twin Creeks Golf Club and Wilmington Reserve in Luddenham Village are located within the Western Parkland City SEPP ANEC 20 contour north-east of the WSI.

There are no specific provisions for protecting recreational land uses from aircraft noise in the Western Parkland City SEPP and AS: 2021-2015 does not have specific guidance for recreation land uses.

The National Airports Safeguarding Framework's (NASF), *Guideline I: Managing the Risks in Public Safety Areas at the ends of Runways* aims to limit the number of people living, working or congregating within Public Safety Area (PSAs) through appropriate land use planning. PSAs include the area immediately at the end of runways where the risk to the public is highest. Certain developments and land uses are prohibited in the PSA for WSI including many indoor and outdoor recreational uses. Beyond the relatively small PSA area (which is not specific to aircraft noise), there are no other land use and planning restrictions to recreational areas as a result of aircraft noise from the project.

The *Western Sydney Aerotropolis Precinct Plan* identifies a range of future recreational areas and land uses within the Aerotropolis. *The Luddenham Village Interim Strategy* identifies open space and recreational areas planned as part of the village's revitalisation.

Beyond the Aerotropolis, land use planning associated with strategic planning initiatives (such as the SWGA) also have specific provisions to provide additional recreational areas to support future population growth although these are located beyond the ANEC contours for WSI and are unlikely to be affected planning provisions related to aircraft noise.

14.7.1.4 Industrial and commercial

The Erskine Park industrial estate and the Kemps Creek Resource Recovery Park is located within the ANEC contours to the north of WSI.

The AS 2021:2015 provides guidance for industrial and commercial land uses in relation to aircraft noise as outlined in Table 14.3.

Table 14.3 Industrial and commercial land use acceptability based on ANEF zones

Building type	ANEF zone		
	Acceptable	Conditionally acceptable	Unacceptable
Commercial building	Less than 25 ANEF	25 to 35 ANEF	Greater than 35 ANEF
Light industrial	Less than 30 ANEF	30 to 40 ANEF	Greater than 40 ANEF
Other industrial		Acceptable in all ANEF zones	

Consent authority would consider the acceptability of the development based on the whether the indoor design sound levels are met as detailed in AS 2021:2015 and outlined in Table 14.4.

Table 14.4 Commercial and industrial indoor design sound levels for determination of aircraft noise reduction (AS 2021:2015)

Building type (and activity)	Indoor design sound level (dB(A))
Commercial buildings, offices and shops	
Private offices, conference rooms	55
Drafting, open offices	65
Typing, data processing	70
Shops, supermarkets, showrooms	75
Industrial	
Inspection, analysis, precision work	75
Light Machinery, assembly, bench work	80

The *Western Sydney Aerotropolis Precinct Plan* identifies a range of future commercial and industrial areas and land uses within Aerotropolis supporting industrial, office and employment uses with a diversity of commercial spaces, community and public places.

Beyond the Aerotropolis, industrial and commercial land uses are likely to continue to expand to support population growth in the region including areas potentially within the ANEC contours for WSI (such as the Erskine Park area) and future planning approval will need to consider impacts from aircraft noise.

14.7.1.5 Health and education

The Penrith health and education precinct is well beyond the limits of the ANEC contours.

Luddenham Public School and Holy Cross Catholic Primary School are both located within the Western Parkland City SEPP ANEC 20 contour.

Mamre Anglican School is located just beyond the Western Parkland City SEPP ANEC 20 contour to the north of WSI. The school does, however, sit within the forecast ANEC 20 (2055 composite) contour for the project.

Each of the schools can continue to operate due to 'existing use rights' under Section 4.65 of the NSW EP&A Act. It is possible to enlarge, expand or intensify, the existing facilities with approval of the relevant consent authority, in consideration of indoor sound requirements and in accordance with the provisions of Part 7, Division 4.11 of the *Environmental Planning and Assessment Regulation 2021* (NSW).

