Australian Government

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

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

Draft Environmental Impact Statement

Technical paper 10: Social

September 2023

Contents

Contents (continued)

Contents (continued)

Contents (continued)

List of tables

List of figures

Appendices

Terms and abbreviations

Term/abbreviation	Definition
ABS	Australian Bureau of Statistics
ANEC	Australian Noise Exposure Concept
ANEF	Australian Noise Exposure Forecast
ANO	Aircraft Noise Ombudsman
ATSB	Australian Transport Safety Bureau
CACG	Community Aviation Consultation Group
CALD	Culturally and linguistically diverse
CBD	Central Business District
CCC	Community Consultative Committee
CSP	Community Strategic Plan
dB(A)	decibel
DITRDCA	Australian Government Department of Infrastructure, Transport, Regional Development, Communications and the Arts
DPE	Department of Planning and Environment (NSW)
EIS	Environmental Impact Statement
EP&A Act	Environmental Planning & Assessment Act 1979
EPBC Act	Environmental Protection and Biodiversity Conservation Act 1999
First Nations	Aboriginal and Torres Strait Islander People
ft	feet
GBMA	Greater Blue Mountains Area
GBMWHA	Greater Blue Mountains World Heritage Area
GRP	Gross Regional Product
ha	Hectares
ICAO	International Civil Aviation Organization
IEO	Index of Education and Occupation
IER	Index of Economic Resources
IRSAD	Index of Relative Socio-economic Advantage and Disadvantage
IRSD	Index of Relative Socio-Economic Disadvantage
IUCN	International Union for Conservation of Nature
LALC	Local Aboriginal Land Council

Term/abbreviation	Definition
L_{Amax}	Maximum sound level reached during a measurement period
LHD	Local Health District
LGA	Local Government Area
LMIP	Labour Market Information Portal
LSPS	Local Strategic Planning Statement
M3R	Melbourne Airport 3rd Runway
NBM	Nepean Blue Mountains
NCIS	Noise Complaints and Information Service
Nm	Nautical miles
NO_2	Nitrogen dioxide
NSW	New South Wales
PCF	Planning Coordination Forum
RAAF	Royal Australian Air Force
SALM	Small Area Labour Markets
SEIFA	Socio-Economic Index for Areas
SIA	Social Impact Assessment
SO_2	Sulphur dioxide
SWLHD	South Western Sydney Local Health District
SWS	South-Western Sydney
UNESCO	The United Nations Educational, Scientific and Cultural Organization
WSA Co	Western Sydney Airport Co Limited
WSI	Western Sydney International (Nancy-Bird Walton) Airport
WSIP	Western Sydney Infrastructure Plan

Executive summary

Introduction

The Western Sydney International (Nancy-Bird Walton) Airport (WSI) Airspace and Flight Path Design (the project) is being developed to facilitate aircraft operations at WSI.

This Social Impact Assessment (SIA) report has been prepared to understand the social changes resulting from the project. The SIA considered a range of scenarios including the operation of the new runway in the early years (2033) and when WSI's single runway is expected to operate near capacity (2055).

This report has defined a regional study area that encompasses 8 Local Government Areas (LGAs) in Western Sydney. These include Blacktown, Blue Mountains, Camden, Fairfield, Hawkesbury, Liverpool, Penrith and Wollondilly. A local study area is also defined to better understand the potential impacts of the communities located within 10 km of the WSI runway.

This report provides a description of the existing social characteristics of the study area, informed by quantitative and qualitative indicators and by primary and secondary sources of data. The assessment is informed by targeted SIA consultation, findings from the Environmental Impact Statement (EIS) engagement and the Technical Papers supporting the EIS. SIA consultation included 24 semi-structured interviews to key stakeholders and community representatives, 2 field visits and 13 in-person interviews with residents.

Management measures are recommended to mitigate the impacts identified in this SIA report.

This SIA has been developed in response to the requirements of the Ministerial Guidelines for the contents of a draft EIS for the project (EPBC2022/9143) and with regard to Airservices' Environmental management of changes to Aircraft Operations Standard (AA-NOS-ENV2.100) (NOS).

The project's strategic context is characterised by planning strategies, environmental planning instruments, precinct plans, and development controls plans. This context also captures relevant local government planning policies and strategies that outline local council's identification of opportunities, benefits, and negative effects in relation to WSI. In particular, the report references planning strategies that discuss the need to protect future airport operations and prevent future residential/sensitive use development, which may influence the future planning of surrounding areas, including Luddenham Village located immediately to the west of WSI.

This SIA report adopted the NSW Department of Planning and Environment's (DPE) Social Impact Assessment Guideline for State Significant projects 2023 (SIA Guideline) methodology for assessing the significance of social impacts, which includes the following factors:

- the 5 impact characteristics that demonstrate the material effect or magnitude of the impact (extent, duration, severity, sensitivity and level of concern/interest)
- who specifically may be affected, directly, indirectly or cumulatively and the level of concern they feel about the matter (high, medium, low), recognising that impacts may affect population groups or individuals differently
- the likelihood of the impact was determined by considering evidence of flight path related social impacts occurring elsewhere, the characteristics of the potentially affected population and consultation feedback.

Existing environment

Key characteristics of the regional and local study areas include:

- a total of 80,358 people live in the local study area, while the regional study area has a total population of 1,379,196 people, representing about one quarter (26.4%) of the population in Greater Sydney (5,231,147)
- the regional study area experienced 14% population growth between 2016 and 2021. For the local study area, the greatest changes in population were experienced in Austral (126.4%) and Cobbitty (103.9%)
- Badgerys Creek decreased its population by 25.3% from 225 people to 168 between 2016 and 2021, likely due to changes in land zoning and property acquisitions for the numerous infrastructure projects to support WSI – noting that WSI is currently under construction in this suburb
- 34.7% of the population in the regional study area was born overseas and 20% of households speak a language other than English at home (compared to 29.5% in NSW). The highest proportion of households who don't speak English as a first language are in Fairfield (49.8%), Liverpool (32.2%) and Blacktown (25.5%)
- First Nations people represent 2.9% of the regional study area population (39,686 people) and 3.3% of the local study area population (2,658 people)
- socio-economic disadvantage indicators show that Fairfield LGA has the highest relative level of disadvantage in the regional study area, followed by Liverpool and Blacktown
- Greendale, Badgerys Creek, Kemps Creek, Austral, Rossmore and Warragamba have the highest relative level of disadvantage in the local study area. While Cobbitty, Luddenham, Silverdale, Mount Vernon and Mulgoa are among the least disadvantaged
- population projections for the regional study area shows that all LGAs are anticipated to experience net growth ranging from a 0.3% to 3.1% increase by 2041. The largest population growth is anticipated in Blacktown LGA with a projected 110,245 new residents from 2021 to 2041, and the largest proportionate change in population is anticipated to occur in Camden LGA (3.1% growth).

Main findings and conclusions

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

Due to the raft of existing planning measures in place surrounding WSI, the assessment has identified that the potential increase of inequality for vulnerable groups located in areas within ANEC 20, N60 and N70 contours for both the 2033 and 2055 scenarios would remain as the only potential residual impact with a High significance rating. All other potential impacts assessed have been identified as having 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.

Chapter 1 Introduction

This chapter provides an overview of the proposed airspace and flight path design for the Western Sydney International (Nancy-Bird Walton) Airport (WSI). This includes the background to WSI and its accompanying airspace and flight path design (the project) which impacts on the existing Sydney Basin airspace. It describes the key features and objectives of the project and identifies the purpose and structure of this this technical paper.

1.1 Background

In 2016, the then Australian Minister for Urban Infrastructure approved development for a new airport for Western Sydney, now known as the Western Sydney International (Nancy-Bird Walton) Airport (WSI), under the *Airports Act 1996* (Commonwealth). The site of the new airport (the Airport Site) covers approximately 1,780 hectares (ha) at Badgerys Creek, as shown in Figure 1.1. The Airport Site is located within the Liverpool local government area (LGA).

Following the finalisation of the *Western Sydney Airport – Environmental Impact Statement* (2016 EIS), the Western Sydney Airport – Airport Plan (Airport Plan) was approved in December 2016. The Airport Plan authorised the construction and operation of the Stage 1 Development. It also set the requirements for the further development and assessment of the preliminary airspace design for WSI. The Australian Government has committed to developing and delivering WSI by the end of 2026.

The 2016 approval provided for the on-ground development of Stage 1 Development of WSI (a single runway and terminal facility capable of initially handling up to 10 million passengers per year) utilising indicative 'proof of concept' flight paths. These flight paths, presented in the 2016 EIS demonstrated that WSI could operate safely and efficiently in the Sydney Basin. WSI will be a 24-hour international airport and will:

- 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 developing and delivering WSI by the end of 2026.

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. 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 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 arrangements for WSI (the project). The preliminary airspace design is the subject of the Draft EIS and this assessment on the impacts to human health.

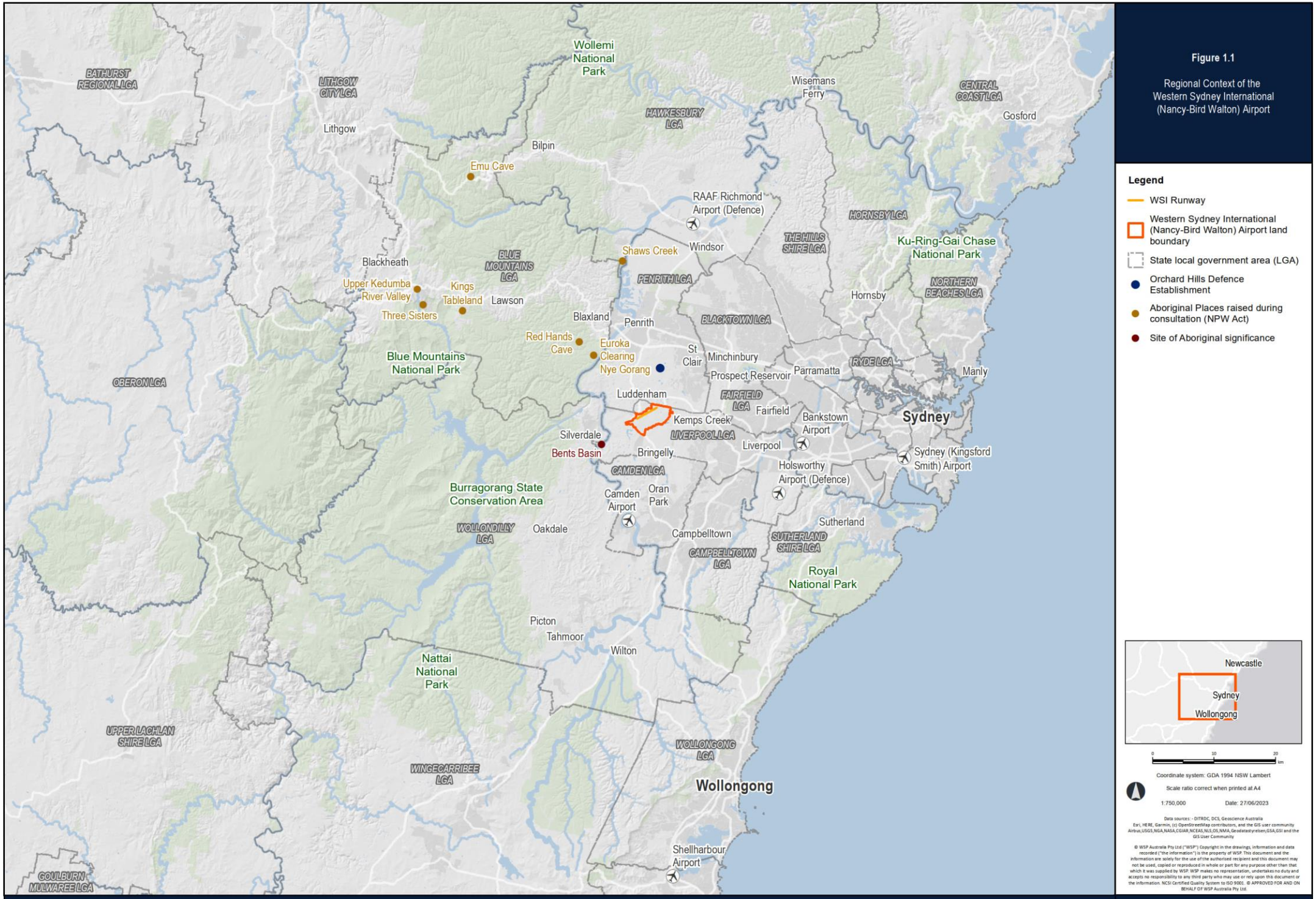


Figure 1.1

Regional Context of the Western Sydney International (Nancy-Bird Walton) Airport

Legend

- WSI Runway
- Western Sydney International (Nancy-Bird Walton) Airport land boundary
- State local government area (LGA)
- Orchard Hills Defence Establishment
- Aboriginal Places raised during consultation (NPW Act)
- Site of Aboriginal significance

0 10 20 km

Coordinate system: GDA 1994 NSW Lambert

Scale ratio correct when printed at A4

1:750,000 Date: 27/06/2023

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

1.1.1 The Airport

1.1.1.1 Stage 1 Development

The Stage 1 Development of WSI has been approved and is limited to single runway operations. It will 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 1.2 shows location of the single runway within the Airport Site.

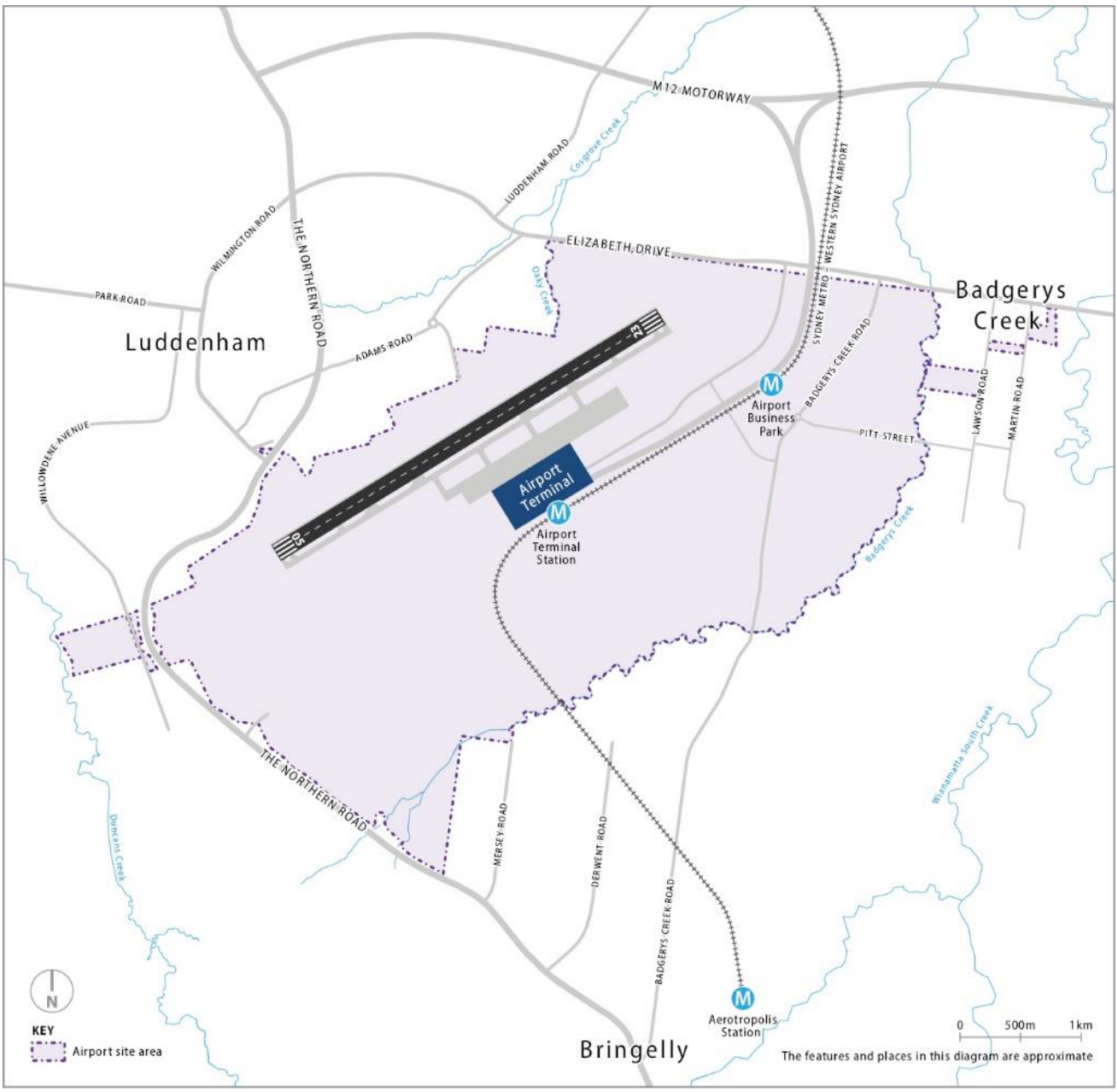


Figure 1.2 Western Sydney International Stage 1 Development

1.2 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. 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 meteorological conditions and low flight demand permit) to minimise the number of residences subjected to potential noise disturbance.

The flight paths differ during the day and night. Flight paths at night differ to take advantage of the additional airspace capacity offered when the curfew for Sydney (Kingsford Smith) Airport is in force. The proposed flight paths are depicted in Figure 1.3 to Figure 1.7.

The project does not include any physical infrastructure or construction work.

1.2.1 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 the Airport as a national asset
- optimise the benefit of WSI for employment and investment in Western Sydney
- deliver sound financial, environmental and social outcomes for the Australian community.

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

The Western Sydney Airport Plan sets out 12 airspace design principles that the design process is required to follow. The principles were informed by and reflect community and industry feedback on the 2016 EIS. The principles seek to maximise safety, efficiency and capacity, while minimising impacts on the community and the environment. For further information on the airspace design principles refer to Chapter 6 (Project development and alternatives) of the Draft EIS.

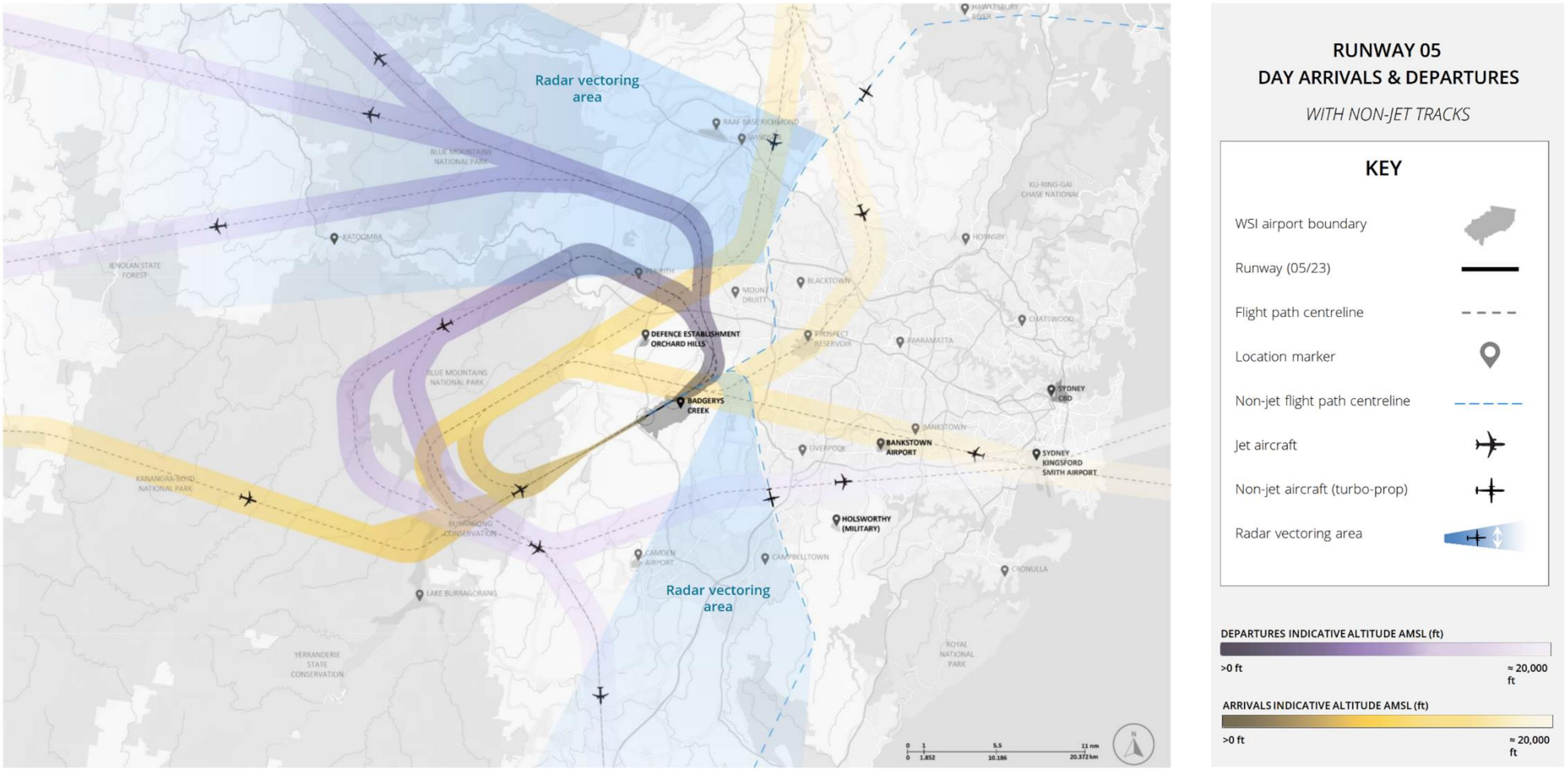


Figure 1.3 Proposed flight paths for Runway 05 (day)

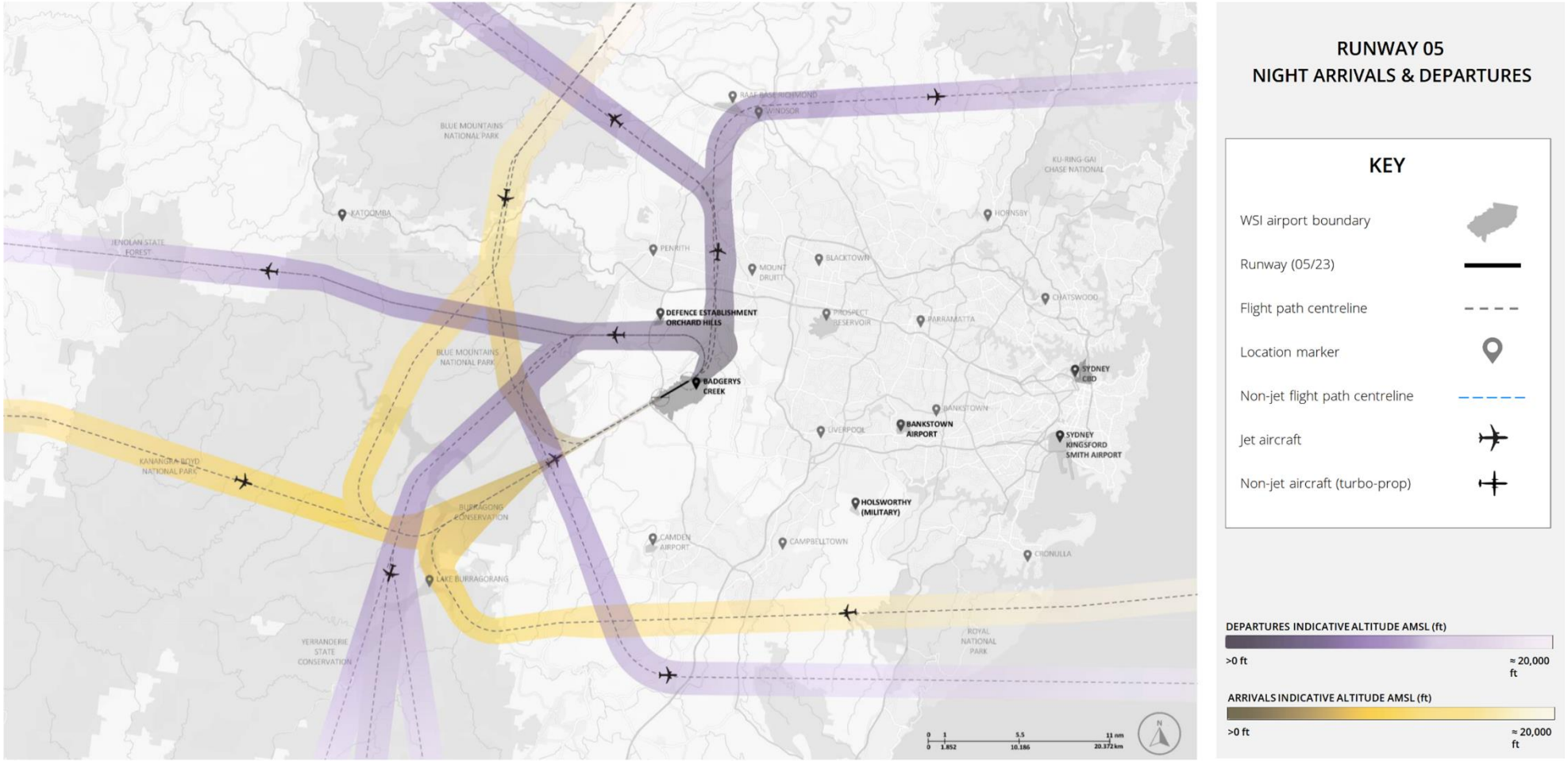


Figure 1.4 Proposed flight paths for Runway 05 (night)

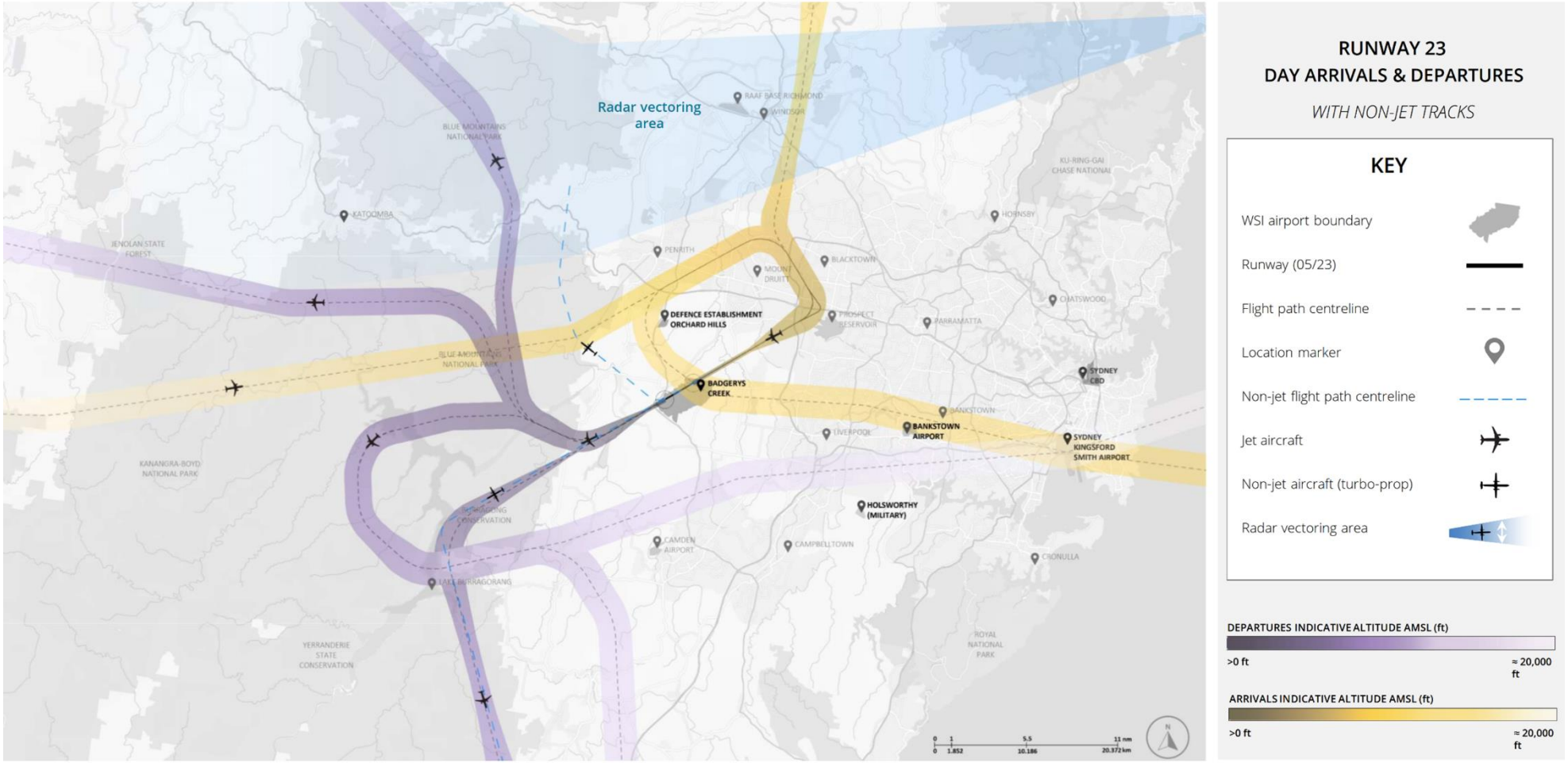


Figure 1.5 Proposed flight paths for Runway 23 (day)

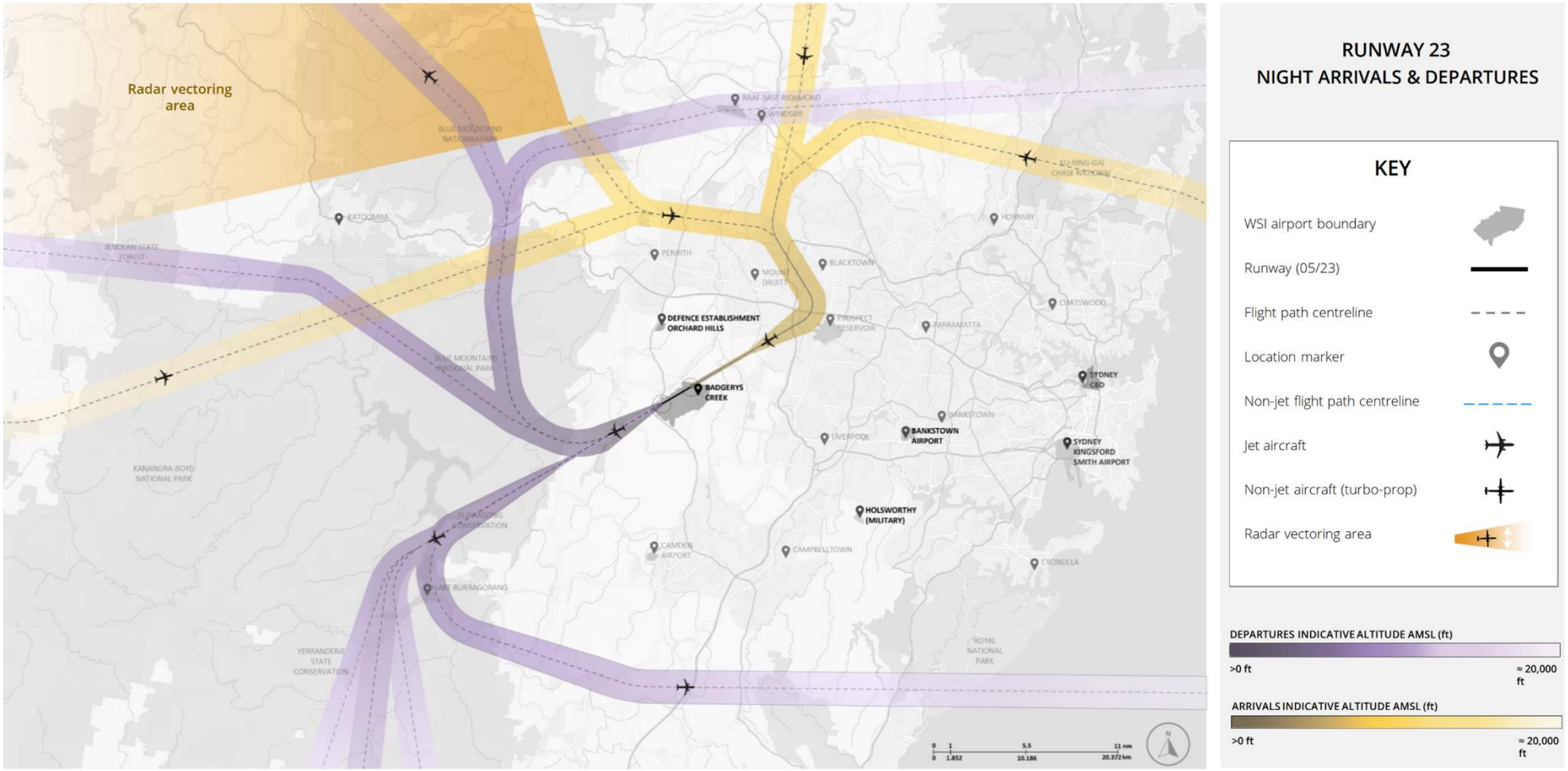


Figure 1.6 Proposed flight paths for Runway 23 (night)

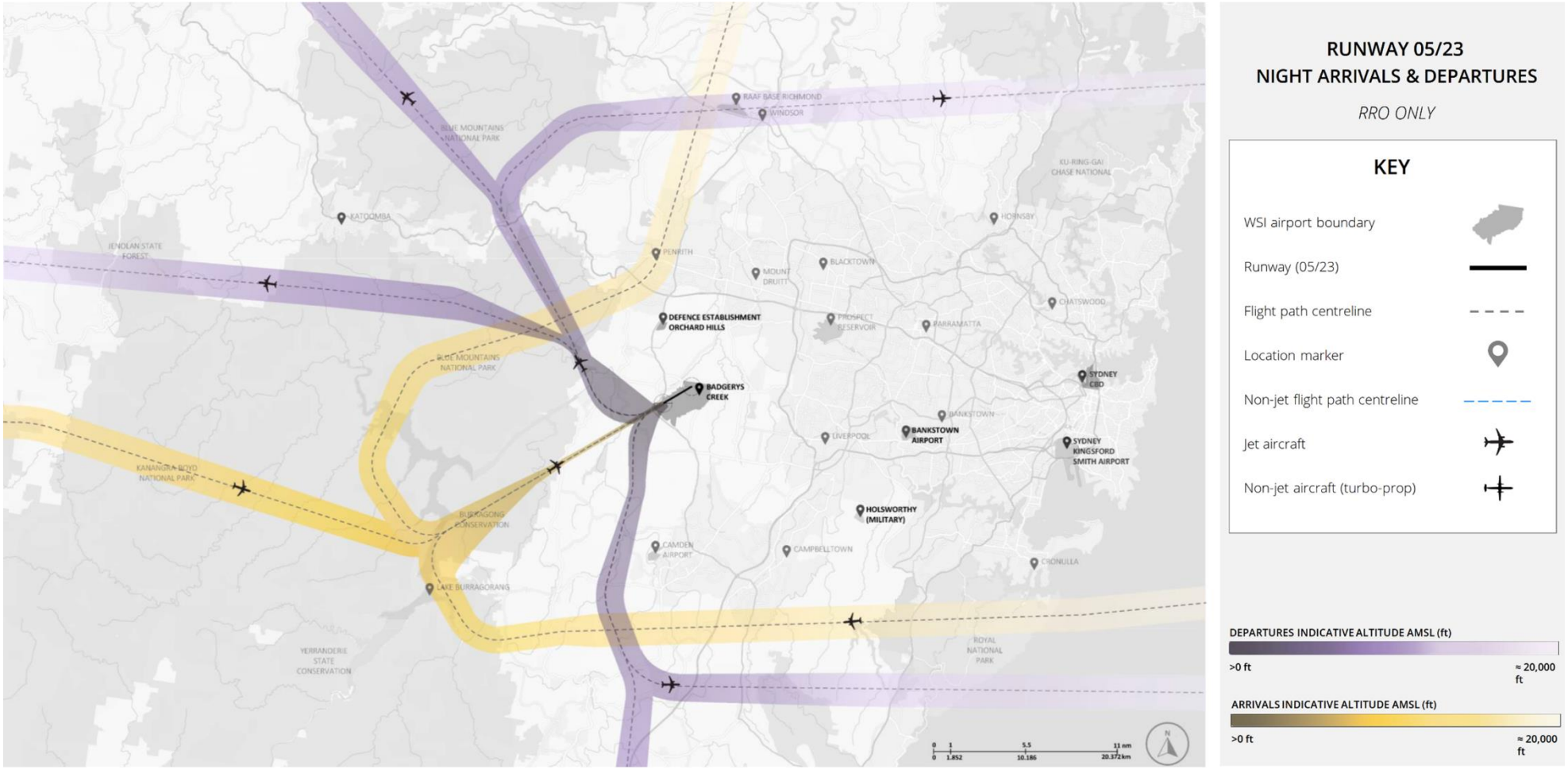


Figure 1.7 Proposed flight paths for Runway 05/23 (night)

1.3 Purpose of this technical paper

This Social Impact Assessment (SIA) report has been prepared by WSP Australia Pty Limited (WSP), as part of the EIS for the project (EPBC2022/9143). It documents the process and outcomes of WSP's assessment of potential social impacts.

This SIA provides a technical assessment of the potential social impacts associated with the project. The purpose being to better understand how the project will be experienced by people across the geographical areas where most of the social impacts are likely to materialise. This is achieved through an analysis of:

- the geographical areas that are intersected by Australian Noise Exposure Concept (ANEC) 20 and noise contours (N60 and N70), as well as by the geographical areas likely to be affected by visual and air quality impacts (found in Section 1.4).
- the existing social environment based on Australian Bureau of Statistics (ABS) and other relevant data indicators (found in Chapter 4)
- community and stakeholder consultation both by the project communication and engagement team to inform the EIS, and specifically by the WSP SIA team to inform this assessment (outlined in Chapter 4)
- potential social impacts of the project (detailed in Chapter 6, Chapter 7 and Chapter 8).

Once impacts are identified and assessed, mitigation measures and monitoring and adaptive management measures, are recommended (found in Chapter 7).

Further detail on the SIA methodology can be found in Chapter 3 of this report.

1.3.1 Assessment requirements

The project was referred to the then Minister for the Environment and Water in 2021 (EPBC 2022/9143) in accordance with Section 161 of the *Environmental Protection and Biodiversity Conservation Act 1999* (Cth) (EPBC Act) and Condition 16 of the Airport Plan. In response, the delegate for the Minister for the Environment and Water determined that an EIS would be required and issued the EIS Guidelines on 26 April 2022.

Condition 16 relevant requirements to this SIA are that the "airspace and flight path design must have regard to the social impacts on existing airspace users in the Sydney basin" and must also "minimise to the extent practicable the impact of Aircraft Overflight Noise on residential areas, sensitive receptors, the Greater Blue Mountains World Heritage Area – particularly areas of scenic or tourism value – and Wilderness Areas".

This technical paper has been prepared to address the requirements related to Ministerial Guidelines for the content of a Draft EIS, as outlined in Table 1.1.

Table 1.1 Guidelines for the content of a draft EIS relevant to SIA

Matters of interest	Assessment requirement	Location of matters relevant for this report
7.3 Heritage	7.3.4 A discussion of impacts on the natural, cultural, heritage and socio-economic values of the Greater Blue Mountains Area (GBMA). This discussion must include, but not be limited to, the consideration of: • habitats, species and ecological communities within the GBMA, and the processes that support their connectivity, productivity and function • the benefit of national parks for people, businesses, and the economy • living and historic cultural heritage recognising Indigenous beliefs, practices and obligations for country, places of cultural significance and cultural heritage sites • non-Indigenous heritage that has aesthetic, historic, scientific or social significance.	Section 6.6.1 assess impacts to social values Section 6.3 assess impacts to Aboriginal cultural values Section 6.6.3 assess impacts to economic values
7.4 People and communities	7.4.1 Detailed assessment of impacts that the proposed project may facilitate on people and communities. Including, but not limited to, assessment of impacts from noise, change in land use and an assessment of any identified risks to people and communities associated with the proposed project. This should be based on relevant metrics such as the ANEC, Australian Noise Exposure Forecast (ANEF) if available, the Number Above 'N' measure, and the maximum noise level (L_{Amax}) single-event noise measure. Identify whether land uses that are noise sensitive could be affected, directly and indirectly, by the project including identification and analysis of impacts to: • health and wellbeing • changes to land use and affordability • lifestyle and culture • social factors. Discuss recent and proposed changes in planning, such as the aerotropolis precinct, and how these changes will alter the likely impacts to people and communities. Where land use is likely to intensify, assess any foreseeable impacts to new residents and visitors to the region.	Section 6.1 assesses impacts to community composition Section 6.2 assesses impacts to way of life Section 6.3.2 assesses impacts to accessibility including affordability Section 6.5 assesses impacts to wellbeing Section 6.6.3 assesses impacts to livelihoods

Matters of interest	Assessment requirement	Location of matters relevant for this report
13 Economic and Social Matters	The economic and social impacts of the project, both positive and negative, must be analysed. Matters of interest may include: • details of any public consultation activities undertaken and their outcomes • projected economic costs and benefits of the project, including the basis for their estimation through cost/benefit analysis or similar studies • employment opportunities expected to be generated by the project • human health impacts arising from the project, with reference to the findings of impact assessments including those relating to noise, air quality, and social/community issues. Give consideration to the demographic characteristics of the sub-region such as the prevalence of existing medical conditions and capacity of health services • impacts on potential Native Title claimants; and • impacts on regional and local communities including impacts on demographic characteristics due to redevelopment or changes in land values. Economic and social impacts should be considered at the local, regional and national levels.	Details of public consultation are provided in Chapter 5. Section 6.3 identifies impacts on First Nations Culture Section 6.1 assesses impacts to community composition Section 6.2 assesses impacts to way of life Section 6.3.2 assesses impacts to accessibility including affordability.

1.4 Study area

The study area for this SIA has been divided into a local area and regional area and use the State of NSW and the Greater Sydney area as points of comparison.

The local study area comprises the communities most likely to be most affected by project impacts, including changes to noise, air quality and visual impacts. The regional study area includes the communities that would possibly be affected by the project's visual and noise impacts.

Noise impacts are identified by noise metrics applied within Technical paper 1: Aircraft noise (Technical paper 1). Key noise metrics considered by this SIA are:

- The ANEC, which has been adopted by land use planning authorities around airports and describes the cumulative aircraft noise for an 'annual average day'. This does not illustrate the day-to-day variation in noise exposure and reflects a hypothetical future airport usage pattern.
- 'N-above contours' of N60 (24-hour), N60 (night-time) and N70 (24-hour). These describe aircraft noise impacts by the number of noise events that exceed a certain noise level. N-above contours provide a cumulative-event descriptor, which is an assessment of the sustained exposure to aircraft noise. For the assessment, the following metrics have been used:
  - N70 (24-hour) contours, which represent 10 aircraft noise events with L_{Amax} that exceed 70 dB(A) over a 24-hour period. N70 is typically used to assess day-time noise impacts. An outside noise event of 70 dB(A) (such as aircraft flyover) can lead to an indoor sound level of 60 dB(A) when windows are open (enough to disturb conversation)
  - N60 (24-hour) contours represent 10 aircraft noise events with L_{Amax} that exceed 60 dB(A) over a 24-hour period

– N60 (night-time) contours, which represent 2 aircraft noise events with L_{Amax} that exceed 60 dB(A) over the night-time period (defined as 11 pm to 5:30 am). An outside noise event of L_{Amax} that exceeds 60 dB(A) results in an indoor maximum sound level of 50 dB(A) with windows open, or 40 dB(A) with windows closed. A 50 dB(A) maximum noise level is considered close to the point at which someone sleeping may wake up.

Further details about the criteria underpinning the determination of the study area can be found in Section 3.1.2.

1.4.1 Local study area

The local study area (see Figure 1.8) includes the ABS Suburb and Localities (SALs) within a 10 km radius from the centre of the runway. This represents residential communities that are within the ANEC20 and noise contours (N60 and N70), and they are potentially affected by visual impacts and changes to air quality.

The following SALs are included in the local study area:

- Austral
- Badgerys Creek
- Bringelly
- Cobbitty
- Cecil Park
- Horsley Park
- Glenmore Park
- Greendale
- Kemps Creek
- Luddenham
- Mulgoa
- Mount Vernon
- Orchard Hills
- St Clair
- Rossmore
- Silverdale
- Wallacia
- Warragamba.

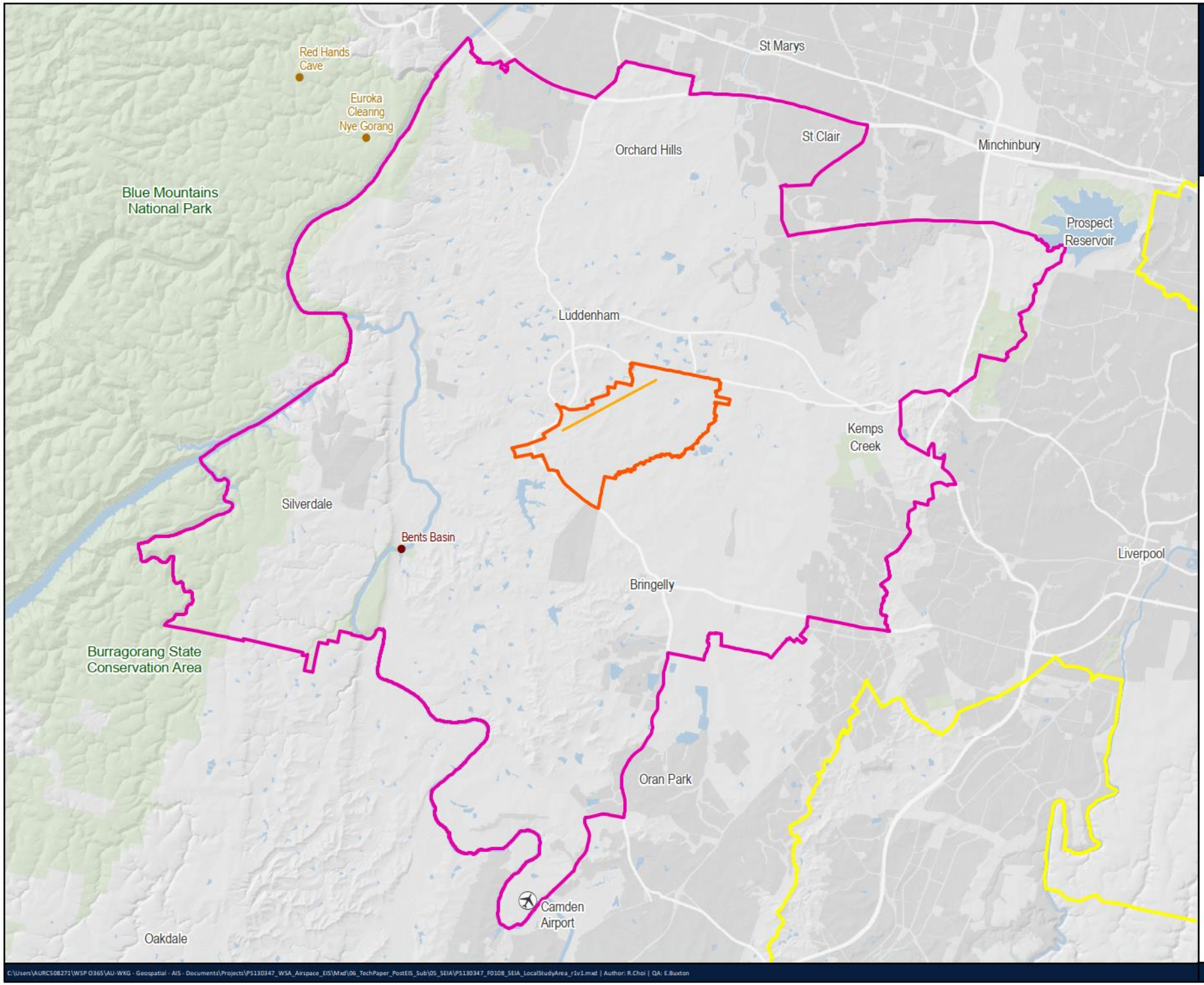


Figure 1.8

Local study area

Legend

- WSI Runway
- Western Sydney International (Nancy-Bird Walton) Airport land boundary
- Regional study area
- Local study area
- Aboriginal Places raised during consultation (NPW Act)
- Site of Aboriginal significance

Coordinate system: GDA 1994 NSW Lambert

Scale ratio correct when printed at A4

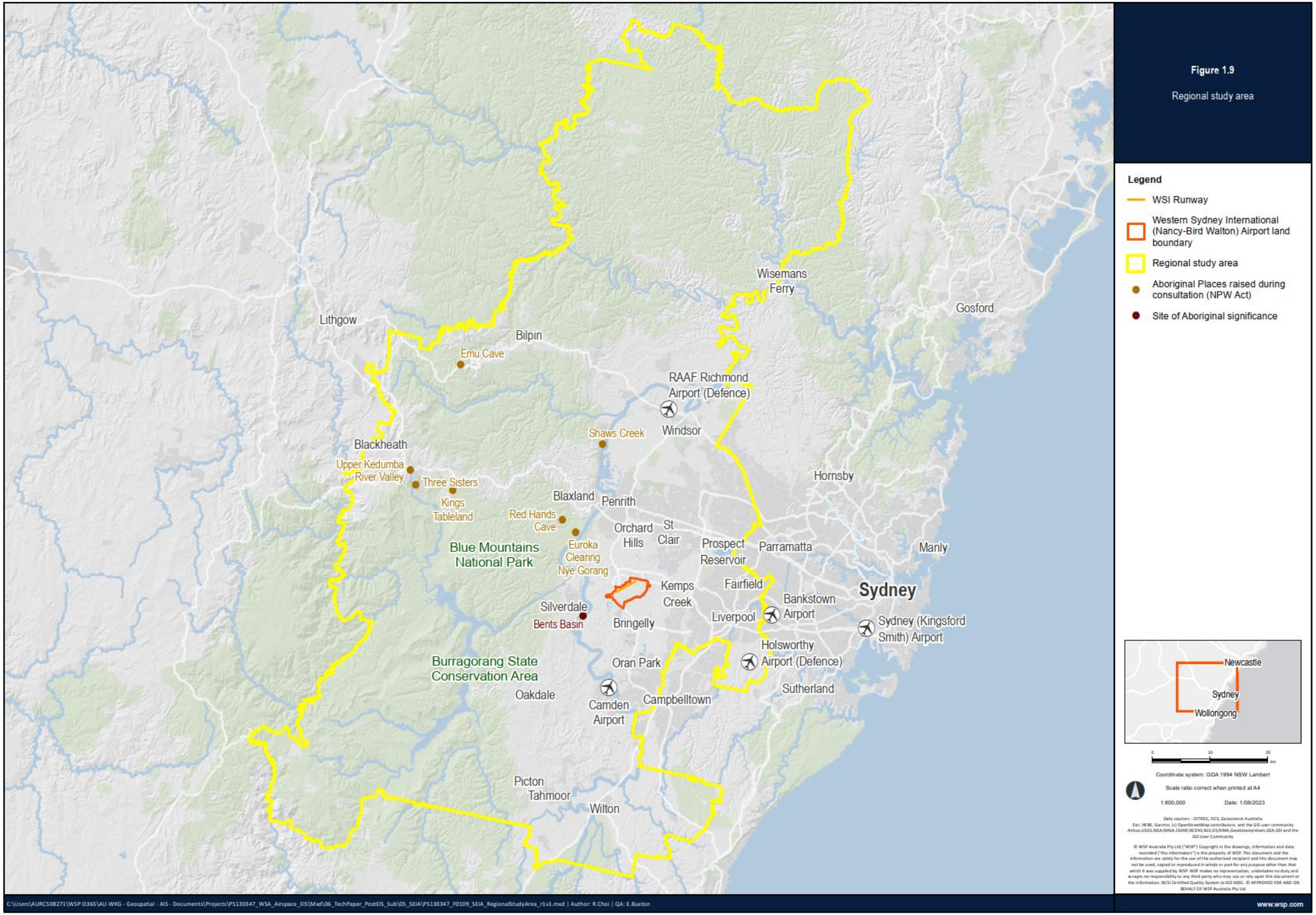
1:175,000 Date: 1/08/2023

1.4.2 Regional study area

The regional study area (see Figure 1.9) includes the LGAs in which residential areas are intersected by noise contours (N60 and N70). The following LGAs are included in the regional study area:

- Blacktown LGA
- Blue Mountains LGA
- Camden LGA
- Fairfield LGA
- Hawkesbury LGA
- Liverpool LGA
- Penrith LGA
- Wollondilly LGA.

For further details about the criteria informing the definition of the regional study area, refer to Section 3.1.2.


Wisemans Ferry
Gosford
Lithgow
Bilpin
Emu Cave
RAAF Richmond Airport (Defence)
Windsor
Shaws Creek
Blackheath
Upper Kedumba River Valley
Three Sisters
Kings Tableland
Hornsby
Blaxland
Penrith
Red Hands Cave
Orchard Hills
St Clair
Euroka Clearing
Nye Gorang
Blue Mountains National Park
Prospect Reservoir
Parramatta
Manly
Kemps Creek
Fairfield
Sydney
Silverdale
Bents Basin
Bringelly
Liverpool
Bankstown Airport
Sydney (Kingsford Smith) Airport
Holsworthy Airport (Defence)
Burragorang State Conservation Area
Oran Park
Oakdale
Camden Airport
Campbelltown
Sutherland
Picton
Tahmoor
Wilton
Figure 1.9
Regional study area
Legend
WSI Runway
Western Sydney International (Nancy-Bird Walton) Airport land boundary
Regional study area
Aboriginal Places raised during consultation (NPW Act)
Site of Aboriginal significance
Newcastle
Sydney
Wollongong
0
10
20
km
Coordinate system: GDA 1994 NSW Lambert
Scale ratio correct when printed at A4
1:800,000
Date: 1/08/2023
Data sources: - DITRDC, DCS, Geoscience Australia
Esri, HERE, Garmin, (c) OpenStreetMap contributors, and the GIS user community
Airbus,USGS,NGA,NASA,CGIAR,NCEAS,NLS,OS,NMA,Geodatastyrelsen,GSA,GSI and the GIS User Community
© 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\06_TechPaper_PostEIS_Sub\05_SEIA\PS130347_F01D9_SEIA_RegionalStudyArea_r1v1.mxd | Author: R.Choi | QA: E.Buxton
www.wsp.com

Chapter 2 Legislation and policy context

This chapter provides an overview of the relevant policies, legislation, guidelines, and strategies to the social matters associated with project and considered in this technical paper.

2.1 Legislation

2.1.1 Commonwealth legislation

2.1.1.1 Environmental Protection and Biodiversity Conservation Act 1999

Under the EPBC Act, proposed 'projects' with potential to significantly impact matters of national environmental significance, the environment of Commonwealth land, or that are being carried out by an Australian Government agency, must be referred to the Australian Minister for the Environment for assessment.

Under Section 160 of the EPBC Act, an Australian agency (or employee) must obtain and consider advice from the Australian Minister for the Environment and Water before a plan for aviation airspace management is adopted or implemented where the aircraft operations will have or are likely to have a significant impact on the environment. The project is a plan for aviation airspace management within the meaning of the EPBC Act.

In accordance with Section 161 of the EPBC Act, the project has been referred to the Minister for the Environment and Water for advice. In doing so, the delegate for the Australian Environment Minister has determined that the Department is the nominated proponent and that an EIS would be required that addresses the EIS Guidelines issued for the project. This SIA has been prepared as part of the Draft EIS to address these requirements. This assessment needs to consider the impacts on the 'whole of the environment'.

The EPBC definition of the environment includes ecosystems and their constituent parts, including people and communities; and natural and physical resources, qualities and characteristics of locations, places and areas, heritage values of places and their associated social, economic and cultural values. All of these elements are relevant to the development of a SIA when identifying potential impacts to way of life, culture, surroundings, and communities.

2.1.2 NSW legislation

NSW planning laws do not apply to the assessment of a plan for aviation airspace management by virtue of Section 160(5) of the EPBC Act.

While the EIS Guidelines provide the primary guidance for what this Draft EIS must address, consideration has also been given to relevant NSW environmental planning instruments and policies as relevant to this SIA.

2.2 Relevant guidelines

The following guidance documents have been used to inform the way the SIA was carried out, and ensure that potential impacts to communities surrounding the project, and mitigation measures, are identified:

2.2.1 Guidelines for the content of a draft environment impact statement: Western Sydney International Airport airspace and flight path design

This SIA has been prepared in accordance with the *Guidelines for the content of a draft environment impact statement: Western Sydney International Airport airspace and flight path design* (Reference: EPBC 2022/9143).

Matters of interest to be addressed by this report include Heritage, People and communities and Economic and Social. Details of specific requirements for each matter are outlined in Table 1.1.

2.2.2 Social Impact Assessment Guideline (DPE, 2023)

The Department of Planning and Environment's (DPE) *Social Impact Assessment Guideline for state significant projects 2023* (SIA guidelines) was released to support the preparation of SIAs for State significant projects. The 2023 SIA guidelines have been adopted for this assessment, in relation to the methodology for evaluating the significance of social impacts outlined in Section 3.1.5 and methodology for organising data on the following impact categories: Community, Way of life, Accessibility, Culture, Health and wellbeing, Surroundings, Livelihoods, and Decision-making systems.

2.2.3 Airservices Environmental management of changes to Aircraft Operations Standard (NOS)

Airservices Environmental management of changes to Aircraft Operations Standard (AA-NOS-ENV2.100) (NOS) outlines requirements to complete Social Impact Analysis. In particular, NOS establishes that the SIA report should:

- consider any information/findings from the environmental impact assessment (EIA) process
- inform flight path design and the EIA
- analyse potential impact on all potentially affected communities and noise sensitive receivers, referring to both qualitative and quantitative values
- include explicit commentary on social impact, considering particular community history, context and sensitivities
- be commensurate with the size of the change and the sensitivity of the social environment
- incorporate the most up to date information on the communities affected.

NOS requirements are adopted by this SIA. See Chapter 3 for further information on how these requirements have been met.

2.3 National policies

2.3.1 National Airports Safeguarding Framework

The National Airports Safeguarding Framework is a national land use planning framework that 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.

It contains measures for managing impacts of aircraft noise (Guideline A) which recognise:

- negative impacts on community amenity due to aircraft noise
- that 20 ANEF and 25 ANEF zones 'do not capture all high noise affected areas around an airport, and the ANEF contours are not necessarily an indicator of the full spread of noise impacts, particularly for residents newly exposed to aircraft noise'
- 'there may be less scope to avoid noise issues in situations of urban consolidation and infill or redevelopment of brownfield areas, but consideration should be given to the appropriate nature of that development and the balance of public interest.'

'N-above contours' levels, have developed from the NASF Guidelines and from the (then) Commonwealth Department of Transport and Regional Services (2000) '*Expanding ways to describe and assess Aircraft noise*'. This discussion paper was in response to the reliance on the ANEF System in the EIS for the proposed third runway at Sydney (Kingsford Smith) Airport (Federal Airports Corporation, 1990). The NASF Guidelines also recognise the merits of using a range of noise criteria.

For this project ANEF have not been yet established, therefore Australian Noise Exposure Concept (ANEC) is considered in this technical paper.

2.4 State and regional planning framework

This section outlines relevant NSW planning strategies, environmental planning instruments, proposed environmental planning instruments relevant to the project.

2.4.1 Western Sydney Airport Environmental Impact Statement (2016)

The 2016 EIS for the Stage 1 development of WSI included an SIA. That SIA identified the benefits and negative effects arising from WSI construction, operation, and long-term development. As such, the benefits associated with WSI operations have already been assessed and are out of scope of this SIA.

Relevant to the context of this SIA, the following impacts were identified:

- potential aircraft noise at varying levels during the daytime and night-time
- minor reduction in amenity and enjoyment of recreational areas
- changes to air quality due to aircraft emissions could increase the risk of health impacts on communities near the site
- risk of health effects resulting from daytime and night-time (sleep disturbance) noise will be determined by the preferred airport operating strategy following the finalised EIS
- no evidence of impacts from current aircraft emissions on Sydney's drinking water catchment or data available that can be used to assess whether emissions from aircraft operations would result in increased loading of contaminants to surface waters
- no discernible negative impact expected on property values, as the anticipated value uplift from land use changes is expected to outweigh any consequence or concern about noise impacts.

In addition, the SIA proposed the following management measures:

- managing and mitigating community concerns about amenity and health impacts though the detailed Western Sydney Airport Communication and Engagement Strategy and EIS Community and Stakeholder Engagement Plan; and
- implementing mitigation and management measures that would also address social amenity impacts as detailed in the relevant draft EIS technical studies.

2.4.2 Condition 16 of the approved Western Sydney Airport Plan (Airport Plan)

Following the finalisation of the 2016 EIS, the Western Sydney Airport – Airport Plan (Airport Plan) was approved in December 2016. The Airport Plan authorised the construction and operation of the Stage 1 Development (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 (being the project).

The design and assessment process for 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. 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 Greater Sydney Area airspace. The airspace design must also meet the requirements of Airservices Australia and civil aviation safety regulatory standards.

The 2 requirements of Condition 16 that are relevant to this SIA include:

- airspace and flight path design must have regard to the social impacts on existing airspace users in the Sydney Basin; and
- must minimise to the extent practicable the impact of Aircraft Overflight Noise on residential areas, sensitive receptors, the Greater Blue Mountains World Heritage Area – particularly areas of scenic or tourism value – and Wilderness Areas.

2.4.3 Greater Sydney Regional Plan: A Metropolis of Three Cities, and Western City District Plan

WSI and the broader Aerotropolis are a key part of the Regional Plan's vision for the Western Parkland City and are considered as 'economic catalysts' as part of a Western Economic Corridor. Aerospace and defence industries are identified as a key part of the precinct's activities, complementing existing defence and army activities in Western Sydney including the RAAF Base Richmond.

In relation to WSI, both Plans identify the following mitigations as key to minimise aircraft associated impacts:

- providing buffer areas to nearby activities such as residential uses that are sensitive to emissions
- improving communication of current and future noise conditions
- recognising and giving effect to the National Airports Safeguarding Framework, incorporating airspace protection (i.e., height), turbulence and wildlife safety measures.

The Regional Plan also acknowledges that:

- careful consideration must be given to the management of 24/7 activities in relation to noise, safety and amenity and that there are existing 'nearby residential areas and that buffers to these should be maintained'
- there are higher incidents of air pollution in the north-west and south-west of Greater Sydney due to natural air circulation patterns
- the Blue Mountains World Heritage Area is a key contributor to regional productivity and visitor economy.

2.4.4 State Environmental Planning Policy (Precincts – Western Parkland City) 2021

The *State Environmental Planning Policy (Precincts – Western Parkland City) 2021* (Western Parkland City SEPP) applies to the area surrounding WSI. The Western Parkland City SEPP is an environmental planning instrument which aims to facilitate and promote the sustainable, orderly and transformational development of the Aerotropolis whilst ensuring development is compatible with the long-term growth and development of WSI, including in relation to the operation of WSI 24-hours a day.

Chapter 4 of the Western Parkland City SEPP sets out the planning provisions for the Western Sydney Aerotropolis, which includes aviation safeguarding provisions.

2.4.5 Western Sydney Aerotropolis Precinct Plan, March 2022

The Precinct Plan provides the place-based objectives and requirements to guide development in the Aerotropolis in a consistent and sustainable manner over time. The Precinct Plan sets out the finer grain detail to support the land use zoning and other provisions of the Western Parkland City SEPP. Precinct Plans provide strategic vision and place-based objectives, performance criteria, precinct scale structure planning in alignment with the SEPP.

Objective O4 of the Western Sydney Aerotropolis Precinct Plan (the Plan) is relevant to this SIA: 'O4 Protect Airport operations, including 24-hour operations, and protect future communities from aircraft noise'. The Plan identifies Badgerys Creek as unsuitable for residential development, because of aircraft noise.

As part of the Aerotropolis planning package, the Luddenham Village Interim Strategy seeks to guide the future of Luddenham Village. However much of this strategy cannot be progressed until findings from this EIS are finalised and understood by relevant stakeholders. Findings will inform decisions on future intensification of residential uses in the Luddenham Village.

2.4.6 Western Sydney Aerotropolis Development Control Plan (DCP) 2022

The Western Sydney Aerotropolis Phase 2 DCP was finalised 10 November 2022 and provides controls to guide development across the Aerotropolis' initial precincts including Aerotropolis Core, Badgerys Creek, Wianamatta-South Creek, Agribusiness, and Northern Gateway precincts.[1] As such, the Aerotropolis will become a hub of industry and innovation, attracting local and global companies drawn to the Western Parkland City and the airport that serves it.

It seeks to safeguard the 'future 24-hour operations of the Airport and provide appropriate protections for the surrounding community' and identifies specific design treatments for residential dwellings.

---

1 DPE 2022, Western Sydney Aerotropolis Development Control Plan Phase 2

2.5 Local government planning policies and strategies

Local Strategic Planning Statements (LSPS) and community strategic plans (CSP) within the local area provide an outline of the councils' position in relation to WSI and its potential impacts. Some key findings include:

- Blacktown City Council's LSPS (2020) mainly supports future connections to the new airport, especially via a new metro line, to maximise benefits.
- The Blue Mountains City Council's LSPS (2020) specifically states that 'Council had a resolved position opposing the Western Sydney Airport on the basis of the potential environmental impacts on the universal values of the Greater Blue Mountains World Heritage Area. Council will also 'seek support from the Environmental Protection Authority to include the Blue Mountains in their air quality data program to capture baseline air quality data prior to the opening of the Western Sydney Airport'.
- Camden Council's LSPS (2020) and CSP (2022) identifies the opportunities for the agriculture and tourism sectors associated with the airport, as well as improved connections within the region and globally. Noise and air pollution are recognised as potential consequences of development that should be mitigated.
- Hawkesbury City Council's LSPS (2021) expects Western Sydney Airport to bring benefits in creating employment and industry opportunities. Council also recognises potential challenges arising from insufficient transport connectivity and pressure on the nearby natural area of South Creek.
- Liverpool City Council's CSP 2022–2032 identifies WSI as a transformative project. Council's LSPS (2020) further identifies a comparative advantage to a curfew-free airport and supports the delivery of this new facility particularly due to associated economic and employment opportunities. It also recognises existing residential uses that may limit the success and opportunities of the airport.
- Fairfield City Council's LSPS (2020) identifies benefits associated with WSI as well as potential impacts on the amenity and liveability of the City. Council recognises the potential noise and air pollution impacts associated with aircrafts.
- Penrith City Council's LSPS (2020) and CSP (2022) identify economic opportunities to be unlocked by the future airport. It further describes how planning should minimise public health impacts that can result from co-locating sensitive developments with activities that generate high noise emissions.
- In their LSPS (2020), Wollondilly Shire Council specifically commits to 'advocate to minimise any negative impacts on the Wollondilly community from the new airport', with one possible measure proposing to limit residential growth in areas such as Silverdale and Warragamba.

Chapter 3 Methodology

This chapter provides an overview of the methodology for the SIA, including the approach to assessment, consultation carried out, dependencies with other studies and any limitations and assumptions.

3.1 Impact assessment approach

The methodology for this SIA has been designed specifically in response to the requirements of the Ministerial Guidelines for the content of a draft of Environment impact statement for the project (EPBC2022/9143), as detailed in Section 1.3 of this report.

In addition, the SIA report has had regard to Airservices NOS, by providing:

- a baseline that describes relevant existing characteristics about the community
- primary and secondary research methods that reflect the size of the study area and affected communities
- an analysis of potential impacts on all potentially affected communities specifically noise sensitive receivers, referring to both qualitative and quantitative values
- integrated findings from relevant technical studies completed for the EIS
- recommendations for management measures that mitigate negative impacts and maximise benefits.

Figure 3.1 provides an overview of the key tasks conducted for the development of this SIA. A description of each step is provided below.

Figure 3.1 Overview of SIA methodological steps

3.1.1 Scoping of potential impacts

Scoping of potential social impacts was conducted to focus the SIA on the most relevant and important issues for the project and to inform the definition of the study area.

Identifying social impacts (positive and negative) included a review of comparable project SIAs and relevant literature on predicted social impacts. This yielded an understanding of potential social issues arising from flight path operations. The review included:

- 2016 EIS: Socio-economic Impact Assessment
- 2016 EIS: Health Impact Assessment
- State, regional and local planning frameworks (see Sections 2.4 and 2.5)
- Investigation into complaints about the flight paths associated with the Brisbane Airport new parallel runway (ANAO, 2021)
- Brisbane Airport New Parallel Runway Draft EIS/MDP: Volume D9 – Airspace Social Impact Assessment (2016)
- Publicly available media sources relating to the project.

Scoping of potential impacts can be found in Appendix A.

3.1.2 Study area

The SIA study area includes the geographical areas where social impacts are likely to occur and be experienced more acutely. These areas were identified with consideration given to:

- residential areas under and in close proximity to the ANEC 20 contour, composite N60 24-hour, N60 night-time and N70 contours for the 2033 and 2055 scenarios. Composite noise contours are inclusive of operating scenarios 1, 3 and 4 (refer to Technical paper 1) which 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
- areas in which changes to air quality might occur (0 to 5 km from the centre of WSI runway)
- areas in which visual impacts may be experienced (0 to 20 km from centre of WSI runway)
- residential areas affected by socio-economic disadvantage in close proximity to noise contours
- geographical areas that shape the history, current use and conditions where significant project impacts are likely to take place (these are the LGAs where impacts are likely to occur).

The study area has been divided in 2 geographical areas, to clearly identify and characterise the communities that will be susceptible to experiencing the most significant impacts, including the combined changes to noise, air quality and visual amenity.

The study area includes the:

- **Local area**: made up of the communities within a radius of 10 km to the centre of the WSI runway – this includes the communities affected by ANEC 20, and composite N60 24-hour, N60 night-time and N70 contours, air quality and visual amenity impacts; and
- **Regional area**: made up of the residential and highly visited areas affected by visual and noise amenity impacts (composite N60 24-hour, N60 night-time and N70 contours).

The communities included in each study area are provided in Section 1.4.

3.1.3 Social baseline

Data was gathered from 2021 and 2016 ABS Census data and DPE's 2020 Population, Household and Implied Dwelling projections by LGA to illustrate the 8 social impact categories: Community, Way of life, Accessibility, Culture, Health and wellbeing, Surroundings, Livelihoods, and Decision-making systems.

While most social indicators can be gathered through desktop research, some aspects of the existing environment were obtained through community and stakeholder consultation (refer to Appendix B).

In addition, the baseline provides data from the State of NSW and Greater Sydney areas as a point of comparison for the local and regional study areas. This data provides context about the area where the project will take place (communities within Sydney Basin out to 45 nm from WSI).

3.1.4 Community and stakeholder consultation

This SIA report is informed by engagement and consultation conducted directly by DITRDCA to inform the EIS, and by targeted consultation led by the SIA team.

This section provides details of the different consultation methods undertaken by both DITRDCA and the SIA team and the number of participants engaged. Chapter 5 provides a summary of consultation outcomes.

It is noted that some of the feedback received during consultation identified benefits in relation to the actual WSI, such as construction and operational employment opportunities and improved travel connections. Due to the nature of the project and the focus of the EIS on flight path design, this type of feedback does not directly address the scope of the SIA. However, this feedback has been summarised in Chapter 5 to recognise community and stakeholder perceptions of the broader project context.

3.1.4.1 EIS Engagement

DITRDCA implemented a comprehensive community and stakeholder engagement plan that included one on one/group briefings with key organisations and stakeholders, newsletters, website updates and community pop-up events. These activities were undertaken between September 2022 and June 2023.

Pop-ups for the broader EIS project were conducted from October to early December 2022. They were held at a range of locations across 9 different LGAs, and featured information boards and fact sheets explaining the flight path design process. In total, 2,681 people were engaged across all pop-up locations.

During pop-ups an online survey was made available to the public to provide feedback to the EIS. A total of 804 surveys were completed, including 350 completed at community pop-ups and 454 completed via the links shared by Susan Templeman MP (Macquarie), Mayor Mark Greenhill (Blue Mountains) and Residents Against Western Sydney Airport via social media. Noting that the survey response rate is not statistically representative of the population within the regional social locality, findings should be treated with caution.

3.1.4.2 SIA consultation

SIA consultation was conducted between November 2022 and March 2023. It included semi-structured interviews to key stakeholders and community representatives, 2 field visits and in-person interviews. In addition, the SIA team provided input into interview questions used by the Cultural Heritage consultant as part of their engagement with First Nations community members and Local Aboriginal Land Councils.

Table 3.1 provides details of the key stakeholders interviewed within the study area. A total of 25 interviews were conducted. These included a total of 7 Councils, 6 services, 8 community organisations, and 4 other organisations.

Another 18 organisations (including childcare centres, schools, Local Health Districts, Chambers of Commerce, and community groups) were contacted for interviews but did not respond or were not available to participate.

In addition, 2 field visits were conducted between November and December 2022 to explore local residents' concerns and aspirations about the flight path design. A total of 13 face-to-face interviews were completed.

An initial radius of 1.5 km from WSI was established to randomly select residents and businesses for the first field visit. For the second field visit the radius was adapted to cover the ANEC 20 and N70 contours, as well as residents hosting noise loggers for the noise assessment. A minimum of 6 interviews was targeted.

During the first field visit roughly 25 residences were visited and a total of 7 interviews were conducted. A total of 18 residences were visited during the second field visit, where 6 people were interviewed. A "sorry we missed you" letter was left with the SIA contact details at residences with no response.

The following localities were visited:

- Luddenham
- Greendale
- Mulgoa
- Silverdale
- Mt Vernon
- Wallacia
- Warragamba
- Kemps Creek.

Table 3.1 Interviewed stakeholders

Councils	Health and education services	Community organisations	Other organisations
Blue Mountain City Council	Luddenham Public School	Luddenham Progress Association	Penrith Valley Chamber of Commerce
Camden Council	Holy Family Primary School	Wallacia Progress Association	Blue Mountains Accommodation and Tourism Association
Campbelltown City Council	Wallacia Public School	Ethnic Communities Council of NSW	Greater Blue Mountains World Heritage Area Advisory Committee
Fairfield City Council	South Western Sydney LHD	Residents Against Western Sydney Airport (RAWSA)	Business Western Sydney
Liverpool City Council	Luddenham Medical Centre	Western Sydney Aerotropolis Community Consultative Committee (CCC) and Commissioner	
Penrith City Council	Bush Babies Pre-school Warrimoo	Mt Wilson Progress Association	
Wollondilly Shire Council		Mt Irvine Progress Association	
		Mulgoa Valley Landcare	

3.1.5 Evaluation of identified social impacts

This SIA examines direct, indirect and combined impacts of the project, defined as follows:

- direct impacts are those caused directly by the project, for example sleep disturbance caused by aircraft noise
- indirect impacts are those that result from changes caused by the project, for example strain on family relations and health from sleep disturbance caused by aircraft noise
- combined impacts refer to the combined effect of the different impacts of the project, for example changes to wellbeing due to increased aircraft noise, changes to air quality and night light visual impact caused by a single project
- cumulative impacts refer to the interactions between the project and other approved or yet-to-start projects, or with reasonably foreseeable future development in the area that is likely to be affected by the project. Cumulative impacts can indicate that the combination of impacts, either positive or negative, created by multiple projects or developments, may be greater than that of the impact of one project or proposed development.

Each identified social impact has been evaluated for significance based on factors including:

- the 5 impact characteristics that demonstrate the material effect of the impact (extent, duration, severity, sensitivity and level of concern/interest is defined in Table 3.2) and magnitude according to Table 3.3
- who specifically may be affected, directly, indirectly or cumulatively and the level of concern they feel about the matter (high, medium, low), recognising that impacts may affect population groups or individuals differently
- when the potential impact is expected to occur (pre-operation, operation)
- likelihood has been established by the criteria outlined in Table 3.4.