Similar to residential areas, health and education facilities are deemed to be noise sensitive developments and the Western Parkland City SEPP outlines that new noise sensitive developments will not be permitted within the ANEC 20 and above contours. Development consent may be granted however if the consent authority is satisfied that the development will meet the indoor design sound levels as detailed in AS 2021:2015 and outlined in Table 14.5.

Table 14.5 Health and education indoor design sound levels for determination of aircraft noise reduction (AS 2021:2015)

Building type and activity	Indoor design sound level, dB(A)
Schools, universities	
Libraries, study areas	50
Teaching areas, assembly areas	65
Workshops, gymnasia	75
Hospitals, nursing homes	
Wards, theatres, treatment and consulting rooms	50
Laboratories	65
Service areas	75
Public buildings	
Churches, religious activities	50
Theatres, cinemas, recording studios	40
Court houses, libraries, galleries	50

The *Western Sydney Aerotropolis Precinct Plan* identifies specific land use areas designed for health and education services, mainly within the Aerotropolis Core precinct. Certain areas, specifically located within ANEC 20 would not be suitable for these future land uses due to elevated aircraft noise.

14.7.2 Impacts of the protected airspace

Structures and other activities that intrude into protected airspace have the potential to impact safe aviation operations at WSI. The prescribed OLS for WSI is shown on Figure 14.1 and extends outwards approximately 15 km from the centre of WSI. Any development, including permanent and temporary structures which intrude on WSI's protected airspace is called a controlled activity. Controlled Activities that do not have prior approval under the APAR or present an unacceptable impact on airport operations are not permitted.

The maximum height for building types in different precincts of Aerotropolis is outlined Technical paper 6.

Building height controls within the study area (and generally) are outlined in the relevant LEPs unless otherwise specified within an overriding SEPP, or specific planning provision such as OLS. LEPs also provide 'height of building' maps which outline heights that are not to be exceeded for varying land use zones.

The Western Parkland City SEPP also contains provisions related to building height for specific growth precincts outlined within the SEPP including areas (Aerotropolis Precinct and Oran Park and Turner Road Precinct) within the study area and the maximum building heights are required to be contained within OLS limits established under the Western Parkland City SEPP.

The OLS applies to both building obstacles (e.g. antennae, masts or tall buildings) and hot or high velocity air emission (e.g. smokestacks, cooling towers) which may cause a potential hazard to aircraft. Emissions above certain velocities, or chimneys above specified heights, are considered potential hazards in accordance with the APAR. Developments with the potential to exceed the OLS must be referred to WSI's operator and DITRDCA for review prior to the development being approved to proceed.

DITRDCA is in the process of engagement with state and local planning authorities as part of the process of declaring a new OLS under the APAR. Once declared, the new prescribed OLS will be enforceable under the APAR and any amendments made to NSW planning instruments.

A PANS-OPS for WSI will be prepared once flight paths have been finalised. Once this occurs, consent authorities are required under the Airports Act and the APAR to review all building and development applications they receive for any infringements into PANS-OPS. If an infringement is likely to occur, Regulation 8 provides that the local council must refer the application to WSI's operator. Airport operators must refer short-term PANS-OPS infringements (less than 3 months) to the DITRDCA for approval. Long-term controlled activities (longer than 3 months) penetrating the PANS-OPS airspace are not permitted and WSA Co can notify the refusal of such controlled activities.

14.7.3 Impacts from wildlife buffers

Wildlife strikes, or sudden avoidance of wildlife can cause major damage to aircraft and/or reduction of safety. Certain land uses have the potential to attract wildlife which can then migrate onto WSI or into flights paths.

Land use planning decisions and the way in which existing land use is managed in the vicinity of airports, can significantly influence the risk of wildlife hazards. As examples, land uses such as agriculture, wildlife sanctuaries, wetlands and land fill sites can attract a high number of birds which increase the risk of interference with aviation activity (DITRDCA, 2012).

NASF Guideline C provides a framework for how to manage the risk of wildlife strike on aircrafts. That framework has been incorporated into the Western Parkland City SEPP and Aerotropolis Precinct Plans. Land use planning around WSI has incorporated the implementation of wildlife buffer zones to mitigate risks of wildlife hazards.