Table 3.5 was used to evaluate significance both before and after the application of the mitigation measure.

Table 3.2 Characteristics of social impact magnitude

Characteristic	Definition
Extent	Who specifically is expected to be affected (directly, indirectly, and/or cumulatively), including any potential vulnerable people? Which location(s) and people are affected (e.g., near neighbours, local, regional)?
Duration	When is the social impact expected to occur? Will it be time-limited (e.g., over particular project phases) or permanent?
Severity or scale	What is the likely scale or degree of change (e.g., mild, moderate, severe)?
Sensitivity or importance	How sensitive, vulnerable (or how adaptable/resilient) are affected people to the impact, or (for positive impacts) how important is it to them? This might depend on the value they attach to the matter; whether it is rare/unique or replaceable; the extent to which it is tied to their identity; and their capacity to cope with or adapt to change.
Level of concern/interest	How concerned/interested are people? Sometimes, concerns may be disproportionate to findings from technical assessments of likelihood, duration and/or severity. Concern itself can lead to negative impacts, while interest can lead to expectations of positive impacts.

Source: Technical Supplement to SIA Guideline (DPE, 2023)

Table 3.3 Defining magnitude levels for social impacts

Magnitude criteria	
Transformational	Substantial change experienced in community wellbeing, livelihood, amenity, infrastructure, services, health, and/or heritage values; permanent displacement or additional of at least 20 per cent of a community.
Major	Substantial deterioration/improvement to something that people value highly, either lasting for an indefinite time, or affecting many people in a widespread area.
Moderate	Noticeable deterioration/improvement to something that people value highly, either lasting for an extensive time, or affecting a group of people.
Minor	Mild deterioration/improvement, for a reasonably short time, for a small number of people who are generally adaptable and not vulnerable.
Minimal	Little noticeable change experienced by people in the locality.

Source: Technical Supplement to SIA Guideline (DPE, 2023)

Table 3.4 Defining likelihood levels of social impacts

Likelihood level	Definition
Almost certain	Definite or almost definitely expected (e.g., has happened on similar projects)
Likely	High probability
Possibly	Medium probability
Unlikely	Low probability
Very unlikely	Improbable or remote probability

Source: Technical Supplement to SIA Guideline (DPE, 2023)

Table 3.5 Social impact significance matrix

		1 Minimal	2 Minor	3 Moderate	4 Major	5 Transformational
Likelihood level	**A** Almost certain	Low	Medium	High	Very high	Very high
	B Likely	Low	Medium	High	High	Very high
	C Possibly	Low	Medium	Medium	High	High
	D Unlikely	Low	Low	Medium	Medium	High
	E very unlikely	Low	Low	Low	Medium	Medium

Source: Technical Supplement to SIA Guideline (DPE, 2023)

3.1.6 Impact mitigation and management planning

The process for drafting mitigation measures included the review of:

- community and stakeholder feedback provided during SIA consultation (see Appendix B) and
- measures adopted in other airport assessments to address social impacts derived from flight paths, including:
  - Melbourne Airport 3rd Runway (M3R)
  - Brisbane Airport
  - Sydney Airport Master Plan
  - Vienna International Airport.

The feasibility of management measures was reviewed by DITRDCA, who refined and prioritised the measures applicable to this project.

3.1.7 Residual impacts

'Residual impacts" refer to how significant the social impact remains after the proposed mitigation measures and existing controls have been implemented.

A residual impact assessment was applied considering the methodology outlined in Section 3.1.5. Residual impact ratings consider proposed mitigations measures proposed in the relevant technical papers outlined in Section 3.2.

3.2 Dependencies and interactions with other technical papers

The information presented in this paper has been informed by the following:

Table 3.6 Dependencies and interactions with other technical papers

Technical paper	Relevance
Technical paper 1 - Aircraft noise (Airbiz 2022)	Informs the assessment of social impacts derived from changes to noise exposure, including enjoyment of private and public space, community wellbeing and sense of belonging.
Technical paper 2 – Air quality (Todoroski Air Sciences 2022)	Informs the assessment of social impacts derived from changes to air quality, including sense of clean environment, enjoyment of private and public space, and community wellbeing.
Technical paper 4 - Hazard and risk (Eddowes 2022)	Informs the assessment of social impacts related to community wellbeing and surroundings.
Technical paper 7 – Landscape and visual amenity (Iris 2022)	Informs the assessment of social impacts derived from changes to landscape and visual, including enjoyment of private and public space, community wellbeing and surroundings.
Technical paper 9 – Heritage (NOHC 2023)	Informs the impact assessment of social impacts related to First Nations wellbeing and culture.
Technical paper 11 – Economic (Hill PDA 2023)	Informs the assessment of social impacts related to livelihoods.
Technical paper 12 – Health (EnRisk 2023)	Informs the assessment of social impacts related to community wellbeing and accessibility.
Technical paper 14 – Greater Blue Mountains World Heritage Area (GBMWHA) (WSP 2022)	Informs the impact assessment of social values related to the GBMWHA, and conversely this SIA informs the impacts to social values for Technical paper 14.

3.3 Limitations

3.3.1 Reflection of the impacts of COVID-19 on data

While data from the 2021 Census is the most up to date and comprehensive source of demographic data for the local and regional study area, it should be noted that these results may have been impacted by the COVID-19 pandemic and may not be illustrative of typical statistics shown in previous census data. This limitation has been addressed by implementing a comprehensive engagement plan with Councils, residents, and community representatives.

3.3.2 Use of composite noise contours

Several runway operating scenarios have been modelled in Technical paper 1 to cover the envelope of potential impacts of aircraft noise for each reference year (2033, 2040, 2055). Consideration was also given to any sensitivities to seasonal (summer versus winter), the time of the week (weekday versus weekend) and the time of day (day, evening, night, 24-hours).

Three runway operating scenarios were taken forward into the noise modelling to create an outer envelope (composite of contours for selected scenarios) to illustrate a geographic extent of potential impacts.

Composite noise contours are considered in this report to identify the extent of potential noise impacts. It is acknowledged that the actual numbers of people and dwellings within each noise contour could be lower depending on the choice of operating scenario.

3.3.3 Statistical significance of consultation

The local study area is composed of 80,358 people, while the regional study area has a total population of 1,379,196 people. Given the large population of both study areas, the SIA approach is based on a qualitative method of data analysis rather than a quantitative method. The findings are understood to be true for the specific groups consulted. The findings are not assumed to be representative of the study area as a whole.

This limitation was addressed by ensuring the SIA was informed by and supplemented with the EIS engagement, which included the participation of 2,681 people across the LGAs within the regional study area, and also a review of the EIS engagement survey which included the responses of 804 people.

3.3.4 People's knowledge and understanding of the project

Limited information about the flight paths was able to be distributed as part of engagement, which in turn led to a limited understanding of flight paths and noise impacts among communities and stakeholders.

The opportunity for the community to provide informed feedback is an important aspect of SIA. It ensures the community is provided the opportunity to inform decisions that will affect their lives. Details pertaining to the location and potential impacts of the flight paths were not used during consultation for this SIA, as these had not been released at the time of preparing this report. As a result, the contribution that the community and key stakeholders have been able to make to assessing social impacts resulting from the project has been limited to speculation and details from previous flight paths released in the 2015/16 EIS process, which have since changed.

3.3.5 Limited consultation with First Nations groups

SIA engagement with First Nations groups was informed by findings from the Cultural Heritage consultant as part of their engagement with First Nations community members and Local Aboriginal Land Councils for Technical paper 9: Heritage (Technical paper 9).

To further assist in the assessment of social impacts associated with First Nations groups, a WSP Indigenous Services Specialist reviewed the content and provided feedback which has been incorporated accordingly.

3.3.6 Distinction between WSI social impacts and flight paths social impacts

During both EIS engagement and SIA consultation, feedback about the approvals, construction, and operation of WSI was provided. This SIA acknowledges that people's experience with the WSI EIS process and current construction of the airport have shaped their views, concerns and aspirations. At the time of consultation, many people often conflated the perceived impacts of the airport's construction and operation and the impacts of the flightpaths.

Section 5.1 provides an overview about people's views on WSI. However, these will be not addressed as part of the impact assessment as they fall outside the scope of this project.

3.3.7 Limited consultation to communities who have experienced changes to flightpaths

At the time of writing this report, consultation with people who have been through changes to their airspace was not possible. This limitation was addressed by triangulating consultation findings with the technical studies conducted for the project, as well as the findings from published research on this specific subject matter. References of all research sources consulted can be found in Chapter 11.

3.3.8 Management measures

Operations at WSI and the associated airspace in the Sydney Basin are being introduced within a well-established regulatory and management framework. The implementation of airspace regulatory and management framework for this project is overseen by Airservices Australia and WSI Co.

The feasibility of management measures was reviewed by DITRDCA, who refined and prioritised the measures applicable to this project.

3.4 About the SIA Authors

This SIA has been developed by an experienced team of social scientists including Carla Martinez and Jessica Walker.

Carla Martinez is the technical lead of this SIA. Carla holds a Master of Development Practice majoring in Planning for Social Development from the University of Queensland. Carla has also completed a SIA course from the University of Strathclyde. Carla is an SIA practitioner with experience in the resource and energy sector in Chile and Australia, having led SIAs in NSW, Queensland and South Australia. Carla is a member of the Environmental Institute of Australia and New Zealand.

A signed declaration from the technical lead is provided in Appendix A.

Jessica Walker is a senior consultant at WSP. Jessica holds a Bachelor of Social Science in Development and a Bachelor of Arts in Geography from the University of Queensland. Jessica is an SIA practitioner with experience in housing, resources, education, infrastructure, and renewables and has worked on SIAs in NSW, Queensland, and Western Australia.

Sian Hromek, a senior consultant within WSP's Indigenous Specialist Services reviewed the sections of this report relevant to First Nations groups. Sian is a descent of the Budawang people from the South Coast of NSW, and has pursued collaborating with Country, the environment and natural systems through study of horticulture, landscape architecture and conservation land management.

Felicity Richards provided a technical review of this report. Felicity is a SIA specialist at WSP with expertise in SIA for major infrastructure and development projects in resources, energy, education, and transport sectors across Australia. Felicity holds a Master of International Business from Monash University and has completed a Graduate Certificate in Social Impact Assessment at Macquarie University. Felicity is a member of the Environmental Institute of Australia and New Zealand and IAP2.

Chapter 4 Existing environment

This chapter describes the existing conditions and features of the study area to provide a baseline against which the project's impacts can be assessed. This includes information on existing and future trends in demographics, housing, services, way of life and culture within the study area.

4.1 Community

This section describes community composition, character, people's values and sense of place.

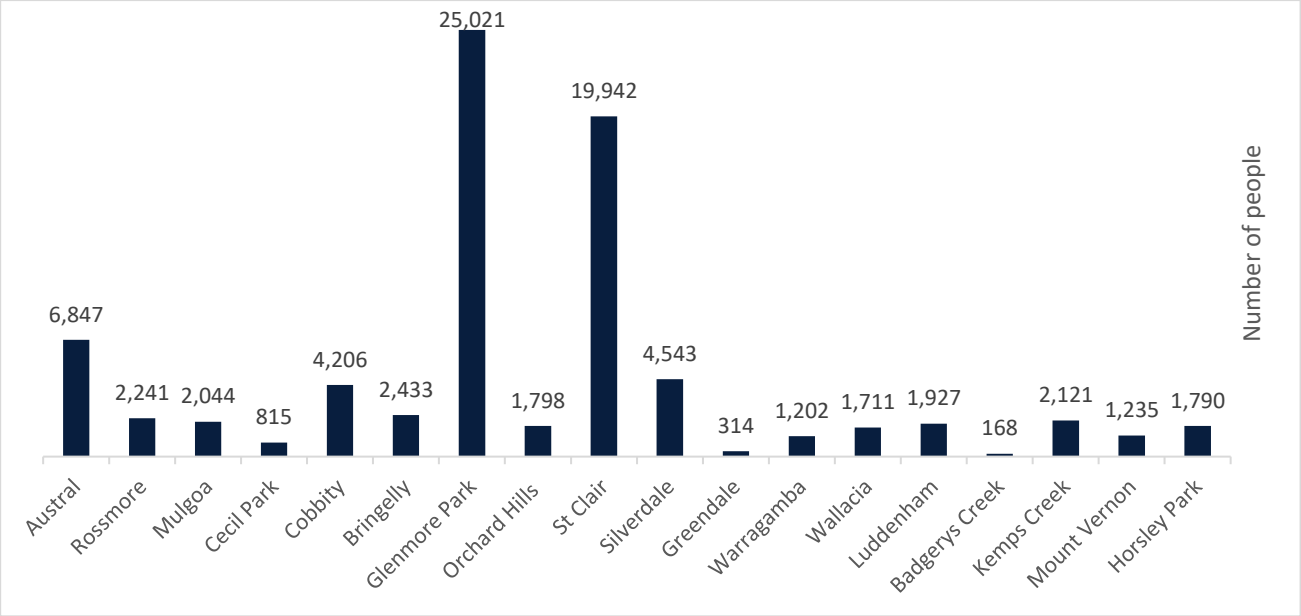
4.1.1 Population demographics

4.1.1.1 Existing population

At the time of the 2021 Census, the total population in the local area was 80,358 (see Figure 4.1), while the regional study area had a total population of 1,379,196 people. This is just over one quarter (26.4%) of the population in Greater Sydney (5,231,147).

The average median age in the local study area ranges from 31 to 47 years, compared to 39 years in NSW and 37 years in the regional study area. The Blue Mountains LGA has the highest median age (45 years old), while Camden, Liverpool, and Blacktown LGAs have the lowest (33–34 years old).

For the local study area, the largest proportions of the total population are located in Glenmore Park (31.1%), St Clair (24.8%), and Austral (11.2%). The smallest populations in the local study area are Badgerys Creek and Greendale, making up 0.2% and 0.4% of the total population, respectively. The highest median ages in the local area are Orchard Hills (47), Horsley Park (45 years), and Kemps Creek (44 years). Suburbs with highest proportions of older age groups (60+) are Badgerys Creek (30.4%), Horsley Park (28.6%), Orchard Hills (27.9%). There are also high proportions (greater than 25%) of older age groups in Cecil Park, Bringelly, and Kemps Creek.



Source: ABS 2021, Census of Population and Housing

Figure 4.1 Local study area population by suburb, 2021

4.1.1.2 Population growth since 2016

The regional study area experienced higher population growth between 2016 and 2021 (14.2%) than NSW (7.9%). Camden LGA (52.6%), Blacktown (17.8%), Liverpool (14.3%), Penrith (11.0%), and Wollondilly (11.2%) experienced higher growth than NSW. Fairfield (4.9%), Hawkesbury (4.0%), and Blue Mountains (1.6%) experienced lower growth compared to NSW. Large population growth in Western Sydney is likely driven by high housing and living costs closer to the CBD forcing people to live further out, along with increasing social, education, and entertainment opportunities in key centres within Western Sydney such as Liverpool and Penrith (GSC 2018) (see Table C.1, Appendix C).

In the local study area, the greatest changes in population between 2016 and 2021 were experienced in Austral with an increase of 126.4% (an average annual increase of 25.3%), Cobbitty with an increase of 103.9% (average annual increase of 20.8%), Badgerys Creek with a decrease of 25.3% (average annual decrease of 5.1%), and Silverdale with an increase of 23.4% (average annual increase of 4.7%). St Clair (+0.05%), Rossmore (-0.4%), Horsley Park (-0.5%), Warragamba (-0.6%), Bringelly (-0.6%), and Mount Vernon (-0.7%) experienced very minimal change in population from 2016 to 2021.

The decreasing population in Badgerys Creek is likely due to changes in land zoning in the area as discussed in Section 4.6.1, and property acquisitions for the numerous infrastructure projects going through the suburb to support WSI, noting WSI is located within this suburb.

4.1.1.3 Forecast population growth

Population projections for the regional study area shows that all LGAs are anticipated to experience annual growth ranging from 0.4%–3.4% increase by 2041[2] (see Table 4.1). The largest population growth within the regional study (by number of people) is anticipated in Blacktown LGA with a projected 95,465 new residents from 2021–2041. The largest proportionate changes in population by LGA are anticipated to occur in Wollondilly (67.4% total growth, 3.4% average annual growth) and Camden (65.7% total growth, 3.3% average annual growth).

Table 4.1 Population forecast for the regional study area

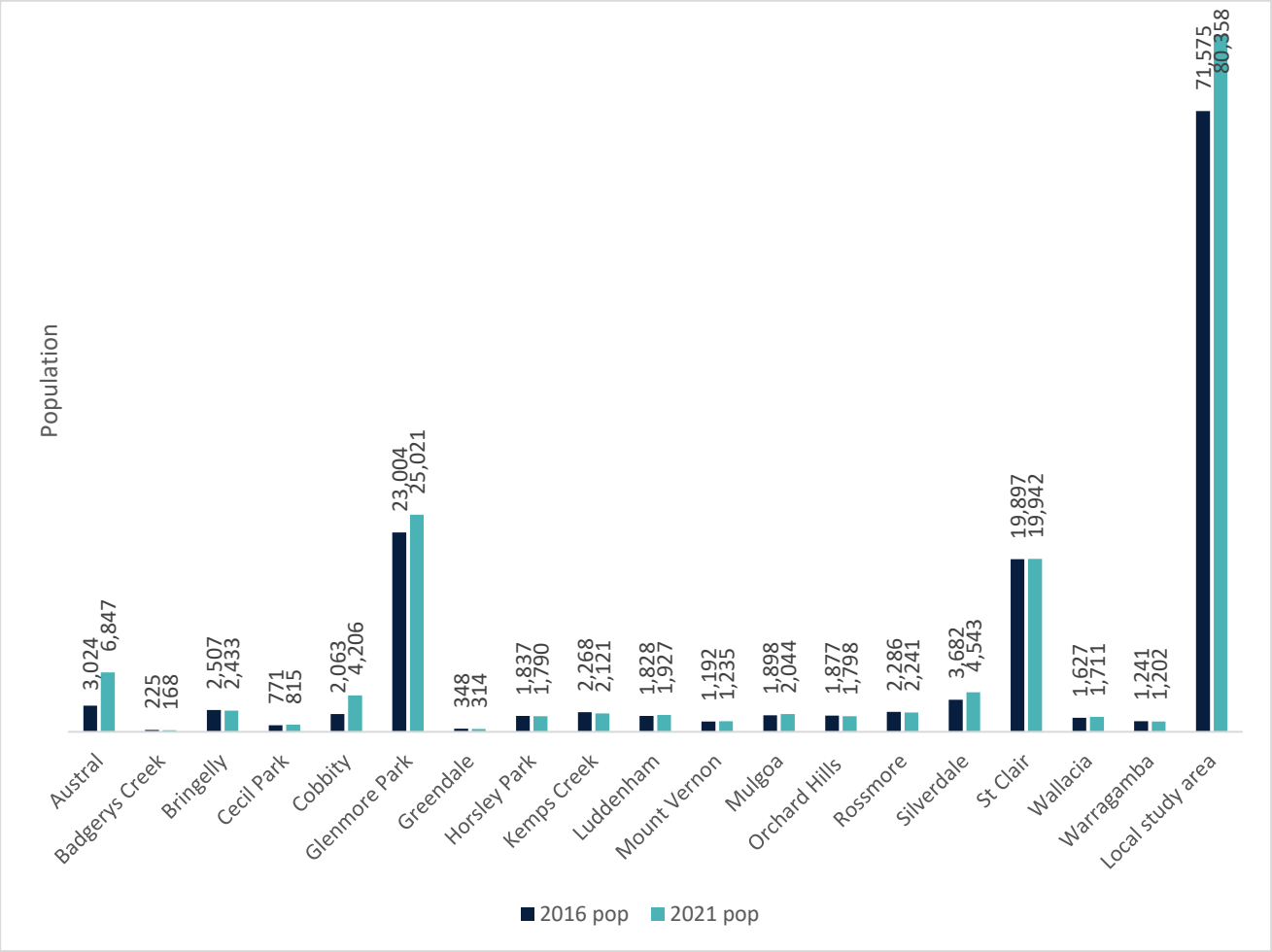
Regional study area LGAs	2021*	2041**	Total change 2021–2041	% change 2021–2041	Average annual growth (%)
Blacktown	396,776	492,241	95,465	24.1%	1.2%
Blue Mountains	78,121	83,951	5,830	7.5%	0.4%
Camden	119,325	197,735	78,410	65.7%	3.3%
Fairfield	208,475	247,803	39,328	18.9%	0.9%
Hawkesbury	67,207	77,211	10,004	14.9%	0.7%
Liverpool	233,446	312,653	79,207	33.9%	1.7%
Penrith	217,664	270,477	52,813	24.3%	1.2%
Wollondilly	53,961	90,356	36,395	67.4%	3.4%
NSW	**8,072,163**	**9,872,934**	**1,800,771**	**22.3%**	**1.1%**

*Source: *ABS 2021, QuickStats; **DPE 2023, projections Explorer*

[2] DPE 2021, projections Explorer

Population forecasts on forecast.id for the local study area are only available for certain suburbs in the area. These include: Austral, Greendale, Luddenham, Silverdale, and Wallacia (Liverpool City Council – combined); Wallacia, Warragamba, and Silverdale (Wollondilly Shire Council – combined); Lowes Creek Precinct, Marylands Precinct, and Grasmere – Ellis Lane – Cawdor – Bickley Vale – Cobbitty Hills (the closest data for Cobbitty, Bringelly, and Rossmore); and Horsley Park – Cecil Park (Fairfield City Council). There is no forecasted population data available for the suburbs located in Penrith City Council (Mulgoa; Glenmore Park; northern sections of Luddenham, Badgerys Creek, and Kemps Creek; St Clair; Orchard Hills; and Mount Vernon).

The available population forecast data for the local study area indicates extreme growth (452.9%) by 2041. The majority of this growth will be experienced in the Rossmore area with an estimated 65,654 people (49,794 in Marylands Precinct and 16,860 in Lowes Creek Precinct), Austral with an estimated 55,204 people (406.9% growth), and Liverpool's portions of Greendale, Luddenham, Silverdale and Wallacia with an estimated 29,190 people (454.0% growth). Significant growth in these areas will be the result of establishing new residential suburbs where there is currently very minimal to no population. Austral is anticipated to accommodate 17,350 new homes as part of the South West Growth Area (Liverpool City Council n.d.). A demographic and social infrastructure study completed by Elton Consulting in 2018 forecasted that the population in the Lowes Creek Maryland Precinct would be 22,441 people while the population for the "whole of the Context Plan Area" (including Bringelly, Lowes Creek and Marylands) was anticipated to be home to between 80,520 and 88,712 people.



Source: ABS 2021, Census of Population and Housing

Figure 4.2 Population growth in the local area, 2016–2021

4.1.2 Population mobility

In the regional study area, 52.5% of people lived in the same place in 2021 as in 2016, 30.4% lived elsewhere in Australia in 2016, and 4.7% lived overseas in 2016. The LGA with the least population mobility is Blue Mountains, with 61.2% of people residing in the same place in 2016. The LGA with the most population mobility is Blacktown, with 31.6% of people living elsewhere in Australia in 2016 and 6.8% living overseas. Fairfield had the most people across the regional study area living overseas in 2016 (7.7%).

In the local study area, the greatest proportion of people were residing in the same place in 2021 as they were in 2016 (56.3%), followed by people living elsewhere in Australia in 2016 (30.9%), and living overseas in 2016 (1.6%), suggesting greater population mobility in the local area compared to the regional area. This is the case for all suburbs within the local area except Austral and Cobbitty, in which the majority of residents lived elsewhere in Australia in 2016 (57.0% and 49.4% respectively). This is reflective of extensive and ongoing urban development in Austral and Cobbitty.

The suburbs in the local study area with the most consistent population (least mobility) are Orchard Hills (73.6% had same address in 2021 as in 2016), Mount Vernon (72.1%), and Horsley Park (70.0%). All other suburbs, except Austral and Cobbitty mentioned earlier, had between 55–69.9% of people living in the same place in 2021 as in 2016. This indicates potentially high levels of community connection to place, which is likely to grow when people live longer in a certain area.

Consultation with local communities in the local area highlighted that land acquisitions for projects in the broader Aerotropolis precinct such as upgrades to The Northern Road have already caused population mobility. It was noted that so far, only smaller households were moving from the area, and farm owners were staying in the absence of competitive offers for their properties.

4.1.3 Community values

Table 4.2 provides detailed information about the values of each LGA within the local area, identified through a review of local strategic documents and during consultation. The following values are consistent across the local area:

- environmental values – valuing and a desire to preserve and enhance the natural environments in the region. Access to green open spaces for fitness and recreation were also noted
- rural lifestyle – large portions of all LGAs (Fairfield excepted) are rural/semi-rural and the communities value the character and amenity afforded by the rural setting
- sense of belonging – the feeling of belonging in their community was highlighted in several LGAs
- First Nations culture – Councils highlighted the value of First Nations culture within their LGAs.

Table 4.2 LGA community values

LGA	Values
Blue Mountains	Consultation highlighted that people in the Blue Mountains value their living environment and what it offers, with a lot of people moving from cities to more rural areas since 2016. The Blue Mountains City Council CSP highlights that its residents value the quiet character of their environment, unaffected by man-made noise, as well as the region's clean air. The character of the Blue Mountains, its scenic views, the World Heritage Area, and the region's cultural heritage are also highly valued. Tourism and associated industries supported by the Blue Mountains were also acknowledged as a value by stakeholders during consultation.
Blacktown	The Blacktown community Satisfaction Survey from 2021 notes that 73% of its residents feel a sense of belonging in their local community[3]. The Blacktown CSP outlines that the community has a lot of pride and respect for their city.
Camden	The Camden CSP states that the region's rural setting and character are highly valued by its community[4]. The community values quality natural environments, accessible and well-maintained facilities and services, and well-designed and adaptive buildings and infrastructure.

LGA	Values
Hawkesbury	Community Strategic Plan 2017-2036 provides a vision of Hawkesbury as a vibrant and collaborative community living in harmony with history and environment. The community values local history and heritage, cleanness of public spaces, elements of natural environment and overall visual characteristics of the area, and vegetation and natural elements such as street trees, waterways, etc.
Fairfield	The Fairfield community values a friendly, family-oriented community; diverse, multicultural community; quality entertainment options; access to green space for fitness and recreation; supportive and welcoming community; proximity to Sydney and Greater Sydney; and the abundance of parklands in the LGA[5].
Penrith	The Penrith CSP outcomes outline what is most important to the community. These include biodiversity; sustainability and climate resilience; waste services; community resilience; services; wellbeing; inclusion; First Nations culture; local jobs; managing growth; business opportunities and partnerships; place management (pedestrian friendly suburbs); safe, easy and quick travel; fit for purpose roads and drains; sportsground, parks, and open spaces; and open and collaborative Council leadership.
Wollondilly	The Wollondilly community values their rural lifestyles with connections to prosperous towns and villages, access to services and facilities, local jobs and education, transport connectivity, and safety on roads[2]. It is also noted as valuing its sense of community spirit and sense of belonging.

1. Liverpool City Council 2022, Community Strategic Plan 2022-2032
2. Wollondilly Shire Council 2021, Community Strategic Plan
3. Blacktown City Council 2021, Community Satisfaction Survey 2021
4. Camden Council 2022, Community Strategic Plan 2036
5. Fairfield City Council 2022, 2022-2032 Fairfield City Plan: Community Strategic Plan

4.2 Way of life

This section describes how people live, how they play, and how they interact each day.

4.2.1 Household and family composition

The average household size in the regional study area is 3.2 people per household, which is larger when compared to the NSW average of 2.6 people per household. Fairfield and Liverpool LGAs have the largest average household size in the regional study area (3.2 for each LGA), while the Blue Mountains LGA has the smallest (2.4 people).

Family and household composition in the local study area is relatively similar to the NSW average. The largest proportion of households in the local study area are families (85.0%) and the largest proportion of families are couples with children (51.7%), both higher than the average proportions for the same compositions in NSW (71.2% and 44.7%, respectively). Suburbs in the local study area with greater proportions of couple families without children than couple families with children include St Clair (50.2%) and Badgerys Creek (46.3%), compared to couple families without children in NSW (37.9%).

Proportions of single or lone person households across the local study area (13.4%) are generally lower than the NSW average (25.0%), besides Warragamba (28.8%). Wallacia also has a similar proportion to NSW of single or lone person households (22.5%).

Group households in the local study area account for 2.4% of all household types. There are similar proportions of group households in Greendale (8.8%), perhaps due to the presence of the University of Sydney campus, Badgerys Creek (8.2%), Rossmore (8.0%), and Bringelly (6.8%) compared to NSW (8%). There are significant proportions of one parent families in Warragamba (24.9%), Greendale (22.4%), and Badgerys Creek (19.5%), compared to NSW (15.8%).

Luddenham has the highest proportion of couple families with children (60.4%) compared to all suburbs in the local study area. It is amongst the suburbs with the lowest proportions of couple families without children (29.6%), has 9.4% single or lone person households, and 1.1% group households. Families and households in Kemps Creek are 48.5% couple families with children, 32.4% couple families without children, 15.8% single or lone person households, and 3.1% group households.

4.2.2 Housing

4.2.2.1 Dwellings

There are a total of 479,566 dwellings in the regional study area, of which 94% are occupied and 6% unoccupied. While for the local area, there are a total 25,094 private dwellings. Of these dwellings, 92.7% are occupied private dwellings and 3.9% are unoccupied private dwellings[3]. The suburbs in the local study area with the greatest proportion of occupied private dwellings are Glenmore Park and St Clair (97.3%).

The majority of occupied private dwellings in the local study area are detached dwellings (94.4%). There are small proportions of semi-detached houses (including row, terrace and townhouses) (3.4%), and apartments (1.4%), and a very minimal proportion of other dwellings (0.1%). This suggests that most of the population in the local study area is living in low- to medium-density housing, which is consistent with the more rural nature of the areas surrounding the WSI site.

The suburbs with the highest proportions of non-detached dwellings in the local study area are Wallacia (85.3% detached, 8.9% apartments, 4.6% other, and 0.7% semi-detached), Austral (88.3% detached dwellings, 5.6% semi-detached, and 2.4% apartments), and Glenmore Park (90.6% detached, 7.4% semi-detached, and 2% apartments). Badgerys Creek in the local study area has 100% detached dwellings, closely followed by Mulgoa (99.7%), and Silverdale (99.3%).

4.2.2.2 Social housing

Social housing in the regional study area is most prevalent in Fairfield (7.3%) and Liverpool (6.1%), followed by Blacktown LGA (5.9%) and Penrith LGA (3.9%). This is compared to 3.6% in NSW.

In the local study area, there are 127 social housing tenures (0.5% of all tenure types). Of this, the majority of social housing is located in Glenmore Park (52.8%), followed by St Clair (39.4%), Cobbitty (3.1%), Austral and Kemps Creek (each 2.4%).

4.2.2.3 Short-term rental accommodation

Technical paper 11: Economic (Technical paper 11) estimated there are 26 short-stay accommodation establishments within the local study area. The identified short-stay accommodations include:

- 19 hotels and taverns
- 5 motels
- 2 bed and breakfast establishments.

Consultation with BMCC highlighted the role of the short-term rental and holiday accommodation market in compromising housing availability for residents. BMCC noted there are areas within the LGA with around 30% vacant properties as homes are taken up by property investors for tourism purposes. This is reflected by the significantly low Residential Vacancy Rate in the Blue Mountains (consistently below 3%[4] since January 2022).[5]

---

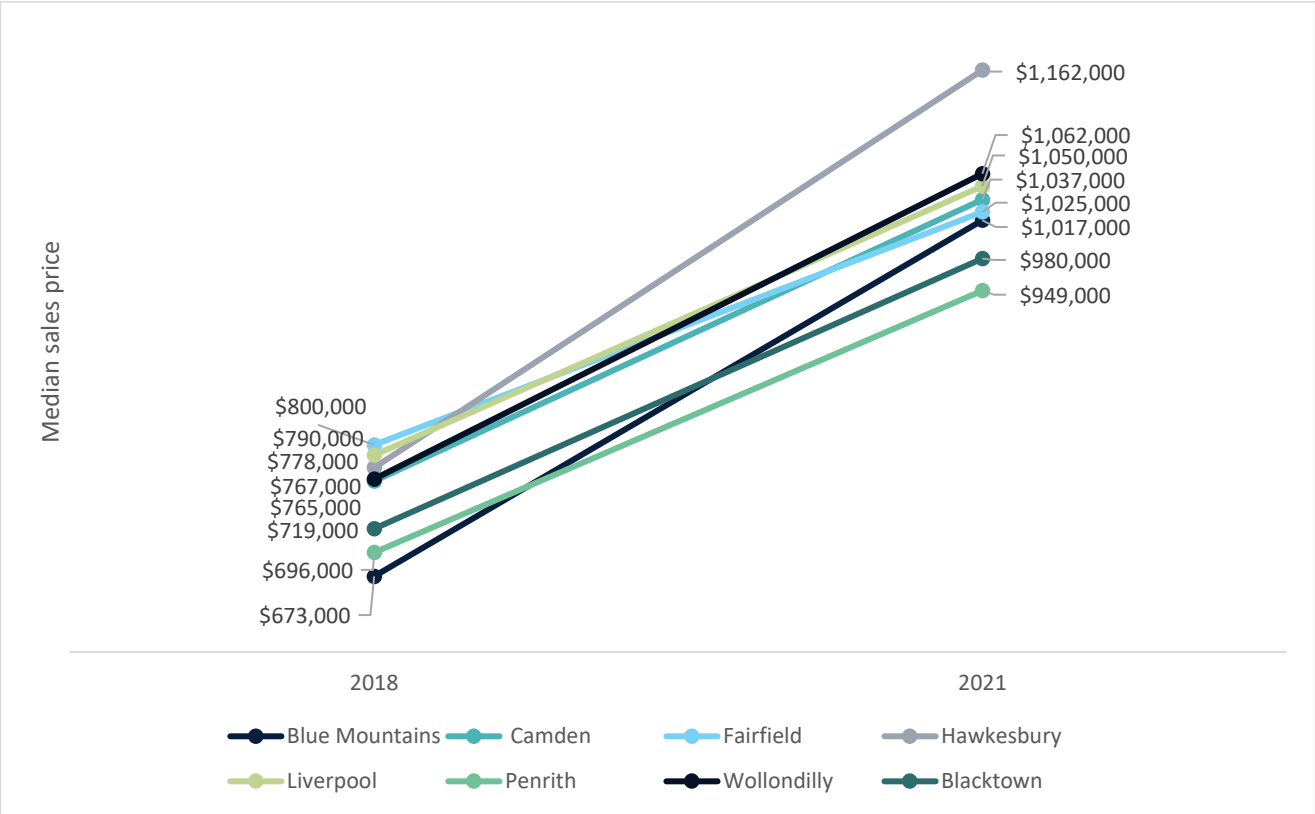
3 Data use consideration – see Appendix C Table C.8

4 Residential vacancy rates below 3% (the equilibrium point where the market is evenly fair for landlords and renters) indicate a tight rental market with an undersupply of rental options for tenants (Brewsters Property Group n.d., The Value of Vacancy Rates)

5 SQM Research 2022, Residential Vacancy Rates

4.2.2.4 Property value

In the regional study area, the sales prices for non-strata properties experienced significant growth between 2018 and 2021 (see Figure 4.3). In 2021, Hawkesbury and Wollondilly LGAs had the highest median sales prices ($1,162,000 and $1,062,000, respectively) while Penrith LGA had the lowest ($949,000).

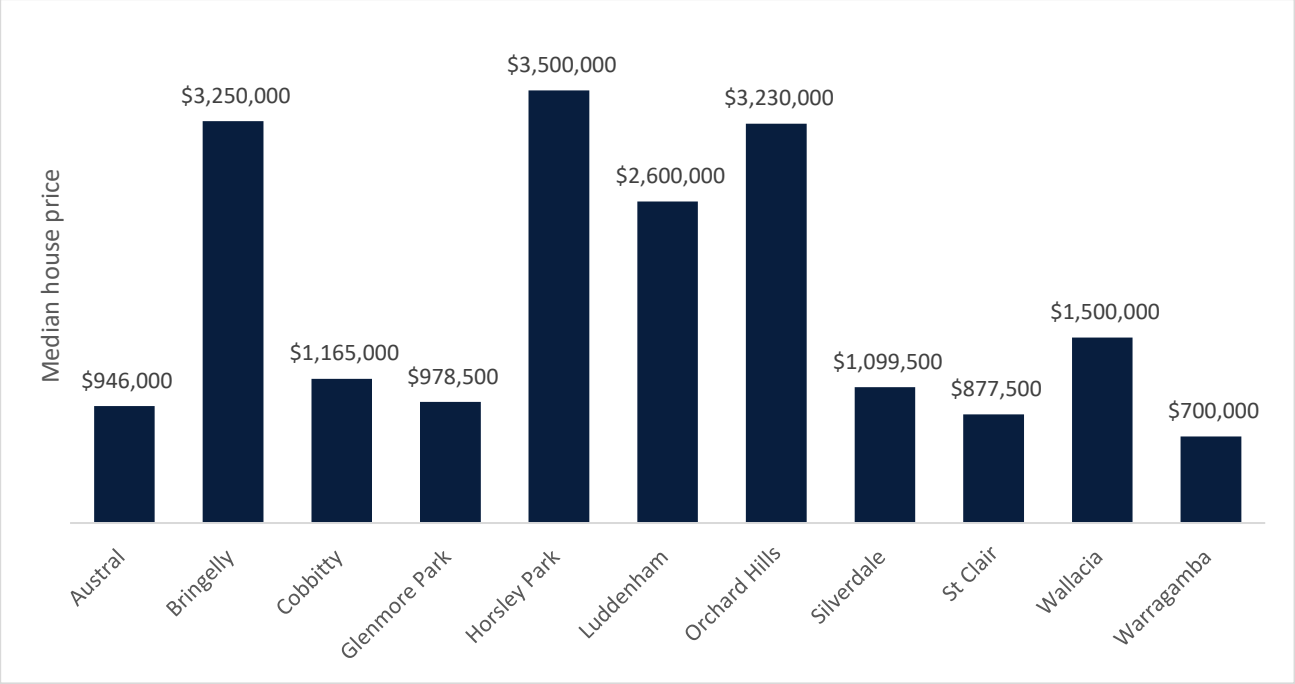


Source: DCJ Statistics 2021, Rent and sales, Sales report, Median sales prices ($'000s) by LGA

Figure 4.3 Median sales price trends for non-strata properties in regional study area, 2018–2021

The following data for median sales prices in the local study area has been retrieved from Realestate.com.au. It is noted that the number of sales in some of these suburbs are low, and data for medians may be skewed by outlying high or low sales values on a small number of properties.

The median sales prices for properties between May 2022 – April 2023 vary noticeably in the local study area (see Figure 4.4). The highest median house prices are in Horsley Park ($3.5 million), Bringelly ($3.25 million), and Orchard Hills ($3.23 million) while the lowest are in Warragamba ($700,000), ($877,500), Austral ($946,000), and (Glenmore Park ($978,500). Austral experience the greatest growth in median house price (14.0%) while Orchard Hills (--28.8%), followed by Luddenham (-23.0%), and (-19.8%) experienced substantial declines.



Source: Realestate.com.au 2023, Find a suburb that suits you

Figure 4.4 Median house price per suburb in the local study area, May 2022 – April 2023

4.2.2.5 Housing affordability

Median weekly rental payments in the regional study area vary between the LGAs, from $390 to $500. All LGAs have lower median weekly rents than the NSW average ($420), besides Camden LGA ($500). Fairfield LGA has the lowest median weekly rental payment ($390) within the regional study area. Median monthly mortgage repayments in the regional study area vary between the LGAs, from $2,000 to $2,500, compared to the NSW average of $2,167. Fairfield LGA has the lowest median monthly mortgage payment ($2,000) while Camden LGA has the highest median monthly mortgage payment ($2,500).

Median weekly rent payments in the local study area range from $380 in Warragamba to $530 in Cobbitty, compared to the NSW average of $420. The lowest rent payments are in Warragamba ($380), Cecil Park and Wallacia (both $400), while the highest are in Cobbitty ($530), Austral ($520), and Badgerys Creek ($505). Median monthly mortgage repayments in the local study area range from $1,300 in Badgerys Creek to $3,250 in Horsley Park, compared to $2,167 in NSW. The lowest mortgage payments are in Badgerys Creek, Warragamba ($1,784), and Rossmore ($1,950), while the highest are in Horsley Park, Mount Vernon ($3,000) and Greendale ($2,850).

One third of rental households in the local study area are suffering rental affordability stress (rent payments greater than or equal to 30% of lower household income) (32.3.%), compared to 35.5% in NSW. Suburbs with the greatest proportion of households suffering from rental affordability stress are Austral (42.2%), Rossmore (40.9%), Bringelly (39.7%) Warragamba (37.9%), Kemps Creek (37.1%), and Badgerys Creek (36.8%), all greater than the NSW average.

The local study area has 39.3% of mortgaged households suffering from mortgage affordability stress (mortgage payments greater than or equal to 30% of household income), compared to 17.3% in NSW. Suburbs in the local study area with greater than a quarter of mortgaged households suffering from mortgage affordability stress are Badgerys Creek (37.5%), Horsley Park (28.6%), Austral (28.5%), and Cecil Park (26.3%). Most suburbs have approximately one-fifth of households suffering from mortgage affordability stress, besides Glenmore Park (14.5%) and Greendale where there are no households suffering from mortgage affordability stress.

4.3 Culture

This section describes both Aboriginal and non-Aboriginal culture including shared beliefs, customs, values and stories, and connections to Country, land, waterways, places, and buildings.

4.3.1 First Nations community

In the regional study area, there are 39,686 people identifying as First Nations people, accounting for 2.9% of the total population, lower than the NSW average of 3.4%. The LGAs within the regional study area with greater proportions of people identifying as First Nations people compared to the NSW average are Penrith (5.0%), Hawkesbury (4.8%), and Wollondilly (4.4%).

Within the local study area, there is a total of 2,658 First Nations people, accounting for 3.3% of the total population, which is similar to the NSW average (3.4%). Across the local study area, the suburbs with the largest proportions of First Nations people are Warragamba (7.9%), Silverdale (4.6%), Wallacia (3.9%), St Clair (3.8%), and Glenmore Park (3.7%). Badgerys Creek and Cecil Park both have no people identifying as First Nations.

The local area is within the Deerubbin, Tharawal, and Gandangara Local Aboriginal Land Councils (LALC)[6] area on Dharug Country (refer Figure 4.5).[7] Table 4.3 summarises the key characteristics of each of these groups.

Table 4.3 Key characteristics of First Nations groups of people in the local study area

Group	Key characteristics
Dharug people	Traditional Owners of the land that covers Western Sydney, including the areas around the Hawkesbury and Nepean Rivers that is currently Campbelltown, Liverpool, Camden, Penrith and Windsor areas. Dharug is the First Nations language of the Western Sydney region, and there are understood to be over 30 clan groups of Dharug language speakers. Today, Dharug people are still living in the area and are working to preserve their culture and heritage.
Gandangara people	Traditional Owners of the land around the catchments of Wollondilly and Coxs rivers that is currently represented by Goulburn, Wollondilly, Blue Mountains and Southern Highlands areas. Gandangara people have their own language. In precolonial times the social organisation of Gandangara people was represented by groups of 30–50 people.
Dharawal people	Originally, Dharawal people are from the area that stretches south from Sydney from the Georges River west to the areas of Campbelltown and Camden, and south to the Shoalhaven River. Dharawal people are identified though their language.

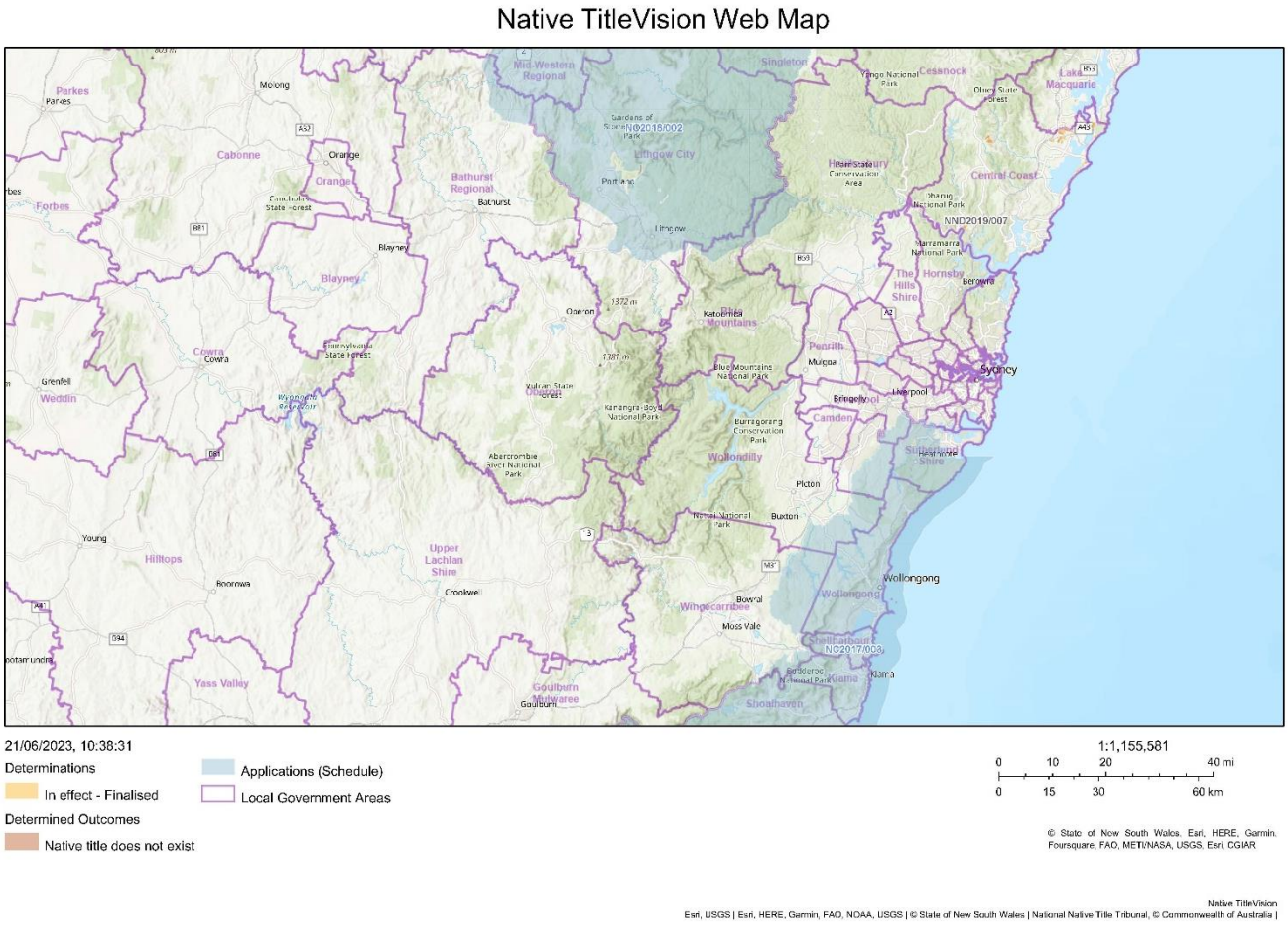
6 NSWALC 2023, Land Council Map
7 AIATSIS 2022, Map of Indigenous Australia

Source: AIATSIS 1996

Figure 4.5 Map of Indigenous Australia relative to study area

4.3.1.1 Native Title Claimants

There are 2 active native title claims that intersect the regional study area. As shown in light blue in Figure 4.6, the Warrabinga-Wiradjuri #7 claim intersects the Blue Mountains LGA to the north, and the South Coast People claim intersects the Liverpool and Wollondilly LGAs to the South. These claims are both active and have not yet been determined.



Source: Native Title Tribunal

Figure 4.6 Native Title claims in the regional study area

4.3.2 Culturally and linguistically diverse populations

4.3.2.1 Countries of birth

Greater Western Sydney is well-known as having a large cultural and linguistically diverse (CALD) population.[8] In the regional study area, 34.7% of the population was born overseas. The Fairfield LGA has the largest percentage of people born overseas (61.4%), followed by Blacktown LGA (49.6%) and Liverpool LGA (48.8%). The LGAs with lowest proportion of people born overseas are Wollondilly (15.8%), Blue Mountains (21.8%), Camden (25.9%) and Penrith (28.7%).

The local study area is much less culturally diverse compared to the regional study area, characterised by a greater proportion of people born in Australia (79.7%). The largest proportion of people born overseas in the local study area were born in England (2.0%), India (1.5%), New Zealand (1.2%), and Italy (1.1%). Suburbs within the local study area with relatively low proportions of people born in Australia include Badgerys Creek (51.2%) and Austral (50.3%). The most common countries of birth for people in Badgerys Creek not born in Australia are China (excluding Hong Kong and Taiwan) (13.1%), Italy (6%), and Malta (4.8%). The most common countries of birth for people in Austral not born in Australia are Iraq (5.6%), Nepal (4.3%), India (4.0%), and Italy (3.4%).

4.3.2.2 Language diversity

In the regional study area, 20% of households speak a language other than English at home compared to 29.5% in NSW. The highest proportion of such households are in Fairfield (49.8%), Liverpool (32.2%) and Blacktown (25.5%) LGAs.

In the local study area, 29.0% of people speak a language other than English at home, consistent with the NSW average (29.5%). Some of the communities within the local area with the greatest levels of language diversity (many households speaking non-English languages) are Austral (66.2%), Cecil Park (55.5%), Horsley Park (52.8%), and Rossmore (50.1%). The suburb with the lowest language diversity is Warragamba (7.3%).

The most commonly used languages (other than English) within the local study area are Arabic (3.6%), Italian (1.5%), Tagalog (0.8%), and Punjabi (0.7%).

4.3.3 Greater Blue Mountains World Heritage Area

The Greater Blue Mountains World Heritage Area (GBMWHA) is an area of significant cultural value both for Australia and the world. The Greater Blue Mountains received its World Heritage listing in 2000 for outstanding examples of vegetation, habitats and plant communities.[9] It was noted during consultation that the project for a new airport in Sydney, which was already being discussed at the time, was an important consideration as the listing application was being progressed. The UNESCO website describes the ongoing high level of interest in the airport project, and involvement of the World Heritage Centre during the 2016 EIS. In 2019, the World Heritage Committee reviewed a range of new information and one of the decisions adopted was about the proposed flight paths:

> 1. *Notes the information provided by the State Party regarding the Western Sydney Airport project and further requests the State Party to submit to the World Heritage Centre a copy of the EIS for the anticipated airspace and flight path operations, once available, for review by IUCN;*

GBMWHA has both First Nations and post-European-settlement cultural values. Intrinsic cultural values of the GBMWHA include Connections to Country for 6 First Nations language groups through ongoing custodial relationships with the area.[10] Physical evidence of cultural connections to the land is present in the form of rock art and occupation sites throughout the GBMWHA.

The importance of GBMWHA for local communities in Western Sydney was raised by a range of stakeholders throughout the consultation process for its health and wellbeing, cultural, and biodiversity values.

---

8 WSU n.d., Culturally and Linguistically Diverse (CALD)

9 DPE 2019, Greater Blue Mountains Area

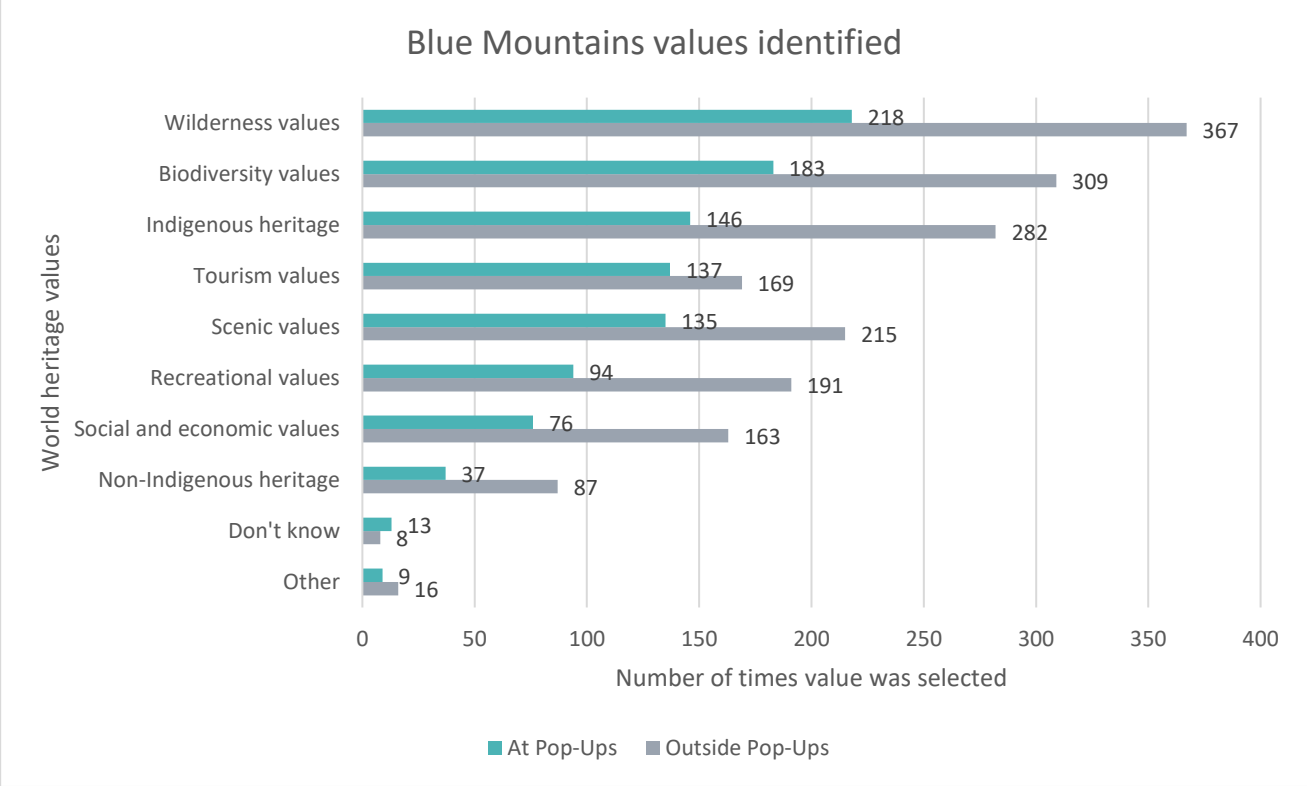
10 UNESCO 2023, Greater Blue Mountains Area

In addition, the Blue Mountains National Park was highlighted throughout consultation as a significant recreation area for residents in Greater Sydney as well as tourists visiting from elsewhere in NSW or Australia and overseas. Multiple suburbs of Blue Mountains LGA including Katoomba and Glenbrook are located close to the National Park. The GBMWHA includes the territory of the Blue Mountains National Park and stretches over a much larger territory shown in Figure 4.7.

During consultation, the Blue Mountains was described as peaceful, serene and wild. As shown in Figure 4.7, wilderness values were most commonly identified by EIS survey respondents, closely followed by biodiversity values, Aboriginal heritage, scenic values, and the overall value of the area's status as a UNESCO World Heritage Area.

Detailed survey responses highlighted that the Blue Mountains are well-known for having fresh air and unpolluted environments, unique birdlife, and playing an important role in preserving biodiversity. The region's natural beauty and unique flora and fauna were highly valued, with the recognition that many of these are already endangered. In the survey, it was also noted that ecosystems in the Blue Mountains are already fragile due to recent bushfires.

Additionally, Aboriginal and non-Aboriginal heritage values of the GBMWHA were identified as important by survey respondents. There are also a range of recreational activities that are important to respondents, including bushwalking, hang-gliding, and more passive forms of recreation. Responses commented that greater value needed to be placed on national parks and bushland in and around Greater Sydney.



Source: Engagement Report, WSP

Figure 4.7 GBMWHA values identified in EIS consultation, 2022

4.4 Accessibility

This section describes how people access and use infrastructure, services, and facilities, whether provided by a public, private, or not-for-profit organisation.

4.4.1 Education

4.4.1.1 Schools

There are 428 schools in the regional study area, including 287 primary schools, 99 secondary schools, and 42 combined schools (primary and secondary).

Within the local study area there are 41 schools with a total of 19,185 enrolments in 2022–2023. Of these, 18 are government-run and 23 are private schools. This includes 23 primary schools, 5 secondary schools, 11 combined schools, and 2 special needs schools. The full list of schools is in Table C.12 Appendix C.

Luddenham Public School (government) and Holy Family Primary School (non-government) are in close proximity to WSI. Both schools provide education for primary school aged students. In 2022, Luddenham Public School had 55 enrolments and Holy Family Primary School had 28 enrolments. Consultation identified that student enrolments at Luddenham Public School are rapidly decreasing as families move out of the area, noting loss of approximately half of its enrolment compared to 100 enrolments around 2018. It was noted that necessary upgrades to schools are unlikely due to lack of funding as a result of small student populations.

There are 2 special needs schools in the local study area. The Aspect Macarthur School in Cobbitty provides special needs education for 120 students on the autism spectrum. Fernhill School in Glenmore Park provides education for students with moderate to severe intellectual and physical disabilities and currently has 130 enrolments.

4.4.1.2 Childcare centres

There are an estimated 82 childcare, long day care, and preschool facilities within the regional study area. This includes:

- 61 long day care
- 13 government-funded preschools
- eight government-run preschools.

There are 51 registered childcare centres in the local study area (ACECQA, 2023). The largest proportion of these centres are located in the suburbs of Austral (10) and Glenmore Park (13). It is estimated that between 1,275 and 4,282 children may be attending childcare in the local study area.[11]

4.4.2 Health and aged care

4.4.2.1 Hospitals and medical centres

There are no hospitals in the local study area. However, there is a total of 26 medical centres. St Clair, Glenmore Park and Austral have the highest numbers (10, 4 and 3 medical centres, respectively). Eight out of 18 suburbs in the local study area do not have medical centres, requiring travel to neighbouring suburbs.

It is noted that the Western Sydney Aerotropolis considers provision of health services, including a hospital.

---

[11] This has been estimated by analysing a sample of 20 of the 51 childcare centres in the local study area. The approved number of places for these centres was noted and the minimum (25) and maximum (84) values were multiplied by 51 to provide an estimated range of children across the 51 centres.

The regional study area has twelve hospitals which are listed below:

- Blacktown Hospital
- Nepean Hospital
- Somerset Private Hospital
- Liverpool Hospital
- Camden Hospital
- Blue Mountains District ANZAC Memorial Hospital
- Mount Druitt Hospital
- Nepean Private Hospital
- Springwood Hospital
- Sydney Southwest Private Hospital
- Minchinbury Community Hospital.
- Hawkesbury District Health Service.

South-Western Sydney and Nepean Blue Mountains LHDs also run services for the First Nations people including child and youth health, chronic diseases, mental and drug health, health promotion and others. Nepean Blue Mountains LHD has 6 service providers working with First Nations people, 2 of which are in the regional study area (Springwood Community Health Centre and St Clair Community Health Centre). In addition, there First Nations health centres run by Wellington Aboriginal Corporation Health Service and based in Nepean, Mount Druitt and Blue Mountains hospitals.

4.4.2.2 Aged and residential care

There are an estimated 19 residential care facilities within the regional study area. These facilities provide an estimated 1,462 residential places and 76 restorative care places (EIA, 2023).

There are 9 aged care facilities in the local study area. The suburbs that have such facilities include Austral (4 aged care facilities), Cobbitty (3), Glenmore Park (1) and Kemps Creek (1).

4.4.3 Recreation

Within the regional study area there are thousands of parks and open spaces for recreational uses. For example, in Penrith LGA alone, there are 144 parks and reserves.[12] Liverpool City Council LGA has 512 parks and 217 sporting fields, ovals, and courts.[13]

Recreational land uses surrounding the WSI site include Twin Creeks Golf and Country Club (340 ha estate with 18-hole golf course, function centre, restaurant, etc., and 200 residential dwellings), Robert Green Oval (including Sales Park) and Willmington Reserve (small recreational areas in Luddenham). These areas are located within the 2055 ANEC 20 Contour (whole of the reserves and southern end of the golf course). Additionally, there are 2 playgrounds within approximately 10 km of the WSI site – Downes Park in Wallacia, and Mulgoa Park in Mulgoa. There is also a country club located north-east of the WSI site (Workers Hubertus Country Club).

The Nepean River in Penrith provides opportunities for boating, fishing, rowing, kayaking, and numerous walking tracks along the river.

The Warragamba Dam allows primary and secondary school children to visit on guided excursions to learn about modern water supply and take part in hands-on water activities in the visitor centre; public access to the Dam is restricted, with no fishing, boating, or swimming permitted.[14]

4.4.4 Places of worship

There are an estimated 46 places of worship in the local study area including 38 churches, 6 temples, and 2 mosques. Badgerys Creek and Mount Vernon have no places of worship. All places of worship in the local study area are listed in Table C.14 of Appendix C.

---

12 Penrith City Council 2022, Playgrounds
13 Liverpool City Council 2022, Community Strategic Plan 2022-2032
14 WaterNSW 2022, Warragamba Dam

4.4.5 Community services

There are 12 community centres in the local study area. These include:

- Outer Liverpool Community Services (Austral)
- Bringelly Community Centre
- Floribunda Community Centre (Glenmore Park)
- Glenmore Park Youth and Community Centre (Glenmore Park)
- Surveyors Creek Community Centre (Glenmore Park)
- Luddenham Progress Hall
- St Clair Library
- Autumnleaf Neighbourhood Centre (St Clair)
- Cook Parade Neighbourhood Centre (St Clair)
- St Clair Youth Centre
- Wallacia Progress Hall
- Warragamba Silverdale Neighbourhood Centre.

The suburbs with the highest number of community centres are St Clair (4) and Glenmore Park (3). Most suburbs in the local study area do not have any community facilities.

4.5 Health and wellbeing

This section describes physical and mental health, especially for people vulnerable to social exclusion or substantial change, psychological stress resulting from financial or other pressures, and changes to public health overall.

4.5.1 Need for assistance

In the regional study area, 5.9% of the population have need for assistance with the 3 core activity areas (self-care; mobility; and communication due to long-term health conditions (lasting 6 months or more), a disability, or old age), a similar proportion to NSW average 5.8% (ABS 2021). The LGA in the regional study area with the highest proportion of people with need for assistance is Fairfield (9.3%).

There are 3,796 people in the local study area with need for assistance with the 3 core activity areas, accounting for 4.7% of the population, compared with the NSW average of 5.8%. Suburbs with high proportions of people with need for assistance (greater than the NSW average) are Badgerys Creek (8.9%), Kemps Creek (8.0%), Rossmore (7.4%), Horsley Park (7.2%), and Orchard Hills (6.1%). All other suburbs are consistent with or below the NSW average.

4.5.2 Long-term health conditions

The leading causes of death in South-Western Sydney (SWS) and Nepean Blue Mountains (NBM) Local Health Districts (LHDs) were cancers and circulatory diseases, and respiratory diseases (SWSLHD 2019; NBMLHD 2013). Common health concerns in both LHDs include:

- rising number of persons with type 2 diabetes as a result of increased rates of obesity, lifestyle and dietary changes; and
- ageing population creating "…new and unique challenges in health care planning, service delivery and access to specialised care" (NBMLHD 2013).

The most prominent long-term health conditions in the regional study area are asthma (7.4%), arthritis (7.1%), and mental health conditions (including depression or anxiety) (6.8%), as well as any other long-term health condition (7.7%). The predominant existing long-term health conditions in the local study area are summarised below:

- there is high prevalence of asthma in Glenmore Park (8.4%), Silverdale (8.6%), Wallacia (8.6%), and St Clair (8.6%), compared to the NSW average of 7.8%
- there is high prevalence of mental health conditions (including depression or anxiety) in Warragamba (10.6%) compared to the NSW average of 8.0% (Glenmore Park has the same proportion as NSW)

- there is high prevalence of heart disease (including heart attack or angina) in Horsley Park (5.6% is most prevalent in Linden (5.9%), Horsley Park (5.6%), and Greendale (5.4%), Wallacia (4.9%), Orchard Hills (4.7%), Kemps Creek (4.6%), Bringelly (4.6%), and Mount Vernon (4.5%), compared to the NSW average of 3.9% (Mulgoa has the same proportion as NSW)
- there is high prevalence of lung conditions (including chronic obstructive pulmonary disease (COPD) or emphysema) in Warragamba (2.9%) and Luddenham (2.2%), compared to the NSW average of 1.7%.

4.5.2.1 Long-term health conditions for First Nations people

The most common long-term health conditions for First Nations communities in the regional study area include asthma (16.0%), mental health conditions (14.9%), other long-term conditions (9.8%), and arthritis (6.9%).

Camden (24.8%), Blacktown (18.0%), and Liverpool (16.2%) LGAs have the highest proportion of First Nations people suffering from asthma in the regional study area. All LGAs have higher proportions of First Nations people with asthma compared to the NSW average for all people (7.8%.)

Camden (22.8%), Liverpool (16.1%), Blue Mountains and Fairfield (15.9%), and Blacktown (15.7%) LGAs have the highest proportion of First Nations people suffering from mental health conditions in the regional study area. All LGAs have higher proportions of First Nations people with mental health conditions compared to the NSW average for all people (8.0%).

Camden (18.0%), Blue Mountains (12.5%), and Fairfield (11.0%) LGAs have the highest proportions of First Nations people suffering from other long-term health conditions in the regional study area. All LGAs have higher proportions of First Nations people with mental health conditions compared to the NSW average for all people (7.8%).

First Nations people in the regional study area also have greater proportions of people than the NSW average suffering from lung conditions (including COPD or emphysema) (2.4% compared to 1.7%) and fewer people with no long-term health conditions (54.7% compared to 61.0%).

4.6 Surroundings

This section describes ecosystem services such as shade, pollution control and erosion control, public safety and security, access to and use of the natural and built environment, and aesthetic value and amenity.

4.6.1 Local environment and built form

There are a significant amount of agricultural and manufacturing land uses in the local study area. As detailed in Technical paper 6: Land use and planning (Technical paper 6), most land immediately surrounding WSI currently consists of low density rural residential and agricultural land uses. Rural residential properties in the vicinity range from approximately 1 ha to 40 ha in size. Cattle grazing and horticulture are the main agricultural land uses.

Relatively more dense residential village populations immediately surrounding WSI include Luddenham, Wallacia, Greendale, Silverdale, Warragamba, and Twin Creeks.

There is also a significant amount of land zoned as “ENT – Enterprise” surrounding WSI in the suburb of Badgerys Creek. Enterprise zoning in the Aerotropolis permits land uses that complements or supplement the functions of the city and the Airport as a 24-hr transport hub, i.e., employment lands supporting commercial or industrial sectors.[15] These may include distribution centres, vehicle repair workshops, landscape material supplies, etc., that may benefit from proximity to the airport.

Consultation highlighted that many areas surrounding the WSI site, including much of Luddenham village, have been zoned as “agribusiness”. There is significant uncertainty in the community as to what this means for landowners, particularly what it means in terms of future planning/building approvals on their properties.

---

[15] Western Sydney Planning Partnership 2019, Western Sydney Aerotropolis: summary of key planning documents

4.6.2 Aesthetic values and amenity

As mentioned above, many communities in the local area place importance on a quiet amenity and rural to semi-rural character.

During consultation people commented on the amenity of Luddenham village, noting it is a *"beautiful country town… peaceful… quiet."* Several Luddenham residents noted that the small planes that currently fly overhead including small stunt planes do not cause much bother, and people enjoy seeing them doing tricks above the town.

4.6.3 Existing aircraft overflights and ambient noise

Aircraft Noise Technical Report outlines that the Sydney Basin airspace has been historically overflown to varying degrees by aircraft arriving or departing from Sydney (Kingsford Smith) Airport, Bankstown and Camden Airports, as well as military flights at RAAF Base Richmond and Holsworthy Military Airport and aircraft in transit.

Moreover, the Aircraft Noise Technical Report identified the existing noise conditions around WSI. Twenty-nine noise monitoring terminals were installed to continually measure ambient sound levels for a 2-to-4-week period. It was found that existing ambient noise environment is mostly dominated by road traffic noise which is audible at nearly all locations emanating from a combination of relatively busy roads including the Northern Road, Elizabeth Drive and Badgerys Creek Road, up to the Western Motorway (M4), Westlink (M7 Motorway).

4.7 Livelihoods

This section describes people's capacity to sustain themselves through employment or business, whether they experience personal breach or disadvantage.

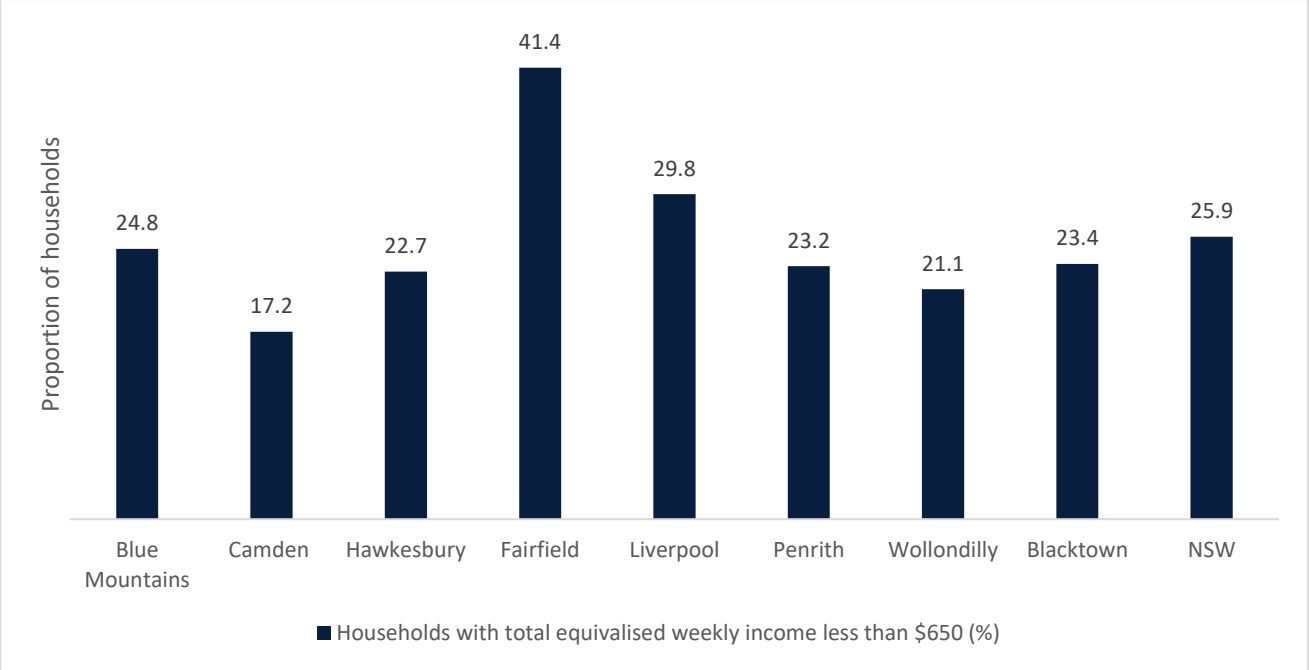
4.7.1 Income and affordability

In the regional study area, 26.3% of households are low-income (earning less than $650 total equivalised household weekly income) compared to an average 25.9% in NSW. Fairfield and Liverpool LGAs have the highest proportions of low--income households (41.4% and 29.8%, respectively). Camden (17.2%) has the fewest low-income households of all LGAs in the regional study area. At the same time, most LGAs in the regional study area have higher mortgage repayments compared to average NSW ($2,167), besides Fairfield ($2,000) and Blue Mountains ($2,035) with slightly lower monthly mortgage repayments, and Penrith with the same as NSW ($2,167). This suggests that the low income residents in most LGAs within the regional study area may be struggling with housing affordability.

In the local study area, median weekly household incomes are higher than the NSW average ($1,829) in all suburbs, besides Rossmore ($1,827), Cecil Park ($1,446), Warragamba ($1,548), Badgerys Creek ($1,271), and Kemps Creek ($1,753) which are lower. The suburbs with greatest median weekly household incomes are Mount Vernon ($3,177) and Luddenham ($2,968), while Badgerys Creek had the lowest ($1,271).

Moreover, 10.8% of households in the local study area are low-income households (earning less than $650 total equivalised household weekly income), compared to 25.9% in NSW. The proportion of low-income households is greatest in Greendale (29.6%), followed by Kemps Creek (26.5%), and Badgerys Creek (25.0%). Glenmore Park has the least low-income households (6.4%).

There is a significantly higher proportion of high-income households (earning greater than $3,000 total equivalised household weekly income) in the local study area (26.0%) compared to the NSW average (6.3%). The proportion of high-income households is greatest in areas such as Mulgoa (40.0%), Glenmore Park (37.2%), Cecil Park (34.9%), and Orchard Hills (34.8%). There are no high-income households in Greendale or Badgerys Creek.



Source: ABS 2021, TableBuilder, HIED

Figure 4.8 Low-income households in the regional study area, 2021

4.7.1.1 Employment

The rate of unemployment across all 8 LGAs in the regional study area increased from 2018 to 2021 (LMIP 20231), though has since declined from late 2021 to December 2022. Unemployment is highest in Fairfield with 8.3% unemployment in December 2022 compared to between 2% and 5.4% in all other LGAs.

The regional study area has similar industry of employment profiles to NSW with construction, retail trade, and health care and social assistance among the top 5 industries of employment in these areas. The regional study area also has a high proportion of people employed in manufacturing.

4.7.1.2 Work from home

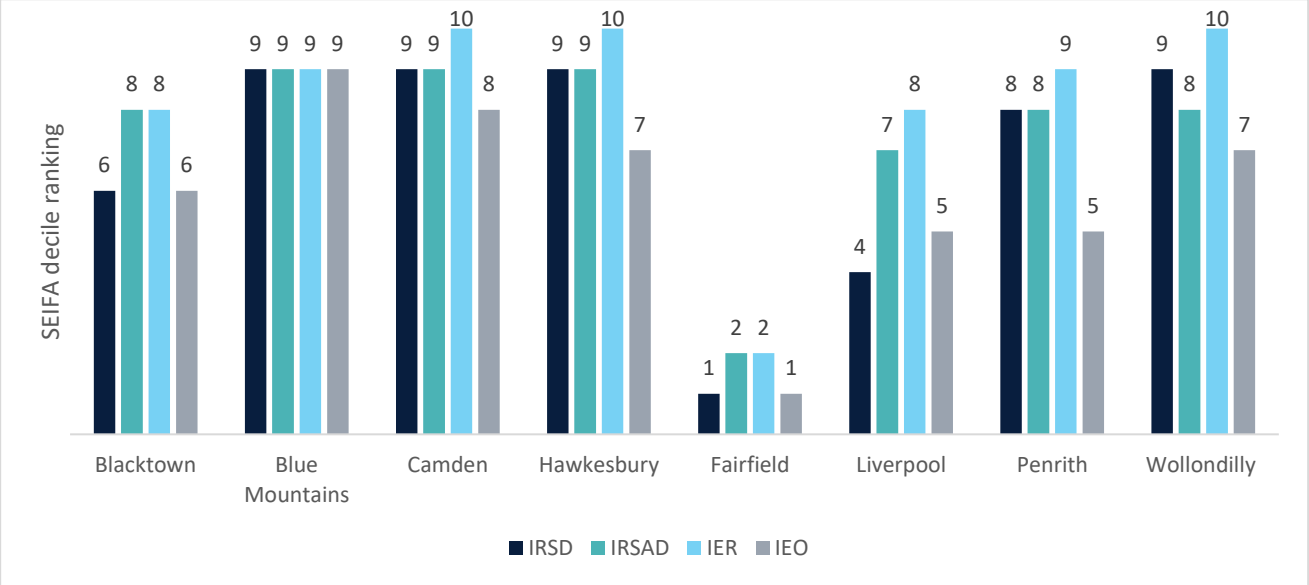
Many people in the local study area (20.8%) and regional study area (24%) worked from home in 2021, though fewer compared to the NSW average (31.0%). As with other areas of Australia and the world, this has increased significantly following 2020 with the COVID-19 pandemic causing many people to work from home during lockdowns. LGAs in the regional study area with highest work from home proportions in 2021 included Blue Mountains (29.7%), Camden (29.1%), and Blacktown (27.1%). Suburbs in the local study area with highest work from home proportions in 2021 included Badgerys Creek (41.5%), Horsley Park and Cecil Park (both 32.6%), and Austral (31.7%).