There are a range of existing land uses within the study area which have the potential to attract wildlife including livestock production and commercial livestock feed businesses, turf farms and landscaping businesses and waste management facilities such as the Kemps Creek Resource Recovery Park.

These existing land uses can continue in the future due to existing use rights however mitigation of potential wildlife risks may be required in consultation with WSI and DPHI.

Any new development classed as 'relevant development' under the Western Parkland City SEPP and within the 13 km wildlife buffer of WSI will be subject to the wildlife management controls contained within the Western Parkland City SEPP.

Under the Western Parkland City SEPP:

- certain land uses are prohibited within the 3 km buffer zone including livestock processing industries, turf farming and management facilities
- development applications for specified uses on land within the 13 km buffer zone must be referred to WSA Co and accompanied by a wildlife hazard assessment and wildlife management plan, incorporating relevant mitigation and monitoring measures
- development applications for specified uses on land within the 13 km buffer zone must be accompanied by a waste management plan for the operation of the use of the land; and
- appropriate landscape species should be planted within these buffer zones.

WSA Co also has an obligation to monitor up to a 13 km radius around WSI for any potential wildlife hazards which may impact the 24-hour operations of WSI. WSA Co will negotiate with existing landowners to mitigate these risks.

14.8 Mitigation and management

14.8.1 Existing management

Strategic planning in the vicinity of WSI has considered and incorporated the operational needs of WSI into land use planning in accordance with guidance provided in the NASF. This has been ongoing for over a decade in conjunction with planning for WSI and is well established in existing planning instruments.

DITRDCA (formerly Department of Infrastructure and Regional Development) undertook liaison with relevant state and local agencies to seek adoption of the necessary guidelines in applicable State environmental planning instruments to ensure development in the vicinity of WSI does not impede protected airspace. WSI's protected airspace was prescribed by declaration on 19 October 2017 under the provisions of the Airports Act and the APAR. Since then, land use and development restrictions related to WSI's protected airspace has been factored into, relevant state and local planning instruments.

Land use planning has also been an effective means to ensure that land use near WSI is compatible with noisy aviation activities, with a primary goal of minimising the population affected by aircraft noise, through implementation of land use planning measures, such as land use zoning around WSI. Appropriate noise management controls referencing the NASF and AS 2021:2015 have also been included in applicable planning instruments in advance of WSI's airport operations.

Until the ANEF contour is approved for WSI, the ANEC contour presented as the Noise Exposure Contour Map in the Western Parkland City SEPP, representing the long-term, dual-runway for WSI will continue to inform land use planning. The ANEF contour would ultimately be prepared for WSI (based on the long-term runway operations) and endorsed by Airservices Australia. In the future, WSA Co under the Airports Act will have the responsibility of publishing endorsed Aircraft Noise Exposure Forecast (ANEF) information as part of the 5-yearly Master Plans. These ANEFs may be standard (up to 20 years), long range (20 year +) or ultimate capacity.

NASF Guideline C provides a framework for how to manage the risk of wildlife strike on aircrafts including adoption of wildlife buffer zones. That framework has also been incorporated into the Western Parkland City SEPP and Aerotropolis Precinct Plans.

The NSW Department of Planning and Environment's *Aviation Safeguarding Guidelines – Western Sydney Aerotropolis and surrounding areas* were also developed with input from DITRDCA and seek to ensure planning authorities consider the aircraft noise guidelines and noise exposure contour maps when undertaking land use planning for the Aerotropolis and surrounding areas of influence. Current planning provisions for land associated with Aerotropolis has been developed in conjunction with the Safeguarding Guidelines specifically to support the operation of WSI and limit potential restrictions on surrounding land uses.

To date, the range of existing planning controls in place in the vicinity of WSI have been an effective means of providing appropriate controls over land use planning and development.

14.8.2 Project specific mitigation measures

Table 14.6 provides a summary of mitigation and management measures identified for the proposal, indicating the relevant impact area and applicable mitigation measure.

Table 14.6 Proposed mitigation measures – land use

ID No.	Issue	Mitigation measure	Owner	Timing
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)