It should be noted that the 2021 Census was undertaken during a lockdown period in the local area and therefore should not be taken as representative of the ordinary level of people working from home, either pre-COVID or currently.

4.7.2 Socio-economic advantage and disadvantage

The ABS Socio-Economic Index for Areas (SEIFA) assesses the economic and social conditions of households within an area. SEIFA consists of 4 indexes measuring relative advantage and disadvantage: Index of Relative Socio-economic Disadvantage (IRSD); Index of Relative Socio-economic Advantage and Disadvantage (IRSAD); Index of Economic Resources (IER); and Index of Education and Occupation (IEO) (ABS 2018). Areas ranking in the lowest 10% of areas are deemed most disadvantaged and the highest 10% least disadvantaged (see Appendix C for further explanation of the indexes).[16]

Within the regional study area, the Fairfield LGA ranked lowest with decile 1 rankings for all indexes indicating communities are among the most disadvantaged within NSW. Liverpool LGA also ranked low for IRSD and IEO (4th and 5th deciles, respectively) followed by the Blacktown LGA scoring slightly higher (6th decile). All other LGAs were in the top 30.0% of least disadvantaged communities in NSW. SEIFA decile rankings are presented in Figure 4.9.



Source: *ABS 2021, SEIFA*

Figure 4.9 Regional study area SEIFA, 2016

The percentile ranking for each community in the local study area is shown in Table 4.4. Key findings from analysis of the indexes for the communities within the local study area include:

- Greendale, Badgerys Creek, Kemps Creek, Austral, Rossmore and Warragamba ranked within the bottom 50% of communities in all indexes suggesting higher numbers of households with low income, no qualifications, or in low skill occupations; few households with high incomes, or few people in skilled occupations; many households paying low rent and few with owned homes; many unemployed people and few people with a high level of qualification or in highly skilled occupations.
- Cobbitty, Glenmore Park (besides IEO), Luddenham, Silverdale, Mount Vernon and Mulgoa ranked within the top 25% of communities in all indexes suggesting these communities are among the relatively most advantaged and least disadvantaged communities in Australia.

---

[16] Data for 2021 had not been released at the time of writing, so data for 2016 is analysed here. It is noted that the areas analysed have undergone significant changes in populations since 2016 and as such, these findings are indicative only of the 2016 populations in these areas. There is no data for Cobbitty – Bringelly SA2 as this geographic classification was created after 2016.

- Austral, Badgerys Creek, Bringelly, Kemps Creek, Rossmore, St Clair, Wallacia and Warragamba ranked in the bottom 30% of areas for IEO, suggesting higher numbers of people without qualifications, in low skilled occupations, or employed and fewer people with high level of skilled occupations or in highly skilled occupations. This is consistent with the rural/semi-rural character of the region and lack of professional employment opportunities.
- Warragamba had the lowest rankings within the local study area for IRSAD (14), IER (25, and IE0 (6), and second lowest ranking for IRSD (20), suggesting the suburb has greater relative disadvantage than all others.

Table 4.4 SEIFA percentile rankings, 2016

	IRSD	IRSAD	IER	IEO
Austral	25	34	46	18
Badgerys Creek	*13*	22	35	22
Bringelly	53	56	84	25
Cecil Park	75	72	95	36
Cobbitty	**94**	**95**	**98**	75
Glenmore Park	**86**	**89**	**94**	61
Greendale	30	44	41	31
Horsley Park	52	63	86	32
Kemps Creek	31	42	66	24
Luddenham	**85**	**90**	**99**	54
Mount Vernon	**95**	**94**	**100**	58
Mulgoa	**93**	**92**	**98**	68
Orchard Hills	**76**	**81**	**94**	47
Rossmore	28	41	55	26
Silverdale	**87**	**84**	**99**	37
St Clair	58	53	68	*23*
Wallacia	71	67	87	30
Warragamba	20	*14*	*25*	*6*

Source: ABS 2016, SEIFA

Note: Lowest percentiles for each index are highlighted grey while highest percentiles for each index are highlighted green

4.7.3 Tourism industry

The following information on tourism in the Blue Mountains has been sourced from the Blue Mountains City Council's *Tourism Industry Profile 2021*.

The tourism industry is an important part of the regional study area economy, particularly in the Blue Mountains. Tourism brings approximately 4.4 million visitors to the Blue Mountains each year, provides 2,400 jobs ($121 million in local wages and salaries), 800 registered tourism businesses, generates $484 million in turnover ($169 million for supply chains), and supports $221 million in Gross Regional Product (GRP).

Tourism is the second largest industry of employment in the Blue Mountains, with two-thirds of these jobs (1,612/68.2%) being supported within the accommodation and food services sector, followed by retail trade, and transport, postal, and warehousing. Tourism businesses in the Blue Mountains are mostly concentrated in Leura – Katoomba, Springwood – Winmalee, and Blaxland – Warrimoo – Lapstone. Mount Irvine, Blackheath, and Mount Victoria are also important tourism areas for the region.

Average visitation over the 10 years prior to 2020 saw the main visitor type as domestic daytrip (72%), followed by domestic overnight (25%), and international overnight (3%). The proportion of domestic overnight visitors in 2020 increased to 34%, while domestic day trip and international overnight visitors decreased (66% and 1% respectively).

Covid-19 and recent natural disasters have had a damaging effect on the tourism industry in the Blue Mountains, with visitation dropping from over 4 million people per year since 2016 to around 2.8 million in 2020. There was a direct loss in revenue of $118 million over 2019/20 – 2020/21, a total gross revenue loss of $186 million (including direct, supply chain, and consumption effects), and a loss of 599 jobs from the workforce. Destination NSW's *Blue Mountains Visitor Profile: Year ended September 2022,* notes that visitation is rising again, with 3.7 million visitors from September 2021 – September 2022, with majority of these being domestic travellers from within NSW.

World Heritage Listing has been seen to increase tourist visitation from overseas within Australia for sites including the Tasmanian Wilderness, Kakadu, Uluru, and the Great Barrier Reef.[17] However, a study published in Tourism Management Perspectives notes that the majority of visitors to GBMWHA were unaware they had visited a World Heritage List Area, meaning the listing may have little effect on visitation to the area.[18]

4.8 Decision-making systems

This section describes people's capacity to participate in decision making systems and accessibility to complaint, remedy and grievance mechanisms.

4.8.1 2016 EIS for construction of the airport

The 2016 EIS and Airport Plan were finalised and submitted to the then Minister for the Environment and Energy for consideration. Consultation for the 2016 EIS involved one-on-one meetings, letters, organisational briefings, telephone and email communications with Government stakeholders at all levels (local, state, and national), and many other stakeholders including tourism, environment, business, education, property groups, as well as airlines, aviation industry groups, airport operators, and financiers.[19] Additionally, 16 community pop-up stalls were held at local events in Liverpool, Penrith, Blacktown, Fairfield, Blue Mountains, Wollondilly, Camden, and Parramatta LGAs to provide community members with information about the project and an opportunity to engage with the project team (approximately 4,153 community members approached the stalls). There were also 6 information sessions for Western Sydney Infrastructure Plan (WSIP) where project team provided attendees with information on WSI. These attendees were asked to fill in surveys about the project (205 responses were received).

---

17 Department of Climate Change, Energy, the Environment and Water 2021, Implications of World Heritage Listing

18 Hardiman, N. & Burgin, S. 2013, World Heritage Area listing of the Greater Blue Mountains — Did it make a difference to visitation?

19 DITRDCA n.d., Environmental Assessment

During public exhibition of the 2016 EIS and airspace design 4,975 submissions were received from 3,973 submitters (4,810 from community members, 43 from government, and 122 from organisations).[20] The most frequently raised issues in submissions were GBMWHA, flight paths, emergency fuel jettison, general health impacts, and overflight noise.

Following public exhibition and review of submissions, the construction and operation of facilities for single runway operations were approved, while the indicative airspace design (flight paths) was not approved, requiring design of new flight paths and establishment of an Expert Steering Group to oversee the design process.

Consultation for this SIA and Draft EIS identified significant distrust in the Government during and following the 2016 EIS process for construction of the airport which left many people feeling like they either had not been consulted, had not been consulted properly, or did not have a say in decisions affecting their lives.

The 2016 EIS consultation feedback noted that not enough information had been provided to allow people to make truly informed submissions during the public exhibition period.

4.8.2 Independent Community Commissioner and Community Consultative Committee

In May 2021, the then NSW Minister for Planning and Public Spaces, appointed Professor Roberta Ryan as the Western Sydney Aerotropolis Independent Community Commissioner, to "assess the issues and concerns of landowners impacted by governments' plans and to make recommendations on the optimal way forward."[21] One of the key recommendations of the Commissioner in her recommendations to the NSW Minister for Planning and Public Spaces in August 2021, following consultation with over 100 landowners, was to establish a Western Sydney Aerotropolis Community Consultative Committee (Aerotropolis CCC).

The Aerotropolis CCC provides an engagement forum for community and stakeholders during planning and development of the Aerotropolis. The Independent Community Commissioner chairs the CCC, which consists mostly of small landowners within the Aerotropolis. Members of the CCC provide advice to all levels of government on impacts and solutions to support the community and to involve them in the process.

4.8.3 Rezoning

While the making and amending of Councils' local environmental plans (LEPs) including public exhibition processes, are matters of local and state government and outside of the scope of this project, consultation findings identified that people's experience with rezoning within the local study area have shaped their views, concerns, and aspirations in relation the project.

There has been a significant number of recent and ongoing rezoning of land uses occurring in the local area in the past decade e.g., Aerotropolis planning, South West Growth Area as well as smaller parcels.

During consultation, many community members expressed concerns around land use planning and rezoning in the Aerotropolis, particularly noting the uncertainty around what they were allowed to do on their properties, and what "agribusiness" zoning means.

---

20 Department of Infrastructure and Regional Development 2016, Western Sydney Airport Environmental Impact Statement: Volume 5, Submissions report

21 NSW Government 2023, Independent Community Commissioner

4.9 Key baseline findings

Key baseline findings

- The local study area has been undergoing population change and is anticipated to experience population growth by 2041 – this may result in a different community profile.
- The local area is split between areas that are more family-oriented with children (e.g., Luddenham, Mount Vernon, and Silverdale) and others with larger proportions of older age groups (e.g., Badgerys Creek, Horsley Park, Kemps Creek, Blaxland).
- Some residents within the local area have lived in their homes for a long time, potentially showing high levels of connection to place and community. This was particularly evident in Luddenham.
- Local communities, particularly in the Blue Mountains, Camden, Wollondilly and parts of Liverpool LGAs, value the semi-rural to rural character and associated quiet amenity.
- The local area is overflown already, by planes coming from or arriving at Sydney KSA, or smaller aircrafts operated out of smaller airports present in the local area.
- Some areas have high levels of multicultural diversity with high representations from the Indian, Chinese, Maltese and Italian communities, including communities directly adjacent to the WSI site.
- Some areas surpass the NSW average in terms of First Nations population.
- The Greater Blue Mountains is an area of significant value that was listed as a World Heritage Area for outstanding examples of vegetation, habitats and plant communities. The World Heritage Committee is aware of the WSI project and of the project and has requested to review the EIS once available. The Blue Mountains Area is a significant contributor to the local economy and recreation opportunities.
- There are numerous community, health, education and recreational facilities in the regional study area as well as high quantities of open space.
- In terms of land use, there is a mix of residential, agricultural and industrial zonings in the local area, with significant numbers of recent or ongoing rezonings that are creating a high level of uncertainty in the community.
- There are areas with high levels of housing stress representing communities with potentially lower resilience towards change and already affected by high costs of living.
- Many people do not have access to local employment, which is bound to change with new opportunities created by the Aerotropolis and WSI.
- At the time of the 2021 Census, working from home had increased in the local and regional study areas compared to the previous 2016 Census.
- There is a mix of socio-economic advantage and disadvantage in the local area, with higher levels of disadvantage in Warragamba, Badgerys Creek, Kemps Creek and Greendale.
- There is existing uncertainty and distrust towards the WSI project due to communities' experience during the 2016 EIS, and there will be high levels of scrutiny during this EIS process.

Chapter 5 Consultation

This chapter provides a summary of the key consultation findings from the EIS engagement and from SIA targeted consultation in relation to the project.

Consultation feedback about the approvals, construction, and operation of the WSI was provided during engagement carried out for this SIA and for the Draft EIS. This SIA acknowledges that people's experience with the 2016 WSI EIS process and current construction of the airport has shaped their views, concerns and aspirations.

Consequently, this chapter provides findings of people's views about WSI. However, these will not be addressed as part of the impact assessment as they fall outside the scope of this project.

5.1 Findings about WSI

5.1.1 Benefits

WSI was viewed as a 'city shaping' project that will play a significant role in creating a new identity and character for the emerging Western City Parklands. An expectation that WSI will help raise the profile and international awareness of Western Sydney, including opportunities for both new and existing commercial activities, industry and agribusiness was raised.

Figure 5.1 provides a summary of the benefits and opportunities identified about WSI in the online survey. While it is understood that these benefits would not be realised without the project, for the purpose of this SIA they are considered out of scope, as they have already been assessed as part of the 2016 EIS.

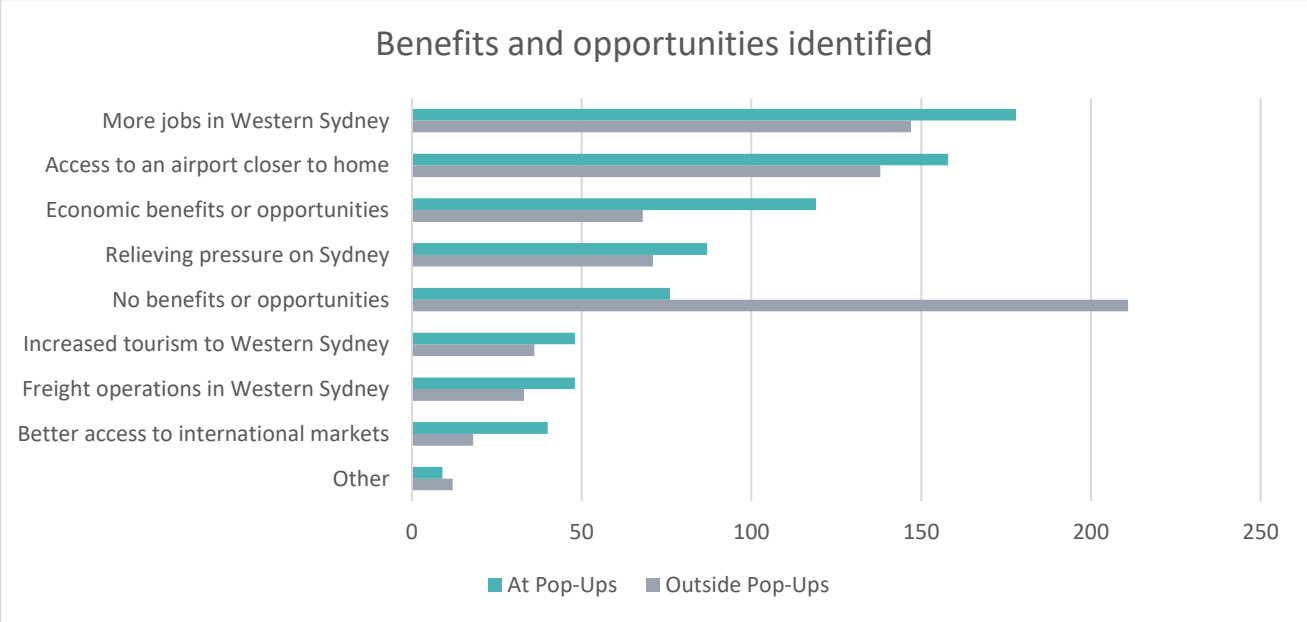


Figure 5.1 Benefits and opportunities identified in the survey

5.1.2 Concerns

While concerns about WSI were raised, and it is understood they fall outside of this project's scope, this section provides a summary of key issues as they provide an indication of community experiences that are shaping views about the project. Concerns about WSI, which excluded concerns about the project, are as follows:

- future road traffic
- construction impacts (noise, dust)
- lack of infrastructure and services for local communities and industry to benefit from WSI (including transport and freight)
- responsiveness of Western Sydney Airport Co Limited (WSA Co) to community concerns and complaints.

In particular, it was found that the local community experience with land acquisition payments and the overall land acquisition process as part of WSI, shaped people's concern in regard to the potential acquisitions to mitigate noise impacts associated with the project.

5.2 Project EIS engagement

Figure 5.2 outlines the concerns and issues identified in the online survey at pop-ups and outside of pop-ups, which gives a better understanding about heightened concerns for residents.

Key findings from EIS engagement included concerns about noise impacts, health and wellbeing, and environmental impacts – including the World Heritage status of the Greater Blue Mountains Area – as well as concerns around lack of information regarding flight paths.

Interest in the protection of heritage and the need for new (or changes to) planning controls were also raised during Draft EIS engagement.

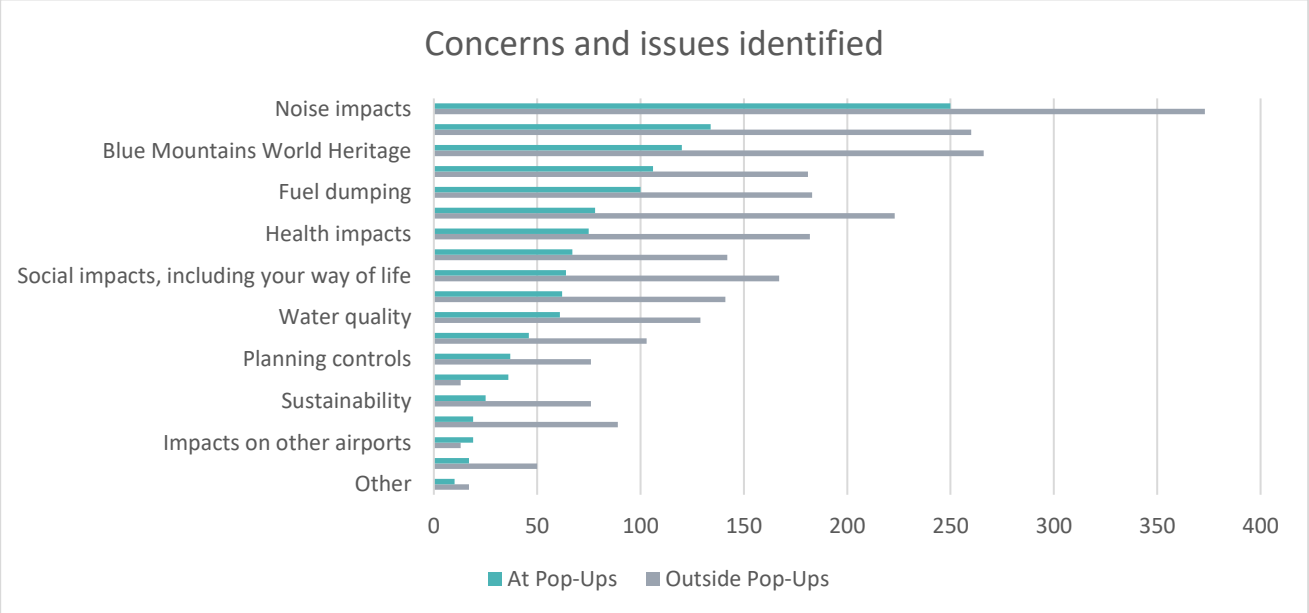


Figure 5.2 Concerns raised in EIS online survey

5.3 SIA consultation

During SIA consultation, key stakeholders and community representatives raised concerns about the flight paths and WSI operation. This section focused on the feedback directly related to flight path design and has been organised by stakeholder group.

5.3.1 Local councils, health services and education services

Seven interviews with local council representatives were conducted, and a total 6 interviews were conducted with local health and education services. Appendix B details the specific concerns and opportunities raised by stakeholders and where they have been addressed in this report.

Key concerns raised by local council and social services included:

- Changes to way of life and lifestyle, including enjoyment of personal properties and open space (addressed in Section 6.2)
- people needing to relocate due to noise and flow on effects on community cohesion (see Section 6.1.1)
- impacts to Aboriginal cultural heritage (addressed in Section 6.3.1)
- noise and air quality changes affecting health and wellbeing and environment (addressed in Sections 6.5 and 6.6.2)
- impacts on most vulnerable groups, including people with pre-existing health conditions and children (addressed in Sections 6.1.2 and 6.5.3)
- impacts to the Blue Mountain heritage sites and flow on effects on tourism (addressed in Sections 6.6.1 and 6.7.2).

5.3.2 Residents

Thirteen interviews with residents were conducted over 2 field visits. Appendix B provides the specific concerns, and opportunities raised by residents. Key concerns included:

- uncertainty over flight path process and noise impacts (addressed in Section 6.8.1)
- sleeping at nights is the main concern and long-term health issues associated (addressed in Section 6.5.1)
- impacts on vulnerable groups including children, the elderly and people with underlying health conditions (addressed in Sections 6.1.2 and 6.5.3)
- disruption for people working from home (addressed in Section 6.2.1)
- interest in obtaining more information about potential impacts and compensation measures (addressed in Section 6.8.1).

5.3.3 Community organisations

Eleven interviews were conducted with representatives of progress associations, chambers of commerce and environmental organisations. Appendix B outlines the specific concerns and opportunities raised by these groups. Key concerns included:

- changes to the peace and quiet (addressed in Section 6.2)
- socio-economic sustainability of Luddenham village, schools, services and business (addressed in Section 6.4.2)
- impacts on vulnerable groups, especially ageing population and people with medical conditions (addressed in Section 6.1.2)
- sleep deprivation and cardiovascular illnesses (addressed in Section 6.5)
- property values (addressed in Section 6.7.1)
- Greater Blue Mountains World Heritage Area listing and impacts to environmental and social values (addressed in Section 6.6.1)
- lack of information and engagement only done as a 'tick the box' exercise (addressed in Section 6.8.1).

5.3.4 Consultation-led mitigation measures

During consultation, participants were asked about how the Australian Government could address their concern and/or enhance any potential benefits associated with the project. Appendix B provides a summary of the feedback provided.

Key recommendations included:

- increased disclosure by providing information about flight paths and impacts prior to EIS submission, as well as about sites/properties that will be considered for acquisition and noise amelioration measures (addressed in Section 8.3)
- more education and information to improve people's understanding of what living with noise will be like and provide information that is easily understood (addressed in Section 8.3)
- enhance the use of targeted engagement methods, such as tapping into existing networks, run focus groups and information sessions on specific topics. Use different mediums of communication to engage (videos, podcasts) and consider the communication needs of older populations, Culturally and Linguistically Diverse (CALD) communities and farmers (addressed in Section 8.3)
- invest in biodiversity offsets in the Blue Mountains to help affected species, support the rainforest conservancy and other initiatives to protect the environment, and provide ongoing environmental monitoring to protect the Greater Blue Mountains World Heritage Area (addressed in Section 8.2).

Chapter 6 Impact assessment

This chapter provides an assessment of the potential social impacts derived from the project. Impacts are assessed for the 2033 and 2055 scenarios.

6.1 Community

6.1.1 Changes to community composition and cohesion

An increase in the noise levels experienced by those in the local and regional study area may lead to people deciding to relocate so they can maintain their current lifestyle. This can often result in changes to community composition and cohesion for both those who stay, and those who leave.

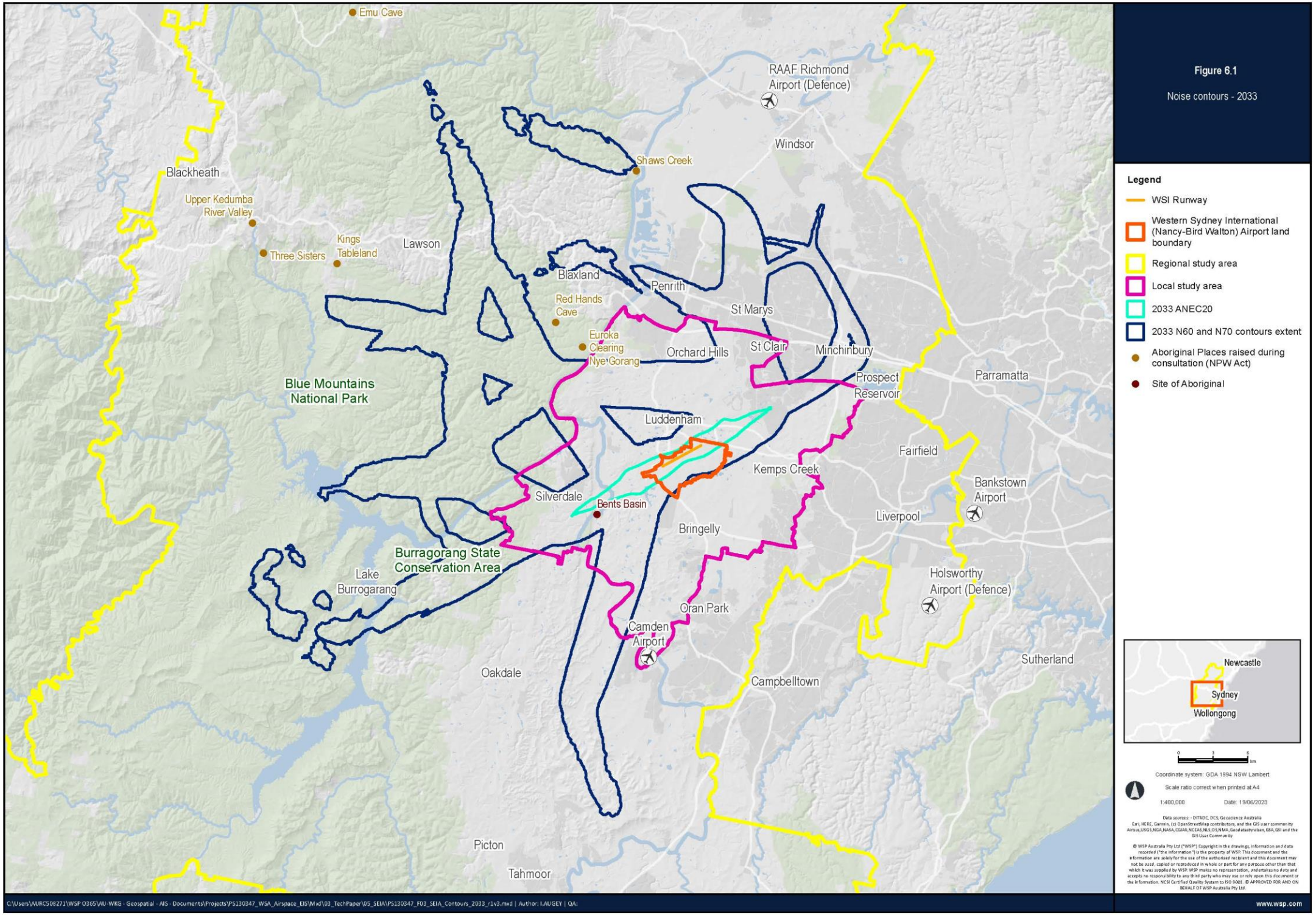
This impact likelihood is determined by understanding community views and concerns about changes to liveability and community composition. During SIA consultation, local councils and residents alike raised concerns about the potential loss of community cohesion. They noted that communities are already experiencing changes to community composition due to rezoning, as evidenced by a 25.3% decrease in population in Badgerys Creek between 2016 and 2021, a 9.8% decrease in Greendale and a 6.5% decrease in Kemps Creek.

One resident explained that *"We would prefer not to move but would have to if there is a lot of noise. We already lost the neighbour next door, that was a big loss. We have close relationships with our neighbours, we keep in touch with all of our neighbours" (Mt Vernon).*

The magnitude of this impact is determined by understanding the proportion of people that will be subject to different levels of aircraft noise. According to Technical paper 1, by 2033 approximately 74 people may be living within the 25 ANEC composite contours and 20 people within 30 ANEC composite contours. These populations are located within the localities of Luddenham (1,927 people), Badgerys Creek (168 people), Kemps Creek (2,121 people), Greendale (314 people) and Silverdale (4,543 people). Together, these people represent 0.8% of their combined populations (see Figure 6.1). For Badgerys Creek, Kemps Creek and Luddenham people living in 30 ANEC contours represent an additional 0.5% of their combined populations.

Additionally, there might be 310 people living in 20 ANEC composite contour. Considering the community itself values a peaceful and quiet lifestyle, it is possible a portion of people living within ANEC 20 may decide to relocate to maintain that lifestyle. If the total population within 20 ANEC decided to relocate, this would account for 2.9% of their combined populations and 0.3% of the local study area. Noting this percentage may be larger for Badgerys Creek due to its small population.

Consequently, it is likely that a population reduction would result in a moderate change to community composition and cohesion for those deciding to stay within ANEC. They may experience a High pre-mitigated impact for the 2033 scenario. While communities outside of the ANEC, and within the local study area, may experience a Medium pre-mitigated impact.


Emu Cave
RAAF Richmond Airport (Defence)
Windsor
Shaws Creek
Blackheath
Upper Kedumba River Valley
Three Sisters
Kings Tableland
Lawson
Blaxland
Penrith
Red Hands Cave
St Marys
Euroka Clearing
Nye Gorang
Orchard Hills
St Clair
Minchinbury
Blue Mountains National Park
Prospect Reservoir
Parramatta
Luddenham
Fairfield
Kemps Creek
Silverdale
Bents Basin
Bankstown Airport
Liverpool
Bringelly
Burragorang State Conservation Area
Lake Burrogarang
Holsworthy Airport (Defence)
Oran Park
Camden Airport
Sutherland
Oakdale
Campbelltown
Picton
Tahmoor
Figure 6.1
Noise contours - 2033
Legend
WSI Runway
Western Sydney International (Nancy-Bird Walton) Airport land boundary
Regional study area
Local study area
2033 ANEC20
2033 N60 and N70 contours extent
Aboriginal Places raised during consultation (NPW Act)
Site of Aboriginal
Newcastle
Sydney
Wollongong
0
3
6
km
Coordinate system: GDA 1994 NSW Lambert
Scale ratio correct when printed at A4
1:400,000
Date: 19/06/2023
Data sources: - DITRDC, DCS, Geoscience Australia
Esri, HERE, Garmin, (c) OpenStreetMap contributors, and the GIS user community
Airbus,USGS,NGA,NASA, CGIAR,NCEAS,NLS,OS,NMA,Geodatastyrelsen, GSA, GSI and the GIS User Community
© 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\03_TechPaper\05_SEIA\PS130347_F03_SEIA_Contours_2033_r1v3.mxd | Author: I.AUGEY | QA:
www.wsp.com

By 2055, for those living within the regional study area (see Figure 6.1), as per Technical paper 1, it is anticipated that about 175,000 people (representing about 9.5% of those living in the regional study area) would be exposed to an average of more than 10 daily movements above 60 dB(A). Additionally, 31,700 people (about 2.3% of those living in the regional study area) would be exposed to an average of more than 2 movements above 60 dB(A) between 11 pm and 5.30 am daily, which might result in sleep disturbance during sleep hours. Notably, the more vulnerable communities living in Fairfield LGA are excluded from these effects as Fairfield is outside the N60 contours. Given the larger populations within LGAs, it can be argued that it is unlikely that people deciding to relocate would have a significant impact on community cohesion or the sense of place for those deciding to stay, resulting on a Low pre-mitigated impact for 2033.

By 2055 it is anticipated that 200 people may be living within the 25 ANEC contours and 1,120 in 20 ANEC contour. In total, this will represent about 0.5% of the 2041 forecasted population for the local study area. Additionally, 161,000 people are anticipated to be living within N60's 24-hour contours, representing about 8.7% of the total forecasted population in the regional study area (see Figure 6.2).

Arguably, the 2055 population in the abovementioned areas would already be experiencing changes to community composition resulting from various planned developments and will be living in areas under new planning frameworks outside of ANEC 20. Therefore, it is unlikely the 2055 scenario would lead to further community composition loss, as by that time new and established residents would already be aware and experiencing disturbances from overflight noise.

As such, by 2055, it anticipated to be unlikely that many people will decide to move out of the area due to increased noise exposure. This means there is a Low pre-mitigated impact to community composition for the local study area and no impact for the regional study area.

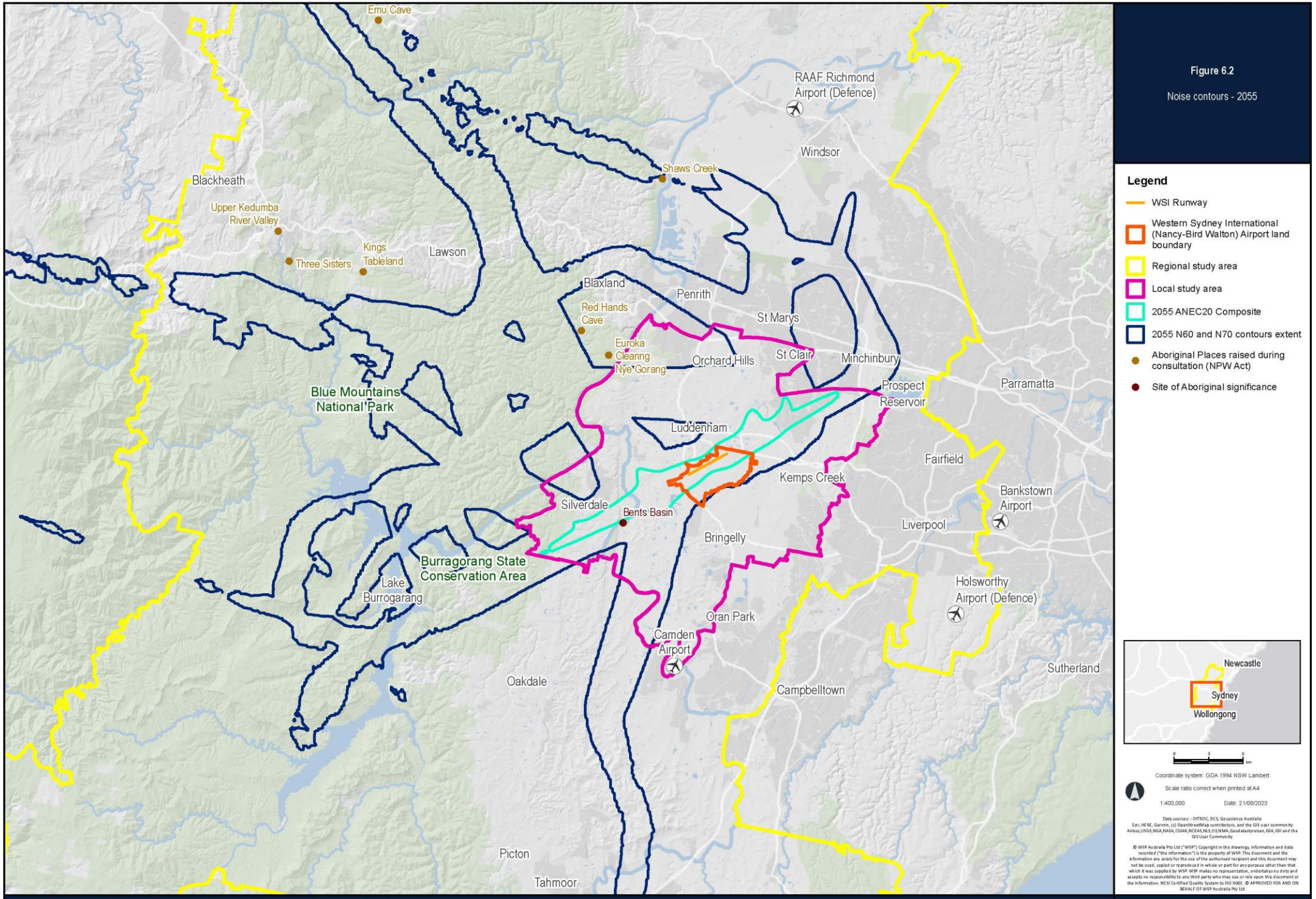

Emu Cave
RAAF Richmond Airport (Defence)
Windsor
Shaws Creek
Blackheath
Upper Kedumba River Valley
Three Sisters
Kings Tableland
Lawson
Blaxland
Penrith
Red Hands Cave
St Marys
Euroka Clearing
Nye Gorang
Orchard Hills
St Clair
Minchinbury
Prospect Reservoir
Parramatta
Blue Mountains National Park
Luddenham
Fairfield
Kemps Creek
Bankstown Airport
Silverdale
Bents Basin
Liverpool
Bringelly
Burragorang State Conservation Area
Lake Burrogarang
Holsworthy Airport (Defence)
Oran Park
Camden Airport
Sutherland
Oakdale
Campbelltown
Picton
Tahmoor
Figure 6.2
Noise contours - 2055
Legend
WSI Runway
Western Sydney International (Nancy-Bird Walton) Airport land boundary
Regional study area
Local study area
2055 ANEC20 Composite
2055 N60 and N70 contours extent
Aboriginal Places raised during consultation (NPW Act)
Site of Aboriginal significance
Newcastle
Sydney
Wollongong
0
3
6
km
Coordinate system: GDA 1994 NSW Lambert
Scale ratio correct when printed at A4
1:400,000
Date: 21/08/2023
Data sources - DITRDC, DCS, Geoscience Australia
Esri, HERE, Garmin, (c) OpenStreetMap contributors, and the GIS user community
Airbus,USGS,NGA,NASA,CGIAR,NCEAS,NLS,OS,NMA,Geodatastyrelsen, GSA, GSI and the GIS User Community
© 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\06_TechPaper_PostEIS_Sub\05_SEIA\PS130347_F0602_SEIA_Contours_2055_r1v1.mxd | Author: R.Choi | QA:
www.wsp.com

Table 6.1 Summary of changes to community composition and sense of belonging

Scenario	Extent	Likelihood	Magnitude	Pre-mitigated impact
2033	Luddenham, Badgerys Creek, Kemps Creek, Greendale and Silverdale	Likely	Moderate	High
	Local study area (outside the areas identified above)	Possibly	Minor	Medium
	Regional study area	Unlikely	Minor	Low
2055	Luddenham, Badgerys Creek, Kemps Creek, Greendale and Silverdale	Unlikely	Minor	Low
	Local study area (outside the areas identified above)	Unlikely	Minor	Low
	Regional study area	No impact anticipated		

6.1.2 Increased inequality

There are several ways aircraft noise can impact a population's inequality, by either creating and/or exacerbating inequality. Research has documented how aircraft noise can lead to health, economic and educational disparities (Flindell et al., 2016; and Shield et al., 2018).

For the purpose of this SIA, gauging the likelihood of aircraft noise-related disturbance on inequality is achieved through understanding existing vulnerability conditions, consulting with affected communities and understanding people's exposure to aircraft noise.

Chapter 4 identified a high concentration of people living in vulnerable conditions within the local and regional study areas. These residents may experience economic burden as they seek additional health and wellbeing support and/or invest in measures to reduce the disturbance.

Vulnerability conditions within both the local and regional study areas, as identified in census data, include:

- long-term mental health conditions including depression or anxiety (7.1%)
- as per SEIFA indicators, the least advantaged LGAs are Greendale, Badgerys Creek, Kemps Creek, Austral, Rossmore and Warragamba, while the least disadvantaged LGAs are in Cobbitty, Luddenham, Silverdale, Mount Vernon and Mulgoa
- Fairfield, Liverpool and Blacktown are the most disadvantaged LGAs, as per SEIFA indexes, within the regional study area
- high proportions of children and young families live in Luddenham, Mount Vernon and Silverdale; and high proportions of older age groups (60+) live in Badgerys Creek, Horsley Park, Kemps Creek.

During consultation, additional vulnerability conditions were identified for the following residents:

- Luddenham residents experiencing stress about changes and uncertainty regarding the future of their community
- CALD populations
- people permanently living in caravans with no noise insulation.

The volume of flight movements expected to occur arguably corresponds to the magnitude of the inequality impact expected. According to Technical paper 1, by 2033:

- 132,000 people would be exposed to an average of more than 10 daily movements above 60 dB(A) within the Blacktown, Penrith, Blue Mountains, Liverpool, Camden and Wollondilly LGAs
- 31,700 people would be exposed to an average of more than 2 movements above 60 dB between 11 pm and 5.30 am daily within the regional study area, except for in Fairfield LGA (i.e., notable due to Fairfield's higher socio-economic disadvantage; if they were to be exposed at night, this could have led to a higher overall impact rating)
- 5,100 people would be exposed to an average of more than 5 daily movements above 70 dB(A) within the regional study area, except for in Fairfield and Hawkesbury. This level of noise is associated with events that can impact a normal conversation, even in urban areas.

Given the multiple vulnerability conditions to which the populations in the local and regional study areas are exposed, it can be argued that noise impacts would be experienced less acutely within the overall study area. As such, it is possible that aircraft noise could lead to a minimal increase of socio-economic disadvantage, resulting on a Medium pre-mitigated impact. However, for those under the N60 24-hour, N60 night-time and N70 contours who are experiencing disadvantage, it is almost certain that the change would be experienced as a moderate impact, resulting in a high pre-mitigated impact in 2033.

For the 2055 scenario, it is anticipated that:

- 1,120 people may be living in 20 ANEC contour, which affects the communities of Luddenham, Wallacia, Badgerys Creek, Kemps Creek, Horsley Park, Mount Vernon, Greendale, and Silverdale
- 175,000 people would be exposed to an average of more than 10 daily movements above 60 dB(A) on a daily basis within the regional study area
- 91,600 people would be exposed to an average of more than 2 movements above 60 dB(A) between 11 pm and 5.30 am daily within the regional study area, which might result on sleep disturbance during sleep hours
- 13,000 people would be exposed to an average of more than 5 daily movements above 70 dB(A) within the regional study area.

By 2041, WSI, the Western Sydney Aerotropolis and Bradfield City Centre, together with new infrastructure and services associated with those developments, are expected to improve the socio-economic conditions within the regional study area and result in about 5% population growth. As such, at the time of writing this report, it was not possible to forecast the number of people living under vulnerable conditions in proportion to the increase of people subject to noise. Therefore, it is not possible to assess the impact of 2055 on inequality within the regional study area. Nevertheless, it is possible to indicate if within additional groups of people subject to noise, they are experiencing disadvantage, the change would almost certainly be experienced as moderate, resulting in a high pre-mitigated impact.

Table 6.2 Summary of increased inequality impact

Scenario	Extent	Likelihood	Magnitude	Pre-mitigated impact
2033	Vulnerable groups under ANEC 20, N60 and N70 contours	Almost certain	Moderate	High
	Local study area	Possibly	Minimal	Low
	Regional study area	Possibly	Minimal	Low
2055	Vulnerable groups under ANEC 20, N60 and N70 contours	Almost certain	Moderate	High
	Local study area	Possibly	Minimal	Low
	Regional study area	Not possible to be determined at this point		

6.2 Way of life

6.2.1 Changes to way of life as a result of loss of residential amenity

Aircraft noise during the day or at night could result in changes to way of life via a loss of residential amenity and/or potential changes to air quality. Changes to way of life might include disruption to working from home, as well as changes in the way people use and enjoy residential indoor and outdoor space (backyards).

The likelihood of this impact is determined by understanding the characteristics of those who may be affected and by assessing consultation findings. As per Chapter 4, the local study area is characterised by low density rural residential and agricultural land uses, where rural residential properties range from approximately 1 ha to 40 ha in size. More dense residential village populations immediately surrounding the WSI site include Luddenham, Wallacia, Greendale, Silverdale, Warragamba, and Twin Creeks Golf Club and Country Club.

During consultation, stakeholders raised that noise impacts should be considered from an indoor and outdoor space perspective, noting that the enjoyment of recreational space is a key reason people choose to live in the area (Wallacia Progress Association). However, most residents interviewed in Luddenham had limited understanding of how flight paths would change their way of life. One Luddenham resident noted that due to concerns about air quality, they would potentially stop growing fruit and vegetables in their backyard.

However, changes to enjoyment or use of residential amenity might not change for others. In Wallacia, one resident was mostly ambivalent about noise, noting that "*noise won't stop me from doing my things*".

The magnitude of this impact is gauged by understanding the potential amenity changes resulting from the project. As previously outlined, Technical paper 1 identifies that by 2033 there would be about 310 people located in the ANEC 20 contour and 74 people located within the 25 ANEC. Moreover, 132,000 people would be exposed to an average of more than 10 daily movements above 60 dB(A) within the Blacktown, Penrith, Blue Mountains, Liverpool, Camden and Wollondilly LGAs, and 5,100 people would be exposed to an average of more than 5 daily movements above 70 dB(A) within the regional study area. The 70 dB(A) level is associated with events that can impact a normal conversation, even in urban areas.

Regarding changes to air quality, Technical paper 2: Air quality (Technical paper 2) identified that no unacceptable impacts to the local air quality are expected, meaning the project would not result in any tangible or significant impact to air quality including odour.

It can be argued that changes to way of life are likely to be experienced within the local study area, and that those changes would result on a moderate change for people, resulting in a High pre-mitigated impact. For the regional study area, it is possible that minor changes to the enjoyment of residential properties would be experienced, resulting on a Medium pre-mitigated impact.

By 2055, it is anticipated that 200 people may be living within the 25 ANEC contours and 1,120 within the 20 ANEC contours. By 2055, it is anticipated that noise insulation improvements will have already been made for those within 25 ANEC (2033).

Technical paper 2 identified minor exceedances on NO_2 and $PM_{2.5}$ for the 2055 forecast. Some small and infrequent exceedances of the 1-hr NO_2 criteria are predicted at a few receptors adjacent to the airport site, near the northern boundary and north-west of WSI (R19 and R135). However, these would not result in any tangible effect on air quality. It is noted that the area surrounding the airport has been rezoned by the State Government, as per the planning initiatives, and is no longer suitable for residential development.

Consequently, it is possible that the increased frequency of aircraft movements by 2055 would lead to loss of residential amenity for those within the local study area who will be living in existing dwellings outside ANEC 20 and 25 in 2033. The result will be a moderate change for these people and a Medium pre-mitigated impact. For the regional study area, it is anticipated that new residential developments will meet higher noise insulation standards, and by that time people will be accustomed to aircraft noise, resulting in a Low pre-mitigated impact.

Table 6.3 Summary of changes to way of life due to residential amenity loss

Scenario	Extent	Likelihood	Magnitude	Pre-mitigated impact
2033	Local study area	Likely	Moderate	High
	Regional study area	Possibly	Minor	Medium
2055	Local study area	Possibly	Moderate	Medium
	Regional study area	Possibly	Minimal	Low

6.2.2 Changes to the use and enjoyment of social infrastructure

Research has documented that aircraft noise can make it difficult for people to have conversations or to simply enjoy the views and quiet in public and private spaces, especially for those who live near airports or under flight paths (van Kamp et al., 2015; and Flindell et al., 2011). As such, the likelihood of aircraft noise and visual impacts changing the way people enjoy and use public and private infrastructure is determined by understanding the characteristics of the study area, consultation findings, and evidence of this impact occurring elsewhere.

As outlined in Chapter 4, there are several large recreation and tourism-based land use assets within the study area. In Penrith LGA alone, there are 144 parks and reserves. In the local study area, there is Twin Creeks Golf Club, Sales Park and Wilmington Reserve located within the 2055 ANEC 20 Contour (see Figure 6.3).

Within the local study area, the following infrastructure is found:

- 3 churches are located in proximity of ANEC 20 for the 2023 scenario: Luddenham Uniting Church, Holy Family Church, Free Church of Tonga
- 3 playgrounds are within approximately 10 km of WSI: Sales Park in Luddenham, Downes Park in Wallacia, and Mulgoa Park in Mulgoa.

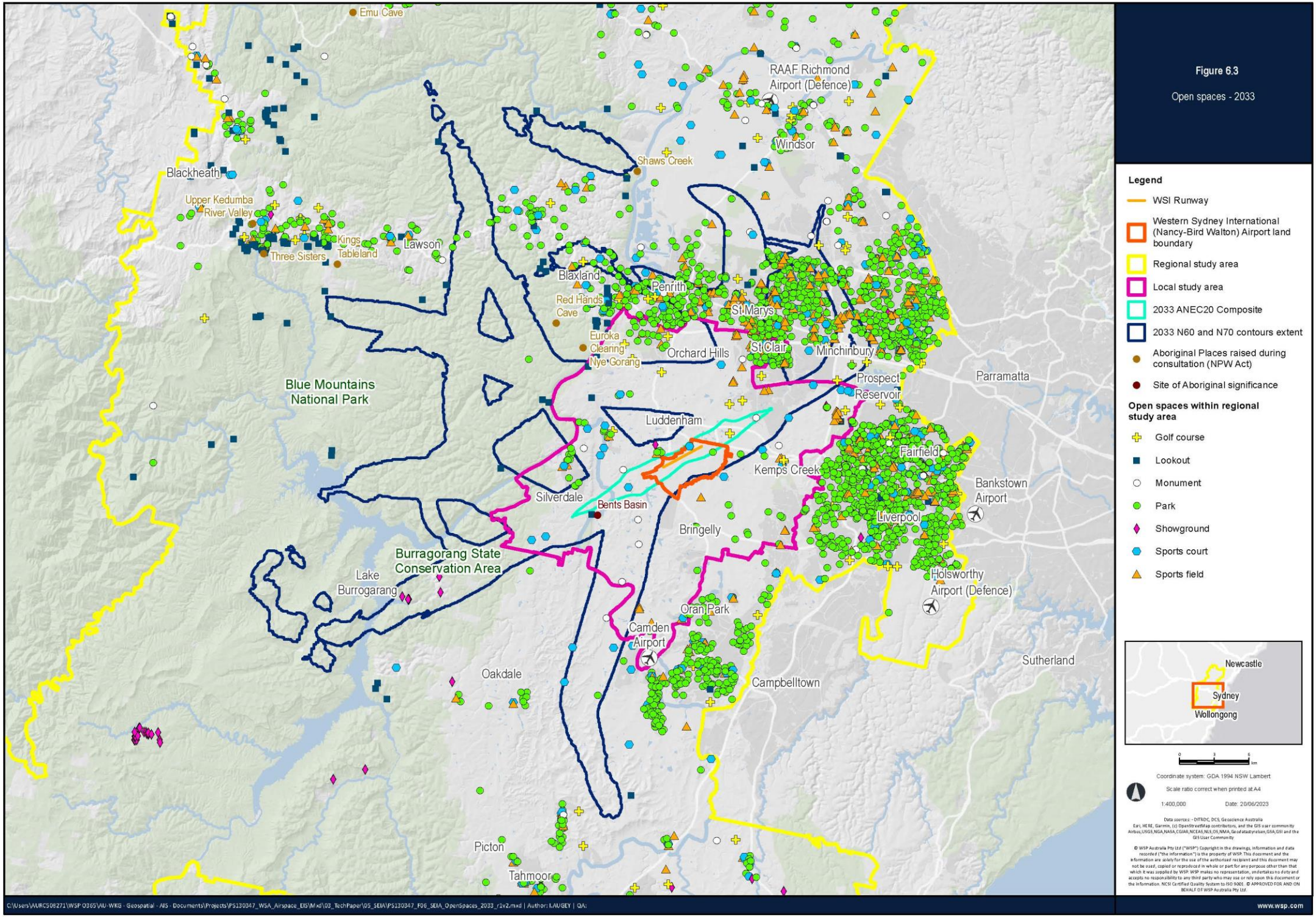
There is a large proportion of children and young families in Luddenham (60.4%), Mount Vernon (59.3%), Silverdale (57.4%), as well as CALD populations, who are likely to use and enjoy social infrastructure.

During SIA consultation, Camden City Council officers raised concerns about reducing the quality of open spaces due to noise. They expressed that as housing blocks become smaller, there is greater reliance on open spaces and playgrounds. For Camden City Council, the COVID-19 pandemic demonstrated the importance of outdoor recreational areas, especially for families with young children, and mothers needing access to play groups that gather in open spaces. Residents' views about how the project would change their enjoyment of public spaces were limited. Only one resident noted they would not want to go to the park as much anymore (Luddenham).

The magnitude of this impact is gauged by understanding the predicted levels of noise and visual change to be experienced within the study area. Figure 6.3 shows open space intersected by ANEC 20, N60 and N70 contours in the 2033 scenario, where larger concentrations of open space intersected by N60 and N70 can be found in St Mary's, St Clair and Penrith. Technical paper 6 identified there are no specific provisions for protecting recreational land uses from aircraft noise in the Western Parkland City SEPP.

Technical paper 7: Landscape and visual amenity (Technical paper 7) identified low to moderate visual impacts across 7 viewpoints in the local study area by 2033. Moderate visual impacts were found at Silverdale, Warragamba Dam lookout, Luddenham Village, Kemps Creek, George Maunder Lookout, and Prospect Reservoir and Orchards Hills. In addition, moderate impacts were identified for the following landscapes in the 2033 scenario:

- Penrith south-east and South Penrith urban area
- Greendale and Silverdale
- Luddenham village and agricultural precinct
- Northern Gateway precinct
- Aerotropolis core precinct Kemps Creek and Rossmore
- Leppington rural residential landscape; and
- Western Sydney Parklands.


Emu Cave
RAAF Richmond Airport (Defence)
Windsor
Shaws Creek
Blackheath
Upper Kedumba River Valley
Kings Tableland
Three Sisters
Lawson
Blaxland
Penrith
Red Hands Cave
St Marys
Euroka Clearing
Nye Gorang
Orchard Hills
St Clair
Minchinbury
Prospect Reservoir
Parramatta
Blue Mountains National Park
Luddenham
Fairfield
Kemps Creek
Bankstown Airport
Silverdale
Bents Basin
Liverpool
Bringelly
Burragorang State Conservation Area
Lake Burrogarang
Holsworthy Airport (Defence)
Oran Park
Camden Airport
Sutherland
Oakdale
Campbelltown
Picton
Tahmoor
Figure 6.3
Open spaces - 2033
Legend
WSI Runway
Western Sydney International (Nancy-Bird Walton) Airport land boundary
Regional study area
Local study area
2033 ANEC20 Composite
2033 N60 and N70 contours extent
Aboriginal Places raised during consultation (NPW Act)
Site of Aboriginal significance
Open spaces within regional study area
Golf course
Lookout
Monument
Park
Showground
Sports court
Sports field
Newcastle
Sydney
Wollongong
Coordinate system: GDA 1994 NSW Lambert
Scale ratio correct when printed at A4
1:400,000
Date: 20/06/2023
www.wsp.com

It can be anticipated that users of public and private infrastructure within noise contours and the landscape impact study area (up to 15 km from WSI) are likely to see diminished enjoyment and use of those spaces, and possibly will increase their usage of other spaces within the local and regional study area, resulting on a High pre-mitigated impact for the 2033 scenario.

Within the GBMA, visitors may experience changes to the use and enjoyment of walking tracks and lookouts. Technical paper 1 identified that the majority of the broader GBMA is largely outside the area predicted to experience aircraft noise at or above 60 dB and 70 dB. As shown in Figure 6.3, a total of 5 lookouts can be observed within N60 and N70 contours and another 15 lookouts are located in close proximity. Technical paper 1 identified that within the N60 contour a total of 30 sensitive areas within the GBMA, which includes lookouts, picnic areas, campgrounds and areas of special interest such as waterfalls. Some of these areas include the Cleary Memorial lookout, the Nepean lookout, Mt Banks picnic area and lookout, the Oaks picnic area, the Burragorang lookout and the Ruined Castle.

Out of these 30 areas, 12 would not experience noise levels at or above 60 dB. Noise levels of 60 dB are expected to occur at the Cleary Memorial lookout, the Nepean lookout and Mt Banks picnic area and lookout. Noise levels of 70 dB are also expected to occur at the Nepean lookout and Warragamba Dam, however, maximum sound exposure levels will more typically range from below 50 dB(A) to 60 dB(A) based on the aircraft type, with some noisier wide-body jets reaching closer to 65 dB(A) near the flight paths.

Technical paper 7 determined that the visual impacts at lookouts situated in the Blue Mountains are expected to be low or negligible for the 2033 scenario. However, night light impacts would be a high-moderate visual impact due to the very high visual sensitivity. As identified in Section 4.3.3, consultation highlighted a number of values associated with the GBMWHA, including peace and quiet, wilderness and recreation.

Consequently, it can be anticipated that those who visit and use walking tracks and lookouts under the N60 and N70 contours are likely to experience moderate changes to their use and enjoyment, resulting in a High pre-mitigated impact.

For those in the regional study area, given the large number of open spaces, parks and recreational areas available elsewhere within the regional study area, it is possible this might result in a minor change leading to a Medium pre-mitigated impact.

Figure 6.4 showcases the public space intersected by ANEC 20 and N60 and N70 contours for the 2055 scenario. The Free Church of Tonga will fall under ANEC 20. Technical paper 7 identifies high moderate visual impacts at Kemps Creek viewpoint, and moderate visual impacts at Luddenham Village, Silverdale, Warragamba Dam lookout, George Maunder Lookout, Prospect Reservoir and Orchard Hills. In addition, impacts to the landscape character might intensify at some locations. Key changes include:

- Penrith rural south-west landscape character zone will be subject to Moderate-low impact
- Luddenham village and agricultural precinct landscape character zone will be subject to High-moderate impact
- Northern Gateway precinct landscape character zone subject to Moderate-low impact.

By 2055, new opportunities for the use and enjoyment of public and private infrastructure would be available to a population that is already accustomed to aircraft noise. Consequently, it can be argued that for 2055, it is unlikely that an increase in flights would diminish the use and enjoyment of public and private infrastructure. Therefore, the result is a Low pre-mitigated impact for the local study area.

For the GBMA in 2055, it is anticipated that there would be moderate and moderate-high visual impacts for a range of lookouts, including Rock Lookout, Echo Point and Cleary Memorial Lookout (Technical paper 9). Moreover, as shown in Figure 6.4, an additional 3 lookouts will be under the N60 and N70 composite contours.

While it can be anticipated that by 2055 those who visit and use walking tracks and lookouts would be to some extent accustomed to aircraft noise and visuals, it is likely that visitors to the 3 additional lookouts under the 2055 N60 and N70 contours would experience moderate changes to their use and enjoyment, resulting in a High pre-mitigated impact.

For the regional study area N60 and N70 noise contours will affect a larger number of open space, and public and private infrastructure, while some of the users may have already adapted to aircraft noise, there will be some users who are likely to experience changes to the use and enjoyment of the space, resulting on a Medium pre-mitigated impact for the regional study area.

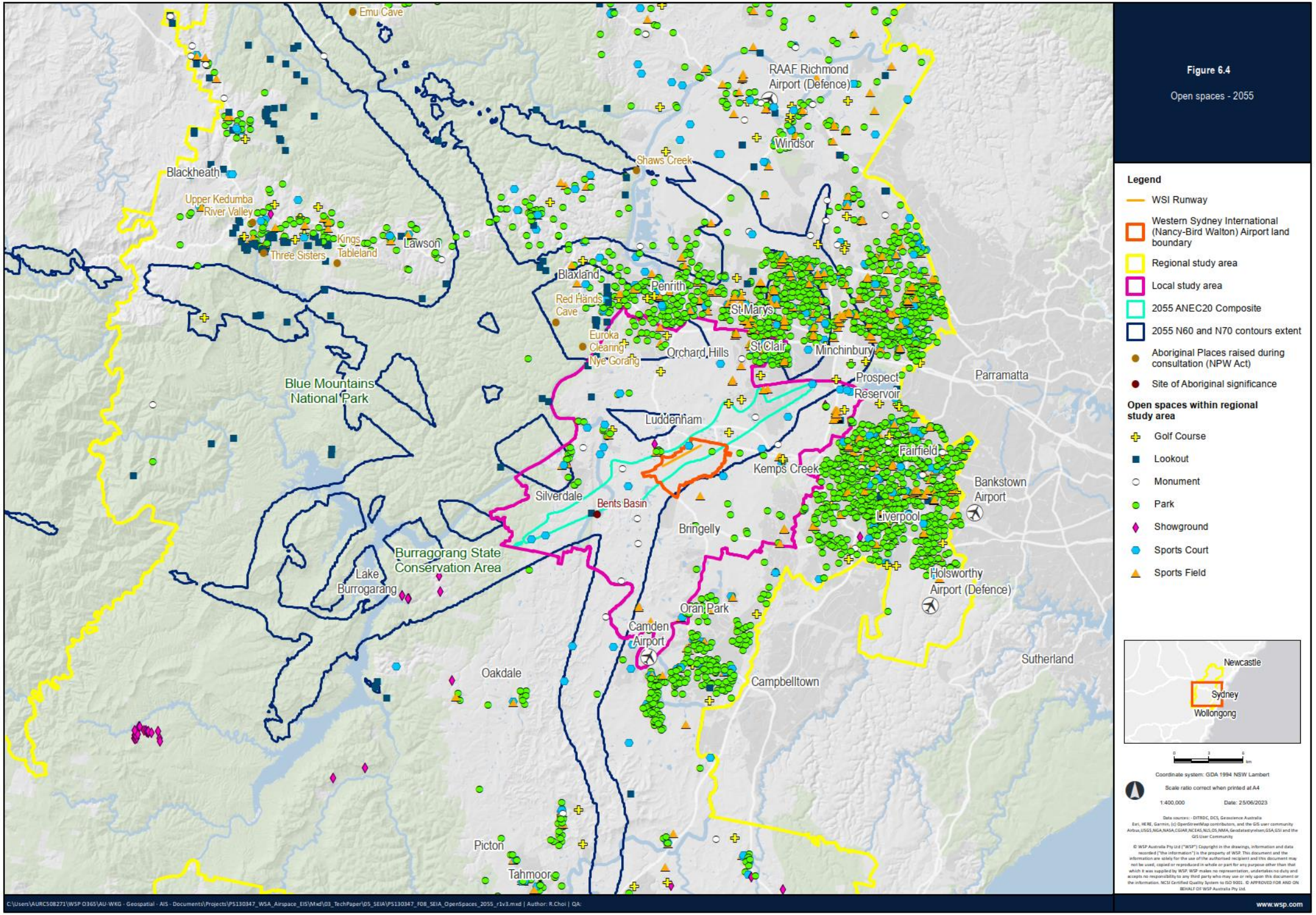

Emu Cave
RAAF Richmond Airport (Defence)
Windsor
Shaws Creek
Blackheath
Upper Kedumba River Valley
Kings Tableland
Three Sisters
Lawson
Blaxland
Penrith
Red Hands Cave
St Marys
Euroka Clearing
Nye Gorang
Orchard Hills
St Clair
Minchinbury
Parramatta
Prospect Reservoir
Blue Mountains National Park
Luddenham
Fairfield
Kemps Creek
Bankstown Airport
Silverdale
Bents Basin
Liverpool
Bringelly
Burragorang State Conservation Area
Lake Burrogarang
Holsworthy Airport (Defence)
Oran Park
Camden Airport
Sutherland
Oakdale
Campbelltown
Picton
Tahmoor
Figure 6.4
Open spaces - 2055
Legend
WSI Runway
Western Sydney International (Nancy-Bird Walton) Airport land boundary
Regional study area
Local study area
2055 ANEC20 Composite
2055 N60 and N70 contours extent
Aboriginal Places raised during consultation (NPW Act)
Site of Aboriginal significance
Open spaces within regional study area
Golf Course
Lookout
Monument
Park
Showground
Sports Court
Sports Field
Newcastle
Sydney
Wollongong
Coordinate system: GDA 1994 NSW Lambert
Scale ratio correct when printed at A4
1:400,000
Date: 25/06/2023
www.wsp.com

Table 6.4 Summary of changes to the use and enjoyment of social infrastructure

Scenario	Extent	Likelihood	Magnitude	Pre-mitigated impact
2033	Local study area	Likely	Moderate	High
	GBMA visitors to lookouts and walking tracks under N60 and N70 contours	Likely	Moderate	High
	GBMA	Possibly	Minor	Medium
	Regional study area	Possibly	Minor	Medium
2055	Local study area	Unlikely	Minor	Low
	GBMA visitors to lookouts and walking tracks under N60 and N70 contours	Likely	Moderate	High
	GBMA	Possibly	Minor	Medium
	Regional study area	Possibly	Minor	Medium

6.3 Culture

6.3.1 Effect to Aboriginal cultural values due to tangible and intangible impacts on Aboriginal cultural heritage

While the project will not result in any impacts to Native Tittle claims identified in Section 4.3.1.1, Native Title claimants together with First Nations groups residing and connected to the regional study area and to the GBMA may experience changes to Aboriginal cultural values.

Impacts to Aboriginal cultural values are understood through an analysis of the potential negative effects on tangible and intangible aspects of cultural heritage, as well as by assessing the level of concern over changes to First Nations people's experience and enjoyment of cultural practices.

Given the limited engagement the SIA team undertook with First Nations groups, a precautionary approach is used for the assessment of this impact as recommended by SIA Guideline. The precautionary approach in this context refers to the need of addressing and preventing social impacts even in the absence of full scientific certainty.

The magnitude and likelihood of this impact is therefore based on baseline data and the outcomes of Technical paper 9. To further assist in the validation of the findings presented in this section, a WSP Indigenous Services specialist also reviewed the content and provided feedback that has been incorporated accordingly.

According to baseline findings, within the regional study area there is a total of 39,686 First Nations people. The greatest proportion of First Nations people is in Penrith (5.0%), Hawkesbury (4.8%), and Wollondilly (4.4%).

During consultation, concerns about impacts to the cultural and spiritual aspects of Country were raised by the Blue Mountains City Council and Wollondilly Shire Council. Engagement completed to inform Technical paper 9 included consultation with representatives of the Dharug (7 interviewees), Dharawal (6 interviewees), Gundungarra (6 interviewees) and Deerubbin (1) communities, who identified a list of places of cultural value within the Technical paper 9 study area. In addition, a representative of the Metropolitan LALC was also interviewed.

The proposed flightpaths have avoided overflying the following Aboriginal places: Red Hands Cave, Kings Tableland, Euroka/Nye Gnorang, the Upper Kedumba Valley, as well as the Linden Ridge sites and the Emu engraving at Faulconbridge (Technical paper 9). However, the project does not avoid impact to the Emu Cave AP, or Shaws Creek AP in the Yellomundee Regional.

Technical paper 9 determined that Aboriginal sites will not be negatively impacted by the proposed flight paths as a whole. Visual intrusion is only likely to have a negative impact on a small range of places such as historic vistas and cultural landscapes and spiritual sites such as the Emu engraving, or the Three Sisters rock formation. It is estimated that flights will be over 10,000 feet above ground as they pass over Mt Solitary. This means the planes will appear as small and distant. However, they are likely to still be heard from Echo Point. Impacts to Aboriginal rock engravings and paintings (through chemical interaction of pollutants on rock surfaces) are undetermined and complying with current air pollution standards is recommended until there is a better understanding of impacts.

Technical paper 9 noted that where values include the need for peace, tranquillity, and spiritual connection, noise and or visual intrusion can impact cultural values. While noise may only be experienced by short to medium intervals of time, if the noise is such that it disrupts the cultural practices at a site to the extent that its use is discontinued, then this would have a profound impact on the cultural values associated with the place. During consultation, it was particularly noted that noise could impact intergenerational cultural education, e.g., at Yellomundee which is used as a venue for cultural education of Aboriginal youth.

Moreover, the heritage assessment identified that flight paths could disrupt the land-sky connection for First Nations peoples. This is most clearly reflected in sites that are connected to stories that link places on the land with the stories about the constellations, such as the Emu engraving at Faulconbridge.

While it was acknowledged by the Knowledge Holders, that designing flight paths to avoid flying over all Aboriginal sites of cultural value would be impossible, there are 4 places where noise and visual intrusions should be minimised to avoid detrimental impact to the significant cultural values. These are:

- The Three Sisters rock formation and the Kedumba Valley Aboriginal Place
- Yellomundee including Shaws Creek rock shelters and the camping area
- Bents Basin
- The Mermaid Pools – women's site near Thirlemere (this is just outside the airspace study area and will not be impacted by the current proposal).

Technical paper 9 states that it is likely the noise and frequency of aircraft traffic will have a substantial impact on the values of the Shaws Creek – Yellomundee area which is an important place for Dharug women. Technical paper 1 identified within the N60 contour a total of 30 sensitive areas within the GBMA, which include lookouts, picnic areas, campgrounds, and areas of special interest such as Victoria Falls, Victoria Creek cascades, Katoomba Falls, Jenolan Caves and Wentworth Falls, all of which hold cultural value for First Nations groups.

Consequently, it is possible that combined impacts on tangible and intangible forms of Aboriginal culture would have a moderate impact for First Nation people across the regional study area, resulting in a Medium pre-mitigated impact to Aboriginal cultural values for the 2033 scenario due to potential changes to use, enjoyment and connectedness to the 4 sites outlined above.

Regarding Aboriginal cultural values associated with the GBMA, it is acknowledged that most of the project would affect a limited area within the GBMA, which overlaps with sections of the Blue Mountain National Park boundaries. Considering that only one site within the GMA was recommended for avoidance and that noise intrusion and visual impacts are expected to be low for the 2033 scenario, pre-mitigated social impact to the GBMA Aboriginal cultural values is Medium.

For the 2055 scenario, the N60 contour would extend over a greater section of the Blue Mountains National Park to the west and towards Dharawal National Park to the southeast. The Dharawal National Park is the traditional land of the Dharawal people. The land, waterways, and plants and animals that live there feature in all facets of Aboriginal culture and are associated with Dreaming stories and cultural learning that is passed on today. The park protects several ancient Aboriginal sites, including drawings and axe-grinding grooves.

Discussions about potential cultural impacts associated to the Dharawal National Park are absent in Technical paper 9. In the absence of consultation to First Nations groups and considering the documented relevance of this park for the First Nations group, however understanding that flight path would affect a limited portion the Dharawal National Park, it can be argued that it is likely that a moderate magnitude of impact to Aboriginal culture may occur by 2055, resulting on a Medium pre-mitigated impact.

With regards to the GBMA, visual and noise intrusion is anticipated to be increase, pre-mitigated social impact to the GBMA Aboriginal cultural values is anticipated to be Medium.

Table 6.5 Summary of impacts to Aboriginal cultural values

Scenario	Extent	Likelihood	Magnitude	Pre-mitigated impact
2033	Aboriginal Cultural values associated with GBMA	Possibly	Moderate	Medium
	Regional study area	Possibly	Moderate	Medium
2055	Aboriginal Cultural values associated with GBMA	Possibly	Moderate	Medium
	Regional study area	Possibly	Moderate	Medium

6.3.2 Effects to non-Aboriginal culture due to tangible and intangible impacts on non-Aboriginal cultural heritage

Technical paper 9 concluded that since many historic heritage places occur in populated areas (such as Katoomba), the first principle of flight path design serves to protect them from direct overflight. Although in some cases, aircraft may still be visible in the distance and will be heard. Windsor and Richmond townships are the exception to this. While Richmond township contains a number of locally significant heritage items, there are several factors (such as proximity of the RAAF base) that constrain flight path options in this area.

Additionally, Technical paper 9 identified that Mulgoa is an historic rural village with several significant historic heritage properties such as Fern Hill Estate and St Thomas Church. These properties will be subject to significant impacts as they will be directly overflown at relatively low altitudes by 10 to 20 flights per day by 2055. Noting that this level of noise exposure is associated with the use of runway operational mode RWY05 departures at night (RWY05 means all aircraft arrive from the south-west and take-off to the north-east at night).

Despite these impacts identified in Technical paper 9, at the time of SIA and EIS engagement, no specific concerns about historic heritage places were raised by respondents during interviews and a survey. Consequently, it can be argued that while some visual and noise impacts will impact the way people enjoy historical places, it is very unlikely this will cause impact to non-Aboriginal cultural values for the local social locality and regional social localities for both 2033 and 2055 scenarios.

6.4 Accessibility

6.4.1 Constrained housing availability and affordability

Flight paths could affect the extent of areas suitable for residential development, and therefore limit the availability of housing in some areas. During consultation local councils and community organisations raised concerns about how flight paths could limit residential land uses and result in new building requirements for new residential developments. Camden City Council officers were interested to understand what impact the project might have on areas identified for residential growth that are awaiting rezoning, as there may be required changes on zoning and controls.

Fairfield City Council officers stated that under the Western Parklands City SEPP, certain development rights in the section of Horsley Park located under the ANEC 20 have been restricted or removed (e.g., ability to subdivide a lot into 1 ha for new dwellings, dual occupancy and secondary dwellings).

To further understand the magnitude of this impact, the following baseline conditions are considered:

- the local and regional study area exhibit high dwelling occupancy rate (approximately 94%), with highest occupation rate in Mount Vernon (97.2%) and the smallest rate in Badgerys Creek (86.4%)
- Greendale, Luddenham, Silverdale and Wallacia have an estimated population growth of 29,190 by 2041, representing 454.0% growth
- significant growth in these areas will be the result of establishing new residential suburbs where there is currently very minimal to no population. Austral is anticipated to accommodate 17,350 new homes as part of the South West Growth Area
- areas with the greatest proportion of households suffering from rental affordability stress are Austral, Rossmore, and Bringelly
- areas with the greatest proportion of households suffering from mortgage affordability stress are Badgerys Creek, Horsley Park, Austral.

For the 2033 scenario, Technical paper 1 predicts that 93 dwellings would be located within the ANEC 20 contour, while for 2055 scenario a total of 320 dwellings are anticipated (see Figure 6.5). Residential dwellings within the 2033 ANEC 20 contour are located 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
- Barracks (living in accommodation) areas at the DEOH site are located outside of the ANEC 20 contour.

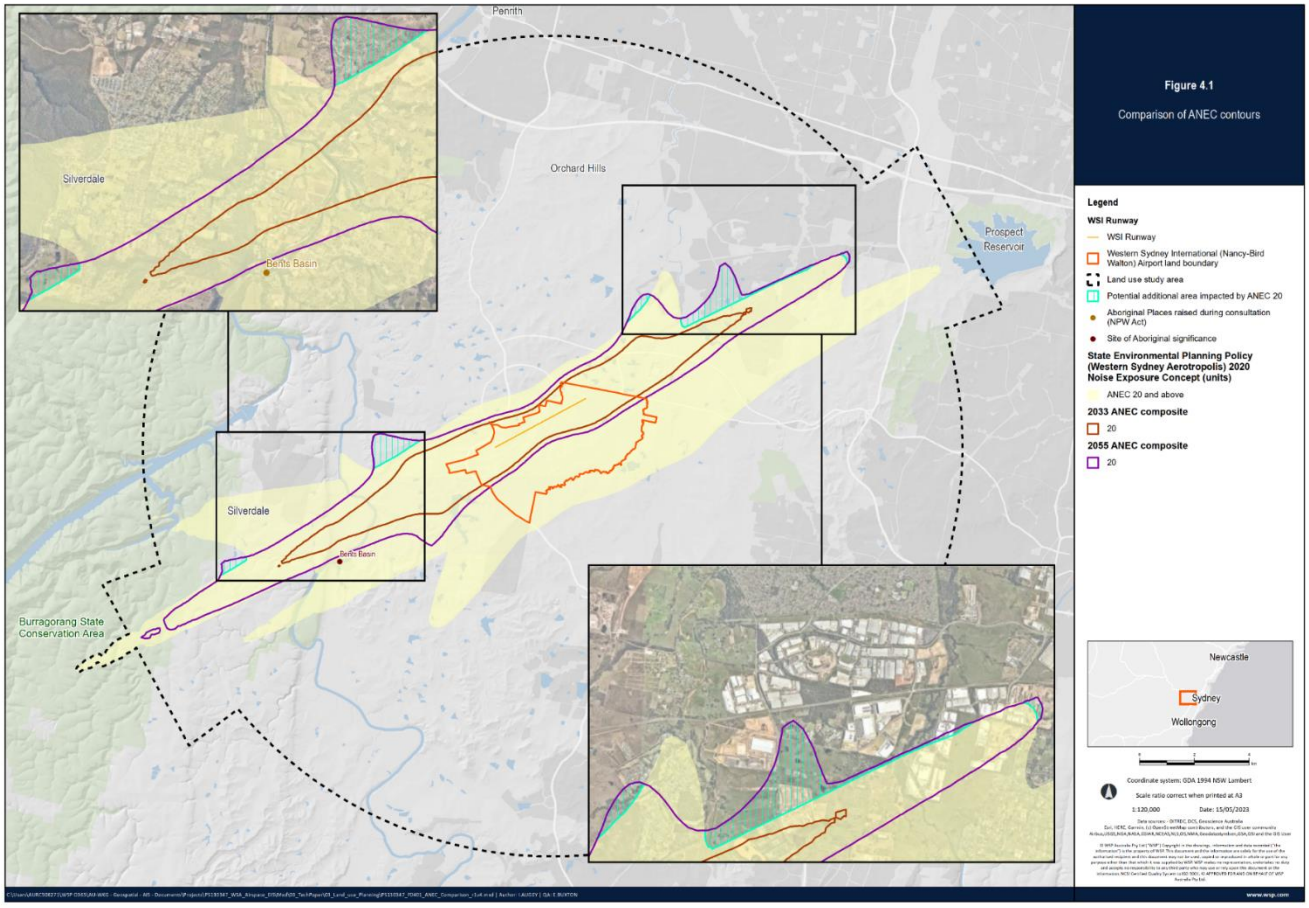
These existing land uses within the ANEC 20 contour can continue in the future due to existing use rights. However, no residential development will be permitted within the ANEC 20 and above contours, including dual occupancies, secondary dwellings and the subdivision of land for residential purposes that have not already been approved (Technical paper 6).

The *Western Sydney Aerotropolis Precinct Plan* identifies that only a few centres in the Aerotropolis will be suitable for residential uses because of aircraft noise and other airport operational constraints. Badgerys Creek precinct is not suitable for residential development. The Luddenham Village 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.

Technical paper 6 concluded that no additional land would be subject to planning restrictions based on aircraft noise from scheduled flight operations between 2026 and 2033. For 2055, it was concluded that locations in the vicinity of Erskine Park, Eastern Creek and to the south of Wallacia would be affected by ANEC 20 contours, however these areas are currently zoned ‘general industrial’ (Penrith LEP) and ‘primary production’ (Liverpool LEP) and include only a small

number of semi-rural residential dwellings and around 5 residential dwellings located within the Twin Creeks Golf and Country Club (see Figure 6.5). As such, any changes to relevant planning instruments because of updated ANEC 20 could see planning conditions imposed on these additional areas.

Thus, considering existing planning controls, estimated population growth and potential changes to land use provisions in Luddenham Village, it is possible that people within the ANEC 20 would experience increased housing affordability stress, resulting in a Medium impact for the 2033 scenario. For the rest of the local and regional study area is unlikely that the project would cause significant changes to housing availability and affordability for the 2033 and 2055 scenario, resulting on a Low impact.



Source: ***Technical paper 6*** *– Land use and Planning*

Figure 6.5 Comparison ANEC Noise contours for 2033 and 2055 scenarios

Table 6.6 Summary of impacts to housing affordability

Scenario	Extent	Likelihood	Magnitude	Pre-mitigated impact
2033	Communities within ANEC 20	Possibly	Minor	Medium
	Local study area	Unlikely	Minimal	Low
	Regional study area	Unlikely	Minimal	Low
2055	Local study area	Unlikely	Minimal	Low
	Regional study area	Unlikely	Minimal	Low

6.4.2 Socio-economic sustainability of Luddenham and accessibility to social services

Population density has significant influence over socio-economic characteristics and sustainability of communities (Khaleel & Ngah, 2013). During consultation, Penrith City Council officers and the Luddenham Progress Association raised concerns about how the uncertainty about flight paths are affecting the ongoing socio-economic sustainability of the Luddenham community, including the continuity of school, shopping and other services (IGA supermarket, post office, doctors, chemist, butcher, bakeries).

Representatives of Luddenham Progress Association stated "*The future of Luddenham is our biggest concern. Our future is very uncertain. The lack of flight paths information is putting Luddenham's future on hold. I'm concerned about population numbers falling below what's sustainable to keep schools and services open for people living in Luddenham. We only see a viable future for Luddenham if we can get more residential into the area, as the current zonings have changed which may result in some of the existing residential disappearing. But this is not being advanced on the basis of not knowing what the flight paths are going to be. No one is making a decision, and this is the frustrating part*".

According to the Luddenham Progress Association the State Government's plan (Luddenham Village Interim strategy) for the area has been put on hold from the Western Sydney Airport's objection to the communities' preferred options of 3 or 4, due to not knowing the flight paths, and approximately 200 houses have already been lost to the airport development and other infrastructure.

Moreover, interviewees raised concerns about the socio-economic sustainability of the Luddenham and Wallacia public schools due to potential increase of families leaving the area as a result of noise. Consultation identified that the Luddenham Public School is already experiencing a decrease in enrolments due to families moving out of the area. Flight paths may result in additional relocation of families out of the local area (refer to Section 6.1), thereby reducing the number of enrolments further. This may put further funding for the school at risk and limits the potential for growth and upgrades at the school.

Technical paper 6 noted that similar to residential areas, health and education facilities are deemed to be noise sensitive developments and the Western Parkland City SEPP outlines that they will not be permitted within the ANEC 20 and above contours. The *Western Sydney Aerotropolis Precinct Plan* identifies specific land use areas designed for health and education services, mainly within the Aerotropolis Core precinct. As with residential areas of Aerotropolis, certain areas, specifically located within ANEC 20 will not be suitable for these land uses due to elevated aircraft noise.

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. Technical paper 6 states that industrial and commercial land uses are likely to continue to expand to support population growth in the region including areas potentially within the SEPP ANEC 20 contours for WSI (such as the Erskine Park area) and future planning approval will need to consider impacts from aircraft noise.

As discussed in Section 6.1.1 while it is likely that some people residing locally would decide to relocate as a result of aircraft noise, it is also known that *Western Sydney Aerotropolis Precinct Plan* and associated developments are expected to result on an influx of new residents and workers to the local study area, who may access services provided in Luddenham. However, prior to the development of the Western Sydney Aerotropolis a decrease of population in Luddenham might occur as a result of uncertainty and changes brought up by the project.

Consequently, it is possible that Luddenham would experience constraints to the socio-economic sustainability of its village for a moderate period of time resulting on a High pre-mitigated impact for the 2033 scenario. It is expected that once the Aerotropolis and WSI are fully operational the sustainability of the Luddenham village would stabilise and grow, resulting on Low impact for the 2055 scenario.

Table 6.7 Summary of impacts to the socio-economic sustainability of Luddenham Village

Scenario	Extent	Likelihood	Magnitude	Pre-mitigated impact
2033	Luddenham	Likely	Moderate	High
2055	Luddenham	Very Unlikely	Minimal	Low

6.5 Health and wellbeing

6.5.1 Effects to wellbeing as a result of changes to amenity

Changes to wellbeing are determined by understanding the existing health and vulnerability conditions of people potentially affected by changes to amenity, including noise, air quality and night light, as well as their level of concern regarding the specific issue.

Noise and air emissions associated with the project have the potential to affect the physical and mental health and wellbeing of residents, sensitive receptors and users of the study area. During consultation, over 200 people selected impacts on health as a key concern. Many were concerned about impacts on health associated with air quality, due to emissions and potential fuel dumping. More specifically, there were concerns about impacts on people with specific diseases e.g., cardiovascular disease, lung and respiratory issues and mental health issues, who could be affected by increased air pollution, increased noise levels, and increased stress levels associated with air and noise pollution.

As identified in the baseline, asthma (7.4%), arthritis (7.1%), mental health conditions (including depression or anxiety) (6.8%) as well as other long-term health condition (7.7%) were predominant in the regional study area. Glenmore Park, Warragamba and Wallacia had the highest rates of prevalence of at least 2 conditions (asthma, heart disease, lung disease and or mental health). Luddenham had high prevalence of lung conditions, while Kemps Creek, Greendale and Mount Vernon reported high rates of heart disease. In addition to those people already affected by health issues, the following groups were identified during consultation as likely to be more affected by air and noise pollution:

- people with disabilities or carers, particularly those experiencing post trauma stress or sensory disorders that may perceive noise as a trigger
- refugee and asylum seeker populations, who may also be more affected by noise – this was particularly mentioned for the Fairfield, Blacktown and Penrith areas
- shift workers needing sleep during the day – noting significant numbers of shift workers employed at the various hospitals and health services in the South West Sydney LHD
- people living in caravans permanently with no noise insulation.

As previously outlined, for the 2033 scenario, Technical paper 1 identified that 132,000 people would be exposed to an average of more than 10 daily movements above 60 dB(A) within the Blacktown, Penrith, Blue Mountains, Liverpool, Camden and Wollondilly LGAs, with 31,700 exposed to an average of more than 2 movements above 60 dB between 11 pm and 5.30 am daily, which might result on sleep disturbance during sleep hours. Moreover, 5,100 people would be exposed to an average of more than 5 daily movements above 70 dB(A). The 70 dB(A) noise level is associated with events that can impact a normal conversation, even in urban areas.

In regard to the GBMA and as outlined in Section 4.3.3 and Chapter 5, the GBMA bring opportunity for recreation, spirituality, being in touch with wilderness, as well as social and economic benefits all of which contribute to some extent to the wellbeing of visitors and residents surrounding the GBMA.

Within the N60 contour, Technical paper 1 identified a total of 30 sensitive areas within the GBMHWA which includes lookouts, picnic areas, campgrounds and areas of special interest such as waterfalls. Some of these include the Cleary Memorial lookout, the Nepean lookout, Mt Banks picnic area and lookout, the Oaks picnic area, the Burragorang lookout and the Ruined Castle. The Nepean lookout is the most overflown area during the day and night because of its location near the eastern boundary of the national park. These areas currently contribute to the physical and mental wellbeing of visitors, who might experience changes to enjoyment and use of these areas (as outlined in Section 6.2.2).

Technical paper 2 determined that increases in NO_2 are generally limited to a radius of approximately 5 to 6 km of the airport. This suggests that the impact of the project's emissions on ground level concentrations is primarily attributable to aircraft near or at ground level, primarily during take-off and landing. Emissions released higher than a few hundred metres above ground level do not appear to have any significant influence on ground level concentrations.

Regarding human health impacts, Technical paper 12: Human health (Technical paper 12) identified for the 2033 and 2055 scenarios the percentage of the population (by area) who will be highly sleep disturbed and highly annoyed. Annoyance is described as a stress reaction that encompasses a wide range of negative feelings, including disturbance, dissatisfaction, distress, displeasure, irritation, and nuisance. The areas with the highest estimated levels of sleep disturbance and annoyance within the local study area are outlined in Table 6.8.

Table 6.8 High sleep disturbance and high annoyance areas

Locality	% population in area highly sleep disturbed		% population in area highly annoyed	
	2033	2055	2033	2055
Luddenham	33%	40%	50%	58%
Greendale	26%	33%	40%	50%
Silverdale	22%	28%	34%	43%
Wallacia	22%	28%	34%	43%
Kemps Creek	19%	25%	–	–

Consequently, it can be argued that by 2033 residents in Luddenham, Greendale, Silverdale, Wallacia and Kemps Creek are likely to experience moderate changes to their wellbeing as a result of changes to amenity. For residents living elsewhere in the local study area, it is possible they may experience minor changes to wellbeing.

For those located within the regional study area and who may also be frequent visitors to the GBMA, it is unlikely they would experience noticeable changes to their wellbeing, resulting in a Low pre-mitigated impact.

For the 2055 scenario, Technical paper 1 and Technical paper 2 identified that:

- 1,120 people may be living in 20 ANEC contour, which affects the communities of Luddenham, Wallacia, Badgerys Creek, Kemps Creek, Horsley Park, Mount Vernon, Greendale, and Silverdale
- 175,000 people would be exposed to an average of more than 10 daily movements above 60 dB(A)
- 91,600 people would be exposed to an average of more than 2 daily movements above 60 dB (A) between 11 pm and 5.30 am, which might result on sleep disturbance during sleep hours
- 13,00 people would be exposed to an average of more than 5 daily movements above 70 dB(A), this includes people living in Greendale, Luddenham, Silverdale and Wallacia
- increase in NO_2 concentrations in the vicinity of the airport, just outside the north-western section of the airport boundary
- for all other pollutants, except for NO_2, the impact of emissions from the project on the existing pollutant concentrations would be negligible and would be unlikely to be discernible above background concentrations.

Consequently, for the 2055 scenario, it can be argued that residents in Luddenham, Greendale, Silverdale, Wallacia and Kemps Creek are almost certain to experience moderate changes to their wellbeing as a result of changes to amenity. For residents living elsewhere in the local study area, it is possible they would experience minor changes to wellbeing. Finally, some GBMA visitors to lookouts and walking tracks under N60 and N70 contours would possibly experience minimal changes to wellbeing, resulting in a Low pre-mitigated impact.

Table 6.9 Summary of impacts on wellbeing because of aircraft operation noise and emissions

Scenario	Extent	Likelihood	Magnitude	Pre-mitigated impact
2033	Luddenham, Greendale, Silverdale, Wallacia and Kemps Creek	Likely	Moderate	High
	Local study area (excluding the above)	Possibly	Minor	Medium
	GBMA visitors to lookouts and walking tracks under N60 and N70 contours	Unlikely	Minimal	Low
	Regional study area	Possibly	Minimal	Low
2055	Luddenham, Greendale, Silverdale, Wallacia and Kemps Creek	Almost certain	Moderate	High
	Local study area (excluding the above)	Likely	Minor	Medium
	GBMA visitors to lookouts and walking tracks under N60 and N70 contours	Possibly	Minimal	Low
	Regional study area	Possibly	Minor	Medium

6.5.2 Wellbeing for First Nations people

First Nations people may experience diminished wellbeing issues from changes to environmental conditions (noise, air quality, night-light), as well as from changes to cultural values and their enjoyment and continuous exercise of cultural practices. Noting that the baseline identifying prevalence of underlying long-term health conditions on First Nations communities, which could be exacerbated by changes in the environment and to cultural heritage.

Chapter 4 identified that the most common long-term health conditions for this group included arthritis, asthma, and mental health conditions. Asthma was prevalent in Hawkesbury LGA (31.1%) and Blue Mountains LGA (28%), while mental health conditions were prevalent in Liverpool LGA (26.2%), Wollondilly LGA (18.8%) and Fairfield LGA (18.2%). Blue Mountains and Liverpool LGAs also have the highest proportion of First Nations people with other long-term health conditions (16 and 15.5%, respectively). Across the local study area, the suburbs with the largest proportions of First Nations people are Warragamba (7.9%), Silverdale (4.6%), Wallacia (3.9%), St Clair (3.8%), and Glenmore Park (3.7%). Badgerys Creek and Cecil Park both have no people identifying as First Nations.

Technical paper 9 noted that Knowledge Holders expressed that they felt emotionally drained and, in some cases, overwhelmed by the cumulative impacts of successive developments in Western Sydney.

While it is not possible to determine the location of First Nations people in relation to noise exposure, it can be argued that it is possible First Nations people living under the ANEC 20, N70 and N60 noise contours are likely to experience moderate changes to their wellbeing, considering potential underlying health conditions that could be exacerbated, resulting in a High pre-mitigated impact. For First Nations people living elsewhere in the local and regional study area, minimal changes to wellbeing might be experienced, resulting in a Low pre-mitigated impact.

Table 6.10 Summary of effects to wellbeing for First Nation Populations

Scenario	Extent	Likelihood	Magnitude	Pre-mitigated impact
2033	First Nations living under ANEC 20, N60 and N70 noise contours	Likely	Moderate	High
	First Nations living elsewhere in the local and regional study area	Possibly	Minimal	Low
2055	First Nations living under ANEC 20, N60 and N70 noise contours	Likely	Moderate	High
	First Nations living elsewhere in the local and regional study area	Possibly	Minimal	Low

6.5.3 Changes to children's behaviour, attentiveness, and cognitive learning in educational settings as a result of aircraft noise

Aircraft-related noise and emissions may affect children's behaviour and attentiveness at school, also affecting staff's ability to teach and overall educational and wellbeing outcomes for students, families and staff. The likelihood of this impact is determined by the existing baseline conditions, consultation findings and evidence of this impact occurring elsewhere.

As outlined in Section 4.4.1 there is a total of 41 schools with a total of 19,185 enrolments in 2022–2023 within the local study area, of these there are 2 special needs schools. In addition, there are 51 registered childcare centres in the local study area.

Section 4.5 found that around one quarter of children in some LGAs are developmentally vulnerable, with high proportions in Orchard Hills (26.7%), Wallacia (20%), Werrington (25.5%), Cambridge Park (23.3%), Oxley Park (20%). Three special needs schools provide special education for a total of about 200 children. These students may have moderate to severe intellectual disabilities, and/or physical, sensory, behaviour, vision, and hearing disabilities.

Consultation identified concerns about how noise may affect students and staff when at school. Distraction may arise from noise, as well as visually with children looking at planes, which may affect children with mental disabilities or sensory issues more than others. There were less concerns for impacts on play time, with some considering that planes flying over the school could be a potentially good and 'fun' for children, however there were concerns for environmental classes that occur outside that may be impacted. With children being affected, staff will also be affected by needing to manage distraction, raise levels of their voice. These effects may impact educational outcomes for children, as well as overall wellbeing with increased stress for staff, children and their families.

The magnitude of the impact is determined by understanding noise exposure at educational facilities, noting that these are deemed to be noise sensitive developments and the Western Parkland City SEPP identified that no new noise sensitive developments will be permitted within the ANEC 20 and above contours. The Australian Standard AS2021:2015, defines an indoor design sound level of 50 dB(A) for libraries and study areas, 65 dB(A) for teaching areas and 75 dB(A) for workshops and gymnasia.

As shown in Figure 6.6, Luddenham Public School and Holy Family Primary School are outside the predicted project composite ANEC 20 for 2033. Within the N60 and N70 contours there are about 31 educational facilities and 3 daycare centres. Noting that the 2 special needs schools in Cobbitty and Glenmore Park are outside the N60 and N70 daytime noise contours.

Technical paper 12 identified areas where learning delays are considered to be of potential significance, with many of these areas consistent with those identified as of potential significance in relation to sleep disturbance and annoyance. The calculated learning delays in these areas is variable, with the highest levels estimated in Luddenham, Greendale, Silverdale, Wallacia and Kemps Creek. For the childcare centres located in the areas where learning delays may be of significance, none of the noise impacts associated with the project at these locations are high enough to be of concern in relation to learning delays (i.e., all learning delays are less than 30 days).

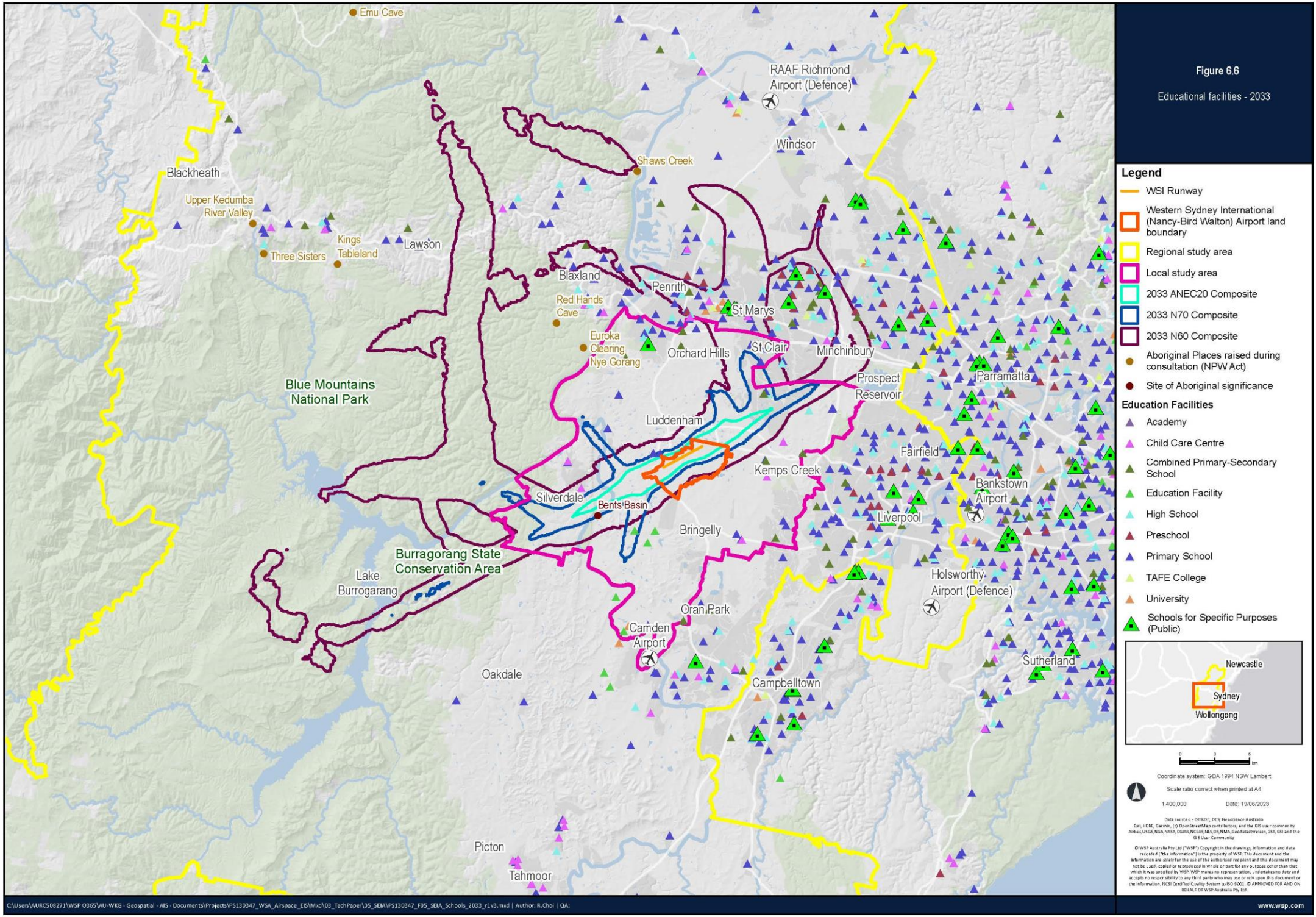
Consequently, it is possible that children attending educational facilities under the N60 and N70 noise contours in the broader local study area and regional study area would experience some level of distraction that could affect their attentiveness and cognitive learning, resulting in a Low pre-mitigated impact. However, this impact would be experienced more acutely by children with cognitive disability, resulting in a Medium pre-mitigated impact for this group.

As shown in Figure 6.7, for 2055, there will be an increase of educational facilities within the ANEC 20, N60 and N70 noise contours. It is anticipated that there will be only one educational facilities within the ANEC 20, and approximately 40 educational facilities within the daytime N60 and N70 noise contours. Noting that the special needs school in Cobbitty and Glenmore Park will continue to be outside of noise contours, but in close proximity to N60 and N70 24hr noise contours.

According to Technical Paper 1, for 2055 it is anticipated that Mamre Anglican School, Trinity Catholic Primary school, Emmaus Catholic College and Luddenham Public School could be exposed to single events exceeding 70 dB(A) and an average sound level of 50 dB(A) between 5:30 am and 7 pm.

For 2055, Technical paper 12 identified more significant impacts to learning delays relevant to childcare and schools located within Luddenham, Greendale, Silverdale, Wallacia and Kemps Creek. However, none of the noise impacts associated with the project at these locations are high enough to be of concern in relation to community health (i.e., learning delays are all less than 30 days).

It is anticipated that by 2055, children within ANEC 20 (at Mamre Anglican School) and N60 and N70 contours would have adapted to some extent to aircraft noise, and that schools would have adopted some measures to mitigated noise. However, the children attending the schools that were not previously under noise contours may encounter some level of distraction that could affect their attentiveness and cognitive learning, which would be experienced more acutely by children with cognitive disability, resulting in a High pre-mitigated impact for those within the ANEC 20, and Medium pre-mitigated impact for those under N60 and N70 24hr noise contours.


Emu Cave
RAAF Richmond Airport (Defence)
Windsor
Shaws Creek
Blackheath
Upper Kedumba River Valley
Kings Tableland
Lawson
Three Sisters
Blaxland
Penrith
Red Hands Cave
St Marys
Euroka Clearing
Nye Gorang
Orchard Hills
St Clair
Minchinbury
Parramatta
Prospect Reservoir
Blue Mountains National Park
Luddenham
Fairfield
Kemps Creek
Bankstown Airport
Silverdale
Bents Basin
Liverpool
Bringelly
Burragorang State Conservation Area
Lake Burrogarang
Holsworthy Airport (Defence)
Oran Park
Camden Airport
Sutherland
Oakdale
Campbelltown
Picton
Tahmoor
Figure 6.6
Educational facilities - 2033
Legend
WSI Runway
Western Sydney International (Nancy-Bird Walton) Airport land boundary
Regional study area
Local study area
2033 ANEC20 Composite
2033 N70 Composite
2033 N60 Composite
Aboriginal Places raised during consultation (NPW Act)
Site of Aboriginal significance
Education Facilities
Academy
Child Care Centre
Combined Primary-Secondary School
Education Facility
High School
Preschool
Primary School
TAFE College
University
Schools for Specific Purposes (Public)
Newcastle
Sydney
Wollongong
Coordinate system: GDA 1994 NSW Lambert
Scale ratio correct when printed at A4
1:400,000
Date: 19/06/2023
www.wsp.com

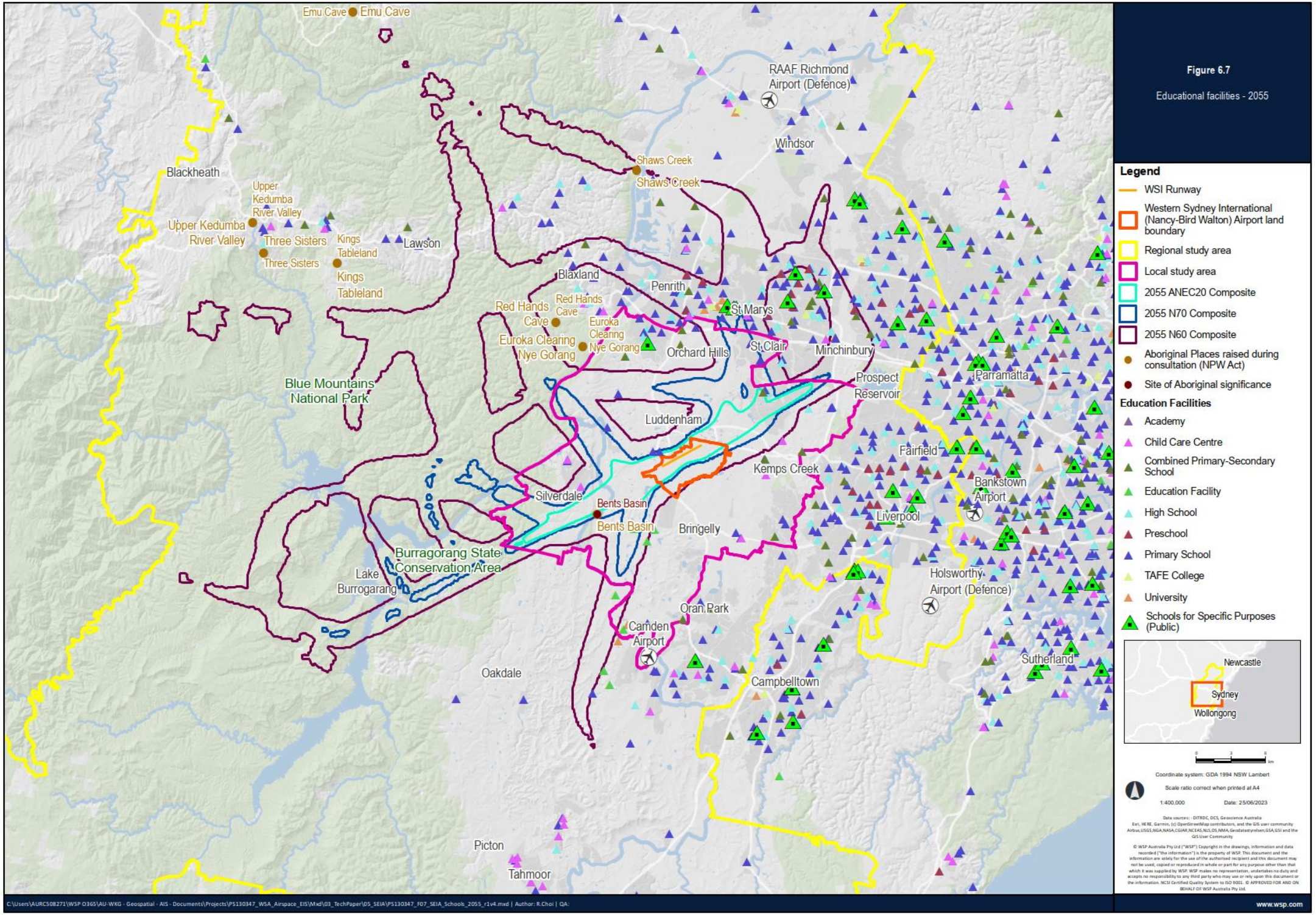


Figure 6.7

Educational facilities - 2055

Legend

- WSI Runway
- Western Sydney International (Nancy-Bird Walton) Airport land boundary
- Regional study area
- Local study area
- 2055 ANEC20 Composite
- 2055 N70 Composite
- 2055 N60 Composite
- Aboriginal Places raised during consultation (NPW Act)
- Site of Aboriginal significance

Education Facilities

- Academy
- Child Care Centre
- Combined Primary-Secondary School
- Education Facility
- High School
- Preschool
- Primary School
- TAFE College
- University
- Schools for Specific Purposes (Public)

Coordinate system: GDA 1994 NSW Lambert

Scale ratio correct when printed at A4

1:400,000 Date: 25/06/2023

Table 6.11 Summary of changes to children's behaviour, attentiveness, and cognitive learning in educational settings as a result of aircraft noise

Scenario	Extent	Likelihood	Magnitude	Pre-mitigated impact
2033	Children with cognitive disability attending educational facilities under N60 and N70 24hr noise contours	Possible	Moderate	Medium
2055	Children with cognitive disability attending Mamre Anglican School	Likely	Moderate	High
	Children with cognitive disability attending educational facilities under N60 and N70 24hr noise contours	Possible	Moderate	Medium

6.6 Surroundings

6.6.1 Social values associated with the Blue Mountains

As outlined in Chapter 4, a section of the GBMA was listed as a World Heritage Area in 2000, based on criteria (vii) and (viii) of the UNESCO World Heritage Convention, which recognise the area's outstanding natural beauty, unique geological formations, and rich biodiversity (UNESCO, 2000). The area is also recognised for its cultural significance to First Nations communities, who have inhabited the region for over 22,000 years and continue to maintain strong cultural connections to the land.

During consultations, the stakeholders highlighted the importance of recreational and touristic values as well as heritage and ecological values associated with GBMA. Stakeholders highlighted that GBMA is used by the population in the study area for recreation purposes and is an important part of the tourism offering for the region. Much of the area's value lies in its wilderness and quietness, with significant associated heritage and ecological values recognised in the World Heritage listing, as noted in the baseline and referred in the Statement of Outstanding Universal Value.

Furthermore, the Blue Mountains CSP (2017) emphasises the natural value of the GBMA for the local community and target sustainable living including minimising urban footprint on the natural environment. The Blue Mountains also have significant economic assets and are a key contributor to the tourism and visitor economy.

Consistent with the values identified in Technical paper 14: Greater Blue Mountains World Heritage Area (Technical paper 14), stakeholders identified the following values:

- cultural values (Aboriginal) associated with landscape features with spiritual significance
- recreation and tourism values resulting from activities such as canyoning, bushwalking, nature observation, scenic driving, picnic and basic camping facilities
- wilderness values from extensive natural areas, absence of significant human interference, and opportunities for solitude and self-reliant recreation
- social and economic values related to economic flow effects derived from tourism, including employment, and output of the regional economy
- scenic and aesthetic values resulting from outstanding vistas and uninterrupted views of forested wilderness
- bequest, inspiration, spirituality, and existence resulting from opportunities for solitude and quiet reflection.

In addition, the Blue Mountains City Council identified as a value the scenic and aesthetic value of the overnight darkness of GBMWHA. The Blue Mountains City Council reported to be exploring the "Dark Skies initiatives", a certification through the International Dark-Sky Association.

Technical paper 14 concluded that while some noise and visual impacts may potentially occur to the wilderness areas, these are considered to be generally insignificant for a vast majority of wilderness areas and are not considered to be such that they would interfere with the values attributed to the wilderness nature of the GBMWHA. Potential indirect impacts may be observed for tourism and recreation values.

Moreover, based on the altitude of aircraft overflying scenic areas and the distance of the Airport Site from vantage points within the GBMWHA, it is not expected that a significant impact would occur because of the project. Technical paper 7 determined that the visual impacts at lookouts situated in the Blue Mountains are expected to be low or negligible for the 2033 scenario. While, for the 2055 impacts would be moderate and moderate-high for a range of lookouts, including Rock Lookout, Echo Point and Cleary Memorial Lookout. Although the scenic value of these views would be altered slightly, due to the very high sensitivity of views from Echo Point, a low magnitude of change would result in a high-moderate adverse visual impact.

Regarding the night light impacts, Technical paper 7 identified that Euroka, Katoomba River crossing, Ingar, Murphys Glen and Burralow Creek campgrounds are the ones having views to the sky where planes using the proposed flight paths may be seen. Overall, the effect of the project lighting would be experienced across a small portion of the landscape, resulting in a low magnitude of change. However, due to the very high visual sensitivity, there would be a high-moderate visual impact.

As outlined in this Technical paper, aircraft noise can result in changes to the following social values associated with the GBMWHA for the 2033 and 2055 scenarios:

- recreation and tourism values manifested on a medium pre-mitigated impacts to the way people enjoy and use open space within GBMA (see Section 6.2.2)
- cultural values resulting on medium pre-mitigated impacts to First Nations cultural values (see Section 6.3.1)
- social and economic values resulting on low pre-mitigated impacts to the tourism and livelihoods (see Section 6.7.2)
- bequest, inspiration, wilderness values resulting on low pre-mitigated impacts to wellbeing (see Section 6.2.2).

Consequently, it can be argued that it is possible the combined effects on GBMWHA associated values would result in moderate changes to the way people enjoy, use and value the GBMWHA, resulting in a Medium pre-mitigated impact for 2033.

For the 2055 scenario, the N60 contour would extend over a greater section of the Blue Mountains National Park to the west, which would result in a High pre-mitigated impact. This is because it is possible that due to the wider affected area, people will change their behaviour and change where they go to enjoy the GBMWHA. They may go to areas where they notice less aircraft-related impacts and they may increase value and attachment to areas that are not significantly overflown by aircrafts.

Table 6.12 Social values associated with the Blue Mountains

Scenario	Extent	Likelihood	Magnitude	Pre-mitigated impact
2033	Regional study area	Possibly	Moderate	Medium
2055	Regional study area	Possibly	Major	High

6.6.2 Sense of safety and clean environment due to air quality changes in the local area

During SIA consultation, key stakeholders and community representatives raised concerns about flight paths going over the Warragamba Dam potentially affecting water quality. In addition, the World Heritage Advisory Committee expressed uncertainty around the impact of fuel dumping on water quality. This concern was shared by the Wallacia Progress Association, Mt Wilson Progress Association, Mt Irvine Progress Association and the Luddenham Progress Association. Interviewees noted that there are a number of residential and agricultural properties within the local area who rely on rainwater collected in water tanks, raising concerns about drinkable water, but also agricultural production. On a smaller scale, residents who grow vegetables in their garden are also concerned about the future quality of their produce.

While the likelihood of a reduced sense of safety and clean environment is informed by people's perception of change, the magnitude of the change is determined by understanding the actual changes to environmental conditions as a result of the project. As such, a review of the Technical reports supporting the EIS reported that:

- There is no evidence of impacts from current aircraft emissions on Sydney's drinking water catchment or data available which can be used to assess whether emissions from aircraft operations would result in increased loading of contaminants to surface water.
- Fuel jettisoning is conducted in emergency situations, and at a sufficient altitude it volatises as it falls and is completely dispersed as vapor before any liquid reaches ground level. An analysis of available incident data shows that fuel dumping does not have impacts at ground level if carried out in accordance with appropriate procedures (conducted over 7,000 ft or over the ocean) (Technical paper 4: Hazard and risk).
- Technical paper 2 identified that for the 2033 scenario there are no tangible or significant impact to air quality from the project. Increases in NO_2 are generally limited to a radius of approximately 5 to 6 km of the airport attributable to aircraft near or at ground level, primarily during take-off and landing. Emissions released higher than a few hundred metres above ground level do not appear to have any significant influence on ground level concentrations.
- For the 2055 scenario, the impact of emissions from the project on the existing pollutant concentrations would be negligible and would be unlikely to be discernible above background concentrations, except for NO_2 where an increase is expected in the vicinity of the airport, just outside the north-western section of the airport boundary.

Consequently, for the 2033 and 2055 scenarios, it is anticipated that a reduced sense of safety and clean environment would manifest as a Medium pre-mitigated impact for the local study area, and as a Low pre-mitigated impact for the regional study area.

Table 6.13 Sense of safety and clean environment due to concerns about air quality changes in the local area

Scenario	Extent	Likelihood	Magnitude	Pre-mitigated impact
2033	Local study area	Possibly	Minor	Medium
	Regional study area	Possibly	Minimal	Low
2055	Local study area	Possibly	Minor	Medium
	Regional study area	Unlikely	Minimal	Low

6.6.3 Environmental values resulting from concerns about biodiversity being affected by noise and air quality

Concerns over biodiversity and associated environmental values were largely focused on the GBMWHA (see Sections 4.3.3 and 6.6.1). Only Camden City Council raised concern about the potential need for reducing tree canopy and the risk of wildlife strike.

Wildlife strike risk was assessed in Technical paper 5: Wildlife strike risk, which concluded that the impact on protected species due to strikes with aircraft is likely to be minimal. However, populations must be monitored to allow for the early detection of emerging issues.

Furthermore, Technical paper 8: Biodiversity (Technical paper 8) assessed impacts on wildlife associated with noise, vibration, and air quality. The technical paper concluded that:

- wildlife impacts will be highest where aircraft generate the most noise, which is generally when aircraft are flying low or taking off/landing. Therefore, most noise-related impacts would be limited to near the runway/s, and the predicted noise levels are unlikely to result in changes at a magnitude that would threaten the viability of local populations of any species
- any alterations to air quality would be temporary, localised and unlikely to impact biodiversity values. Ecosystems in the region would not however be directly impacted upon and impacts are unlikely to result in a long-term decline that would threaten the viability of any of these ecosystems.

Consequently, it can be argued that no impacts to biodiversity values would occur for the broader local and regional social localities given that impacts to wildlife are likely to be minimal and that limited concerns about biodiversity outside the GBMWHA were raised. Note: social-environmental values attached to the GBMWHA are assessed separately in Section 6.6.1.

6.7 Livelihoods

6.7.1 Impacts on residential property values

The 2016 WSI EIS examined the potential impacts of flight paths on residential property values in the vicinity of the airport. It is broadly understood that property changes are subject to several factors. In recent years, COVID-19 has impacted the property market in Australia and as such the findings from the 2016 WSI EIS should be treated with caution as they might be outdated.

While the 2016 WSI EIS identified that aircraft noise broadly has adverse effects on residential prices, the EIS also acknowledged there are no studies exploring the impacts on large lot land holdings, which could be comparable to Badgerys Creek. As such, the EIS analysis was unable to identify adverse impacts on large lot land property prices attributable to aircraft noise in the range of ANEC 20–25. It was recommended that further analysis may be required to provide context about purchaser preferences that may ultimately drive property values around Badgerys Creek.

More recent research was developed by QUT (2020) to assess the impact of aircraft noise on Brisbane residential properties. The research was completed post-COVID-19 and included a 5-month period when both Brisbane Airport runways (and revised flight path) were in operation. The full 33-year analysis confirmed that the suburbs under the existing runway flight paths, and within the inner city and middle ring locations of Brisbane, are still showing higher average annual capital returns compared to other less well-located suburbs of Brisbane. If aircraft noise was the main driver of values in these suburbs, it would be expected that the average annual returns would be lower than the Brisbane median house price average capital return.

During consultation, stakeholders raised concerns about property prices and additional changes to land use. Feedback received included concerns over:

- property values, which may be impacted by the noise itself and by future rezoning when noise contours are finalised
- intent of future zones such as 'agribusiness', with people unsure what this would mean for their property, and if it might include reduced opportunities for landowners to modify their property (for residential uses)
- future requirements and associated costs for landowners to modify their property to comply with any future noise protection standards
- potential acquisition of properties identified as having excessive noise impacts.

Business organisations stated that they don't anticipate high impacts on property values.

Technical paper 11 identified the total loss in residential property value would be $53 million in 2033, increasing to a cumulative level of $147 million by 2055 (measured in 2022 dollars). However, the technical paper indicated that while the impact appears high, residential values in Western Sydney have increased considerably over the past 10 years, for example in Blacktown and Penrith LGAs both have increased by 130% (more than doubled) since September 2012, resulting in an average 6.3% real growth rate per annum. Hence for a dwelling inside the N70 contour, an immediate loss in value of 4.0% would be 'made good' by less than one year of growth in real capital gain.

Technical paper 11 concluded that impacts to property values would be compensated with capital gains as a result of population growth (and hence increasing housing demand), and that given that flight paths are a consequence of the airport itself and that a base case of no impact on residential properties is highly unlikely, then the marginal impact is likely to be significantly lower than the numbers shown above. However, it does presume that properties within the ANEC 20 will be subject to greater property value loss, when compared to those within noise contours N70 contours.

Consequently, for the 2033 and 2055 scenarios, it is anticipated that impacts on property values would manifest as a Low pre-mitigated impact for the regional study area, and as a Medium pre-mitigated impact for the local study area in the 2033 scenario.

Table 6.14 Impacts on property values

Scenario	Extent	Likelihood	Magnitude	Pre-mitigated impact
2033	Local study area	Possibly	Minor	Medium
	Regional study area	Possibly	Minimal	Low
2055	Local study area	Unlikely	Minor	Low
	Regional study area	Unlikely	Minimal	Low

6.7.2 Impact to the tourism and livelihoods associated with the Blue Mountains World Heritage Listing

The Blue Mountains were listed as a World Heritage Area in December 2000. The listing was based on criteria (vii) and (viii) of the UNESCO World Heritage Convention, which recognise the area's outstanding natural beauty, unique geological formations, and rich biodiversity.

During consultation, concerns about how outdoor activities in the Blue Mountains area would be affected, impacting visitation and the visitor economy in the area were raised. Interviewees reported the following areas as sensitive to noise, Jamison Valley, south of Echo Point, the Scenic cableway and Scenic Skyway and the Wentworth Falls lookout.

In addition, respondents were concerned about the potential loss of the UNESCO heritage listing and its impacts on visitation numbers, particularly national and international visitors. As outlined in Section 4.7.3, there are 800 registered tourism businesses and accommodation providers (mostly concentrated in Leura – Katoomba, Springwood – Winmalee, and Blaxland – Warrimoo – Lapstone, Mount Irvine, Blackheath, and Mount Victoria) that are dependent on the GBMWHA visitation economy.

A review of UNESCO Heritage listed sites showed there are no known examples of World Heritage sites losing their listings solely due to aircraft noise. The process of a site losing its World Heritage status is rare and typically involves significant concerns related to the site's conservation or management, and the decision to remove a site from the list is made by the UNESCO World Heritage Committee after careful evaluation. The closest example of the effects of aircraft noise on a UNESCO World Heritage Listing is the Westminster Palace and Abbey Complex in London, which was listed in 1987 but was placed on the organisation's endangered list in 2004 due to the noise pollution caused by aircraft flying over the city.

While there have not been cases in which a UNESCO heritage site has lost its status due to aircraft noise, impacts to the tourism economy resulting from aircraft noise in Australia have been documented. In 2018, a study by the University of Technology Sydney found that aircraft noise was a major concern for tourists visiting Sydney's popular tourist destinations, such as Bondi Beach and Sydney Opera House, with many reporting that it impacted their overall experience. The study estimated that the negative impact of aircraft noise on tourism in Sydney could cost up to $1.9 billion per year (University of Technology Sydney – Sydney Morning Herald, 2018). On the Gold Coast, a report by the Gold Coast Tourism Corporation (2015) found that aircraft noise was a major concern for tourists visiting the area, with many reporting that it impacted their decision to return. The report estimated that the negative impact of aircraft noise on tourism on the Gold Coast could cost up to $350 million per year (Gold Coast Tourism Corporation – The Australian, 2015).

Technical paper 11 identified that there are 26 short-stay accommodations inside the N60 contour and none inside the N70 contour. These places are in the St Marys to Penrith urban corridor with only one in the Blue Mountains. Most of the places are small-scale motels and hotels each providing around 15 to 30 rooms, with a few larger hotels. Consequently, the technical paper determined that it is not expected any of those places would lose any revenue in any measurable way.

Moreover, Technical paper 11 concluded that the visual impacts are not considered significant enough to result in any measurable economic impacts in terms of visitation numbers to the Blue Mountains area. As a result, there would be no loss in tourism spend in the area and hence no impacts on the local economy.

As such, pre-mitigated impact to the visitor economy and livelihoods associated with the Blue Mountains World Heritage Listing is Low for the local and regional study area for both 2033 and 2055 scenarios.

Table 6.15 Impact to the tourism and livelihoods associated with Blue Mountains World Heritage Listing

Scenario	Extent	Likelihood	Magnitude	Pre-mitigated impact
2033	Leura, Katoomba, Springwood, Winmalee, Blaxland, Warrimoo, Lapstone, Mount Irvine, Blackheath, and Mount Victoria	Unlikely	Minimal	Low
	Regional study area	Unlikely	Minimal	Low
2055	Local study area	Unlikely	Minimal	Low
	Regional study area	Unlikely	Minimal	Low

6.8 Decision-making systems

6.8.1 Capacity to participate due to a lack of understanding of flight paths and potential impacts

Communication, transparency and education about flight paths and associated impacts were consistently raised by stakeholders and community representatives as key concerns. As outlined in Section 3.1.4.1 DITRDCA implemented a comprehensive community and stakeholder engagement plan that included one on one/group briefings with key organisations and stakeholders, newsletters, website updates and community pop-up events. However, at the time of SIA consultation there was no specific information about the flight paths provided to the public, and it was noted that flight paths will be released with the EIS during public exhibition.

At the time of SIA consultation, the limited publicly available flight path information resulted in feedback relating to increased sense of uncertainty and limited people's capacity to decide over their future. Key findings included:

- a limited understanding of noise impacts, which results in speculation, fears and assumptions that may not always be correct
- limited information on available results and limited feedback – constraining people's capacity to identify impacts and recommend solutions (refer to Section 3.3.4)
- such lack of understanding of noise meant some people believed they could continue to live at their residences with no major change. This was evidenced during the door knock interviews where residents indicated they did not anticipate major noise impacts due to the direction of the runway, and they thought other suburbs would be more affected
- scepticism about how genuine the consultation process is – though some mentioned they appreciated the level of consultation. Many thought that flight paths were already known given the airport and runway are currently being built.

After SIA consultation, DITRDCA released the WSI noise tool prior to the display of the Draft EIS, which has allowed people to have a better understanding of the noise exposure at their residences and in places of interest more broadly. The release of the noise tool included the following activities across the local and regional study areas:

- detailed briefings to all organisations consulted with to date and key groups who have been engaged in the draft EIS process
- approximately 16 community information and feedback sessions
- approximately 4 community information stalls
- letterbox drop to residents, businesses, and organisations
- public notices in media, online and relevant information outlets
- community information line and email
- stakeholder meetings, presentations and emails.

In addition, DIDTRCA will provide an extended period for EIS public exhibition which will further the opportunity for those affected to give feedback to the project and management measures. Targeted engagement will also take place during the extended EIS public exhibition period with those eligible for amelioration.

Given that project engagement has taken place within the local and regional study area and that there will be additional opportunities for engagement during EIS public exhibition, it is possible that a proportion of residents and service providers within the local and regional study areas would have limited understanding about the flight paths, resulting in a medium impact to people's capacity to effectively engage and influence decision-making over issues that may affect their lives in both the local and regional study areas.

For the 2055 scenario, it is possible that existing and new residents may not be aware of the upcoming changes, resulting in a Medium pre-mitigated impact for those in the regional study area and local study area.

Table 6.16 Capacity to participate due to a lack of understanding about flight paths and potential impacts

Scenario	Extent	Likelihood	Magnitude	Pre-mitigated impact
2033	Local study area	Possibly	Moderate	Medium
	Regional study area	Possibly	Moderate	Medium
2055	Local study area	Possibly	Moderate	Medium
	Regional study area	Possibly	Moderate	Medium

Chapter 7 Cumulative impacts

Cumulative impacts have the potential to occur when impacts from a project interact or overlap with impacts from other projects.

Recent and proposed changes in planning, such as those occurring within the broader Aerotropolis precinct, will result in changes to community composition, way of life and livelihoods over time as the Aerotropolis transitions into a city. However, it is noted there are no other planned or potential airspace projects that have been identified that may introduce cumulative airspace direct or indirect impacts.

Other on-the-ground planned or potential projects in the locality that may contribute to cumulative indirect impacts relevant to the project include:

- Sydney Metro
- Western Sydney Infrastructure Plan including the M12 Motorway and upgrades to The Northern Road, Bringelly Road, Werrington Arterial Road and Glenbrook Intersection at Ross Street
- future supporting infrastructure such as orbital road links, transmission lines and extension of the South West Rail Line to facilitate access to and from the WSI
- Western Sydney Priority Growth Area including future planned industrial and employment lands to the east and south of the Airport Site.

Potential social cumulative impacts resulting from the project and the on-the-ground abovementioned projects include:

- incremental changes to community composition. It is anticipated there will be in and out migration resulting from the interaction of the projects, as people will experience changes to their way of life and others will be interested in moving into the area due to increased employment opportunities. These changes to the community composition will affect both positively and negatively the existing social fabric and cohesion of the communities in the local study area
- incremental increases in noise, light exposure and lower air quality may result in exacerbated effects to wellbeing, changes to the way people enjoy social infrastructure and their own properties. Some of these incremental changes may take place only during the construction of the on-the-ground projects. However, those living under noise contours (and in proximity to M12 Motorway and orbital road links) may experience long-term impacts
- incremental uptake of land and properties to construct the on-the-ground projects, paired with SEPP ANEC 20 land use restrictions, may contribute to constrained housing availability within the local study area. During consultation, it was evidenced that Mount Vernon and Badgerys Creek were already experiencing the cumulative effects of property acquisition, limiting housing options for those wanting to reside locally. However, it is acknowledged that within the regional study area there are a number of residential developments that will increase housing availability, such as Bradfield City Centre
- socio-economic sustainability of Luddenham may be enhanced due to the increased influx of people and business opportunities within the local study area.

Chapter 8 Management and mitigation measures

This chapter outlines proposed management measures to mitigate the impacts assessed in Chapter 6.

Additionally, a summary of existing controls and measures provided other technical papers informed the EIS are provided to contextualise the existing controls adopted for WSI that are relevant to the project.

8.1 Existing management measures relevant to the mitigation of social impacts

The 2016 EIS proposed management measures related to Stage 1 Development of WSI, which are relevant to the social impacts identified in this report. These included:

- aligning the Australian Government, NSW Government, and Western Sydney local governments economic and employment policies, strategies and plans to realise the full benefit from the proposed airport and other projects in the Western Sydney region
- continuing liaison with relevant agencies that may include local and state government agencies, tourism agencies, agencies responsible for affordable housing, Western Sydney Business Chamber and educational facilities including universities and TAFE, to inform agency planning activities and allocation of funding to programs that may benefit or otherwise be affected by the proposed airport
- continuing engagement with key stakeholders through the ongoing WSI Communication and Engagement Strategy
- implementing mitigation and management measures that would also address social amenity impacts as detailed in the relevant draft EIS technical studies including aircraft and ground-based operational noise assessments; surface transport and access assessment; local air quality and greenhouse gases assessment; landscape character and visual impact assessment; community health risk assessment; and regional air quality assessment
- finalising, communicating, and implementing a proposed noise mitigation policy to address landowner anxiety regarding noise impacts
- implementing other mitigation measures that may address community concerns, including measures such as air quality and water quality monitoring within or in the vicinity of the proposed airport.

In addition, strategic planning in the vicinity of WSI has considered and incorporated the operational needs of WSI into land use planning in accordance with guidance provided in the National Airport Safeguarding Framework (NASF) Guidelines. This has been ongoing for over a decade in conjunction with planning for the airport and is well established in existing planning instruments. This land-use planning has 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.

8.2 Dependencies and interactions with other mitigation measures

Interactions between mitigation measures in these technical papers, which are relevant to social impacts, include:

- Technical Paper 1: Aircraft noise, specifically those relating to the finalisation of the noise insulation and property acquisition policy, noise abatement procedures, noise complaints handling, the post-implementation review of the project and the establishment of a Community Aviation Consultation Group (CACG) to ensure appropriate community engagement on airport planning and operations.
- Technical paper 2: Air quality and greenhouse gas, specifically that WSA Co will continue to monitor ambient air quality in the vicinity of the airport to quantify the existing levels and monitor trends in pollutant concentrations over time and identify any exceedances or improvements. This will be undertaken in accordance with the requirements set out for the WSI Stage 1 Development Air Quality OEMP.
- Technical paper 4: Aircraft hazard and risk, specifically measures concerning fuel jettisoning and wildlife strike.
- Technical paper 6: Land use, specifically, the requirement for 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, and the management of wildlife strike.

8.3 Mitigation measures

Table 8.1 provides management and mitigation measures to address social impacts. The goal being to avoid, minimise or mitigate negative social impacts, and to maximise the identified positive impacts.

Table 8.1 Preliminary management measures

ID No.	Issue	Mitigation measure	Owner	Timing
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)

Chapter 9 Residual impacts

Table 9.1 details the residual impacts of the social impacts identified in Chapter 6, it outlines the recommended mitigation or enhancement measures or make reference to the relevant EIS technical paper mitigation measure that would address the identified social impact.

It is anticipated that after implementing existing controls and proposed management measures, pre-mitigated impacts rated:

- high will result in a Medium residual impacts
- medium will result in Medium to Low residual impacts
- low will result in Low residual impacts.

The only impact with High residual significance is the potential increased inequality for vulnerable groups under ANEC 20, N60 and N70 contours for the 2033 and 2055 scenarios.

Table 9.1 The project's residual impact assessment and recommended mitigation or enhancement measures

Scenario	Impact	Likelihood	Magnitude	Pre-mitigated impact	Existent controls and proposed management measures	Likelihood	Magnitude	Residual Impact
2033	Changes to community composition and sense of belonging in Luddenham, Badgerys Creek, Kemps Creek, Greendale and Silverdale	Likely	Moderate	High	• Noise abatement procedures • Noise insulation and property acquisition policy • WSA Co will establish a CACG • Airservices Noise Complaints and Information Service • Aircraft Noise Ombudsman • 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.	Possibly	Moderate	Medium
	Changes to community composition and sense of belonging in the local study area (outside the areas identified above)	Possibly	Minor	Medium		Unlikely	Minor	Low
	Changes to community composition and sense of belonging in the regional study area	Unlikely	Minor	Low		Very unlikely	Minor	Low
2055	Changes to community composition and sense of belonging in Luddenham, Badgerys Creek, Kemps Creek, Greendale and Silverdale	Unlikely	Minor	Low		Very unlikely	Minor	Low
	Changes to community composition and sense of belonging in local study area (outside the areas identified above)	Unlikely	Minor	Low		Very unlikely	Minor	Low

Scenario	Impact	Likelihood	Magnitude	Pre-mitigated impact	Existent controls and proposed management measures	Likelihood	Magnitude	Residual Impact
2033	Increased inequality for vulnerable groups under ANEC 20, N60 and N70 contours	Almost certain	Moderate	High	• Noise abatement procedures • Noise insulation and property acquisition policy • Aircraft Noise Ombudsman • 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 • Post-Implementation Review.	Likely	Moderate	High
	Increased inequality within the local study area	Possibly	Minimal	Low		Possibly	Minimal	Low
2055	Vulnerable groups under ANEC 20, N60 and N70 contours	Almost certain	Moderate	High		Likely	Moderate	High
	Increased inequality within the regional study area	Possibly	Minimal	Low		Possibly	Minimal	Low
2033	Changes to way of life due to residential amenity loss within the local study area	Likely	Moderate	High	• Noise abatement procedures • Noise insulation and property acquisition policy • WSA Co will establish a CACG • Airservices Noise Complaints and Information Service • Aircraft Noise Ombudsman • 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.	Possibly	Moderate	Medium
	Changes to way of life due to residential amenity loss within the regional study area	Possibly	Minor	Medium		Unlikely	Minor	Low
2055	Changes to way of life due to residential amenity loss within the local study area	Possibly	Moderate	Medium		Unlikely	Moderate	Medium
	Changes to way of life due to residential amenity loss within the regional study area	Possibly	Minimal	Low		Unlikely	Minimal	Low

Scenario	Impact	Likelihood	Magnitude	Pre-mitigated impact	Existent controls and proposed management measures	Likelihood	Magnitude	Residual Impact
2033	Changes to the use and enjoyment of social infrastructure within the local study area	Likely	Moderate	High	• Noise abatement procedures • Community Aviation Consultation Groups • Airservices Australia Noise Complaints and Information Service. • Aircraft Noise Ombudsman • 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.	Possibly	Moderate	Medium
	Changes to the use and enjoyment for GBMA visitors to lookouts and walking tracks under N60 and N70 contours	Likely	Moderate	High		Possibly	Moderate	Medium
	GBMA	Possibly	Minor	Medium		Possibly	Minimal	Low
	Changes to the use and enjoyment of social infrastructure within the regional study area	Possibly	Minor	Medium		Unlikely	Minor	Low
2055	Changes to the use and enjoyment of social infrastructure within the local study area	Unlikely	Minor	Low		Very unlikely	Minor	Low
	Changes to the use and enjoyment for GBMA visitors to lookouts and walking tracks under N60 and N70 contours	Likely	Moderate	High		Possibly	Moderate	Medium
	GBMA	Possibly	Minor	Medium		Possibly	Minimal	Low
	Changes to the use and enjoyment of social infrastructure within the regional study area	Possibly	Minor	Medium		Unlikely	Minor	Low

Scenario	Impact	Likelihood	Magnitude	Pre-mitigated impact	Existent controls and proposed management measures	Likelihood	Magnitude	Residual Impact
2033	Impacts to Aboriginal cultural values within the regional study area	Possibly	Moderate	Medium	• Noise abatement procedures • Airservices Noise Complaints and Information Service • DITRDCA will ensure that, where safe and feasible, the detailed design phase will consider Aboriginal cultural places and values. • Aircraft Noise Ombudsman • 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.	Possibly	Minor	Medium
	Impacts to Aboriginal cultural values linked to GBMA	Possibly	Moderate	Medium		Possibly	Minor	Medium
2055	Impacts to Aboriginal cultural values within the regional study area	Possibly	Moderate	Medium		Possibly	Minor	Medium
	Impacts to Aboriginal cultural values linked to GBMA	Possibly	Moderate	Medium		Possibly	Minor	Medium
2033	Impacts to housing affordability to communities under ANEC 20	Possibly	Minor	Medium	• Noise abatement procedures • Noise insulation and property acquisition policy • DITRDCA and WSA Co will continue to liaise with State and local government agencies to ensure applicable environmental planning	Unlikely	Minor	Low
	Impacts to housing affordability to population within broader local study area	Unlikely	Minimal	Low		Very unlikely	Minimal	Low
	Impacts to housing affordability to population within broader regional study area	Unlikely	Minimal	Low		Very unlikely	Minimal	Low

Scenario	Impact	Likelihood	Magnitude	Pre-mitigated impact	Existent controls and proposed management measures	Likelihood	Magnitude	Residual Impact
2055	Impacts to housing affordability to population within broader local study area	Unlikely	Minimal	Low	instruments have regard to ANEC forecasts produced for the project • Post-Implementation Review.	Very unlikely	Minimal	Low
	Impacts to housing affordability to population within broader regional study area	Unlikely	Minimal	Low		Very unlikely	Minimal	Low
2033	Sustainability of Luddenham and accessibility to social services	Likely	Moderate	High	• 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 • Post-Implementation Review • Airservices Noise Complaints and Information Service • Aircraft Noise Ombudsman • 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.	Possibly	Moderate	Medium
2055	Sustainability of Luddenham and accessibility to social services	Very Unlikely	Minimal	Low		Very Unlikely	Minimal	Low

Scenario	Impact	Likelihood	Magnitude	Pre-mitigated impact	Existent controls and proposed management measures	Likelihood	Magnitude	Residual Impact
2033	Detrimental effects to wellbeing as a result of changes to amenity to populations of Luddenham, Greendale, Silverdale, Wallacia and Kemps Creek	Likely	Moderate	High	• Noise abatement procedures • Noise insulation and property acquisition policy • Airservices Noise Complaints and Information Service • Aircraft Noise Ombudsman • 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 • Post-Implementation Review.	Possibly	Moderate	Medium
	Detrimental effects to wellbeing as a result of changes to amenity to population within the local study area (excluding above)	Possibly	Minor	Medium		Unlikely	Minor	Low
	Detrimental effects to wellbeing as a result of changes to amenity for GBMA visitors to lookouts and walking tracks under N60 and N70 contours	Possibly	Minimal	Low		Unlikely	Minimal	Low
	Detrimental effects to wellbeing as a result of changes to amenity to those within the regional study area	Possibly	Minimal	Low		Unlikely	Minimal	Low
2055	Detrimental effects to wellbeing as a result of changes to amenity for the populations of Luddenham, Greendale, Silverdale, Wallacia and Kemps Creek	Almost certain	Moderate	High		Possibly	Moderate	Medium
	Detrimental effects to wellbeing as a result of changes to amenity to population within the local study area (excluding above)	Likely	Minor	Medium		Unlikely	Minor	Low

Scenario	Impact	Likelihood	Magnitude	Pre-mitigated impact	Existent controls and proposed management measures	Likelihood	Magnitude	Residual Impact
	Detrimental effects to wellbeing as a result of changes to amenity for GBMA visitors to lookouts and walking tracks under N60 and N70 contours	Possibly	Minor	Medium		Unlikely	Minor	Low
	Detrimental effects to wellbeing as a result of changes to amenity to those within the regional study area	Possibly	Minimal	Low		Unlikely	Minor	Low
2033	Diminished wellbeing for First Nations people living under ANEC 20, N60 and N70 noise contours	Likely	Moderate	High	• Noise abatement procedures • Noise insulation and property acquisition policy • Airservices Noise Complaints and Information Service • DITRDCA will ensure that, where safe and feasible, the detailed design phase will consider Aboriginal cultural places and values • Aircraft Noise Ombudsman • 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.	Possibly	Moderate	Medium
	Diminished wellbeing for First Nations people living elsewhere in the local and regional study area	Possibly	Minimal	Low		Unlikely	Minimal	Low
2055	Diminished wellbeing for First Nations people living under ANEC 20, N60 and N70 noise contours	Likely	Moderate	High		Possibly	Moderate	Medium
	Diminished wellbeing for First Nations people living elsewhere in the local and regional study area	Possibly	Minimal	Low		Unlikely	Minimal	Low

Scenario	Impact	Likelihood	Magnitude	Pre-mitigated impact	Existent controls and proposed management measures	Likelihood	Magnitude	Residual Impact
2033	Changes in behaviour, attentiveness, and cognitive learning of children with cognitive disability as a result of aircraft noise for those who attend educational facilities under N60 and N70 24-hr noise contours.	Possible	Moderate	Medium	• Noise abatement procedures • Noise insulation and property acquisition policy • Post-Implementation Review • Airservices Noise Complaints and Information Service • Aircraft Noise Ombudsman • 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.	Possibly	Minor	Medium
2055	Changes in the behaviour, attentiveness, and cognitive learning of children with cognitive disability attending Mamre Anglican School.	Likely	Moderate	High		Possibly	Moderate	Medium
	Changes in the behaviour, attentiveness, and cognitive learning of children with cognitive disability as a result of aircraft noise for those who attend educational facilities under N60 and N70 24-hr noise contours.	Possible	Moderate	Medium		Possibly	Minor	Medium

Scenario	Impact	Likelihood	Magnitude	Pre-mitigated impact	Existent controls and proposed management measures	Likelihood	Magnitude	Residual Impact
2033	Diminished social values associated with Blue Mountains within the regional study area	Possibly	Moderate	Medium	• Noise abatement procedures • Airservices will apply existing procedures to deal with aircraft fuel jettisoning occurrences as per Manual of Air Traffic Services • WSA Co will establish a long-term flying-fox monitoring program • Post-Implementation Review.	Unlikely	Minor	Low
2055	Diminished social values associated with Blue Mountains within the regional study area	Possibly	Major	High		Unlikely	Moderate	Medium
2033	Reduced sense of safety and clean environment due to air quality changes in the local areal	Possibly	Minor	Medium	• WSA Co will continue to monitor ambient air quality in the vicinity of the airport to quantify the existing levels and monitor trends in pollutant concentrations over time and identify any exceedances or improvements • Community Aviation Consultation Groups • Noise abatement procedures • Noise insulation and property acquisition policy • Post-Implementation Review.	Unlikely	Minor	Low
	Reduced sense of safety and clean environment within the regional study area	Possibly	Minimal	Low		Unlikely	Minimal	Low
2055	Reduced sense of safety and clean environment due to air quality changes in the local areal	Possibly	Minor	Medium		Unlikely	Minor	Low
	Reduced sense of safety and clean environment within the regional study area	Unlikely	Minimal	Low		Unlikely	Minimal	Low
2033	Impacts on residential property values within the local study area	Possibly	Minor	Medium	• Noise abatement procedures • Noise insulation and property acquisition policy • Community Aviation Consultation Groups	Unlikely	Minor	Low
	Impacts on residential property values within the regional study area	Possibly	Minimal	Low		Unlikely	Minimal	Low

Scenario	Impact	Likelihood	Magnitude	Pre-mitigated impact	Existent controls and proposed management measures	Likelihood	Magnitude	Residual Impact
2055	Impacts on residential property values within the local study area	Unlikely	Minor	Low	• Aircraft Noise Ombudsman • Post-Implementation Review.	Unlikely	Minor	Low
	Impacts on residential property values within the regional study area	Unlikely	Minimal	Low		Unlikely	Minimal	Low
2033	Impact to the tourism and livelihoods associated with Blue Mountains World Heritage Listing for Leura, Katoomba, Springwood, Winmalee, Blaxland, Warrimoo, Lapstone, Mount Irvine, Blackheath, and Mount Victoria	Unlikely	Minimal	Low	• Noise abatement procedures • Airservices will apply existing procedures to deal with aircraft fuel jettisoning occurrences as per Manual of Air Traffic Services • WSA Co will establish a long-term flying-fox monitoring program Community Aviation Consultation Groups • Aircraft Noise Ombudsman • Post-Implementation Review.	Very unlikely	Minimal	Low
	Impact to the tourism and livelihoods associated with Blue Mountains World Heritage Listing for the Regional study area	Unlikely	Minimal	Low		Very unlikely	Minimal	Low
2055	Impact to the visitor economy and livelihoods associated with Blue Mountains World Heritage Listing for the Local study area	Unlikely	Minimal	Low		Very unlikely	Minimal	Low
	Impact to the visitor economy and livelihoods associated with Blue Mountains World Heritage Listing for the Regional study area	Unlikely	Minimal	Low		Very unlikely	Minimal	Low

Scenario	Impact	Likelihood	Magnitude	Pre-mitigated impact	Existent controls and proposed management measures	Likelihood	Magnitude	Residual Impact
2033	Limited capacity to participate due to a lack of understanding about flight paths and potential impacts within the local study area	Possibly	Moderate	Medium	• Community Aviation Consultation Groups • Aircraft Noise Ombudsman • 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.	Unlikely	Moderate	Medium
	Limited capacity to participate due to a lack of understanding about flight paths and potential impacts within the regional study area	Possibly	Moderate	Medium		Possibly	Minor	Medium
2055	Limited capacity to participate due to a lack of understanding about flight paths and potential impacts within the local study area	Possibly	Moderate	Medium		Unlikely	Moderate	Medium
	Limited capacity to participate due to a lack of understanding about flight paths and potential impacts within the regional study area	Possibly	Moderate	Medium		Unlikely	Minor	Medium

Chapter 10 Conclusion

This report provides the results of an SIA for the WSI flight paths. This report contains a description of the existing social baseline conditions for local and regional areas potentially affected by the project, an assessment of the potential likelihood and magnitude of the predicted direct, combined and cumulative social impacts on those communities during the operation of 2 scenarios for the project (2033 and 2055), and the list of recommended mitigation and enhancement measures associated with each identified social impact.

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

Due to the raft of existing planning measures in place surrounding WSI, the assessment has identified that the potential increase of inequality for vulnerable groups located in areas within ANEC 20, N60 and N70 contours for both the 2033 and 2055 scenarios would remain as the only potential residual impact with a High significance rating. All other potential impacts assessed have been identified as having 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.

Chapter 11 References

Australian Children's Education and Care Quality Authority (ACECQA). 2023. Service search. Retrieved 31 July 2023: https://www.acecqa.gov.au/resources/national-registers/services?s=Orchards+hill&field_service_id=.

Airservices Australia. Aircraft Operations Standard (AA-NOS-ENV2.100).

Australian Government. (1999). Environmental Protection and Biodiversity Conservation Act.

Australian Standard AS2021-2015 Acoustics – Aircraft Noise Intrusion Building Sitting and Construction (AS: 2021-2015).

Blacktown City Council. (2020). Local Strategic Planning Statement. Retrieved 20 April 2023: https://www.blacktown.nsw.gov.au/Plan-build/Planning-for-the-growth-of-our-City/Blacktown-Local-Strategic-Planning-Statement-2020.

Blue Mountains City Council. (2020). Local Strategic Planning Statement.

Blue Mountains City Council. (2021). Tourism Industry Profile 2021. Retrieved 20 April 2023: https://www.bmcc.nsw.gov.au/sites/default/files/docs/Blue%20Mountains%20Remplan%20Tourism%20Profile%202021.PDF.

Brisbane Airport New Parallel Runway. (2016). Draft EIS/MDP: Volume D9 – Airspace Social Impact Assessment.

Camden Council. (2020). Local Strategic Planning Statement.

Camden Council. (2022). Community Strategic Plan. Retrieved 20 April 2023: https://www.camden.nsw.gov.au/council/integrated-planning/community-strategic-plan/.

DCJ. (2021). Statistics: rent and sales by LGA.

Destination NSW. (2022). Blue Mountains Visitor Profile: Year ended September 2022. Retrieved from: https://www.destinationnsw.com.au/wp-content/uploads/2023/01/travel-to-blue-mountains-ye-sep-2022.pdf.

DITRDC (Department of Infrastructure, Transport, Regional Development and Communications). (1996). Airports Act. Retrieved 20 April 2023: https://www.legislation.gov.au/Details/C2010C00109.

DPE (Department of Planning and Environment). (2021). Environmental Planning and Assessment Regulation.

DPE (Department of Planning and Environment). (2023). Social Impact Assessment Guideline for State Significant projects. Retrieved 20 April 2023: https://www.planningportal.nsw.gov.au/sites/default/files/documents/2023/GD1944%20SIA%20Guideline_NEW%20VI_14_02_23.pdf.

DPE (Department of Planning and Environment). (2023). Technical Supplement for Social Impact Assessment Guideline for State Significant projects. Retrieved 20 April 2023: https://www.planningportal.nsw.gov.au/sites/default/files/documents/2023/GD1944%20SIAG%20-%20Technical%20Supplement_NEW%20VI_14_02_23.pdf.

Elton Consulting. (2018). Demographic and Social Infrastructure Assessment: Lowes Creek Maryland Precinct. Retrieved from: https://s3.ap-southeast-2.amazonaws.com/dpe-files-production/s3fs-public/dpp/292073/Social%20infrastructure%20assessment%20exhibition%20report%202018%2008%2027.pdf.

EPBC 2022/9143 Guidelines for the content of a draft environment impact statement: Western Sydney International Airport airspace and flight path design.

Fairfield City Council. (2020). Local Strategic Planning Statement. Retrieved 20 April 2023: https://www.fairfieldcity.nsw.gov.au/files/assets/public/documents/your_council/ipr/final-2022-2032-fairfield-city-plan.pdf.

Flindell, I. H., & Stallen, P. J. (2011). Aircraft noise exposure and residents' stress and hypertension: A public health perspective for airport environmental management. Journal of Air Transport Management, 17(5), 319-324.

Flindell, I. H., & Shultz, T. J. (2016). Aircraft noise around six large airports in Australia. Noise & health, 18(81), 69-76.

Greater Cities Commission. (2018). Greater Sydney Regional Plan: A Metropolis of Three Cities. Retrieved 20 April 2023: https://www.greatercities.au/metropolis-of-three-cities.

Greater Cities Commission. (2018). Western City District Plan. Retrieved 20 April 2023: https://www.greatercities.au/western-city-district-plan/about-plan.

Hawkesbury City Council. (2022). Local Strategic Planning Statement. Retrieved 20 April 2023: https://www.hawkesbury.nsw.gov.au/__data/assets/pdf_file/0020/57521/Hawkesbury-City-Council-Community-Strategic-Plan-2022-2042-Adopted-14-June-2022.pdf.

Lee et al. (2018). Academic Achievement and Noise Exposure of Elementary School Children. Journal of Environmental Psychology, vol. 54.

Liverpool City Council. (2022). Community Strategic Plan 2022–2032.

Liverpool City Council. (n.d.). Austral and Leppington. Retrieved from: https://www.liverpool.nsw.gov.au/development/planning-the-future/austral-and-leppington.

LMIP (Labour Market Information Portal). (2022). Small Area Labour Markets (SALM).

National Airports Safeguarding Framework (2012). Retrieved 20 April 2023: https://www.infrastructure.gov.au/infrastructure-transport-vehicles/aviation/aviation-safety/aviation-environmental-issues/national-airports-safeguarding-framework/national-airports-safeguarding-framework-principles-and-guidelines.

National Native Title Tribunal (NNTT). 2023. Native Title Vision Web Map NSW. Retrieved from: http://www.nntt.gov.au/assistance/Geospatial/Pages/NTV.aspx.

NBMLHD (Nepean Blue Mountains Local Health District). (2013). Health Profile: Nepean Blue Mountains Region. Retrieved 20 April 2023: https://www.nbmphn.com.au/Resources/About/043_1115-Regional-health-profile-final-weba.

NSW Government. (2021). Western Parklands City State Environmental Planning Policy. Retrieved 20 April 2023: https://legislation.nsw.gov.au/view/html/inforce/current/epi-2021-0728/lh.

Penrith City Council. (2020). Local Strategic Planning Statement. Retrieved 20 April 2023: https://yoursaypenrith.com.au/penrith-LSPS.

Penrith City Council. (2022). Community Strategic Plan

QUT. (2020). The Impact of Aircraft Noise on Brisbane Residential Property Sectors: 1988-2020. Available at: https://www.bne.com.au/sites/default/files/docs/2023-02/QUT_Noise_Impact_Supplementary_%20Report_2020.pdf.

South-Western Sydney Local Health District (SWSLHD). (2019). South West Sydney: our health, in brief. Retrieved 31 July 2023: SWS Our Health in brief.pdf (nsw.gov.au).

Stansfeld et al. (2005). Aircraft noise exposure and children's cognitive performance: The RANCH project. Aviation, Space, and Environmental Medicine, vol. 76, no. 10.

Sydney Water (2020). Western Sydney regional master plan. Available at: https://www.sydneywater.com.au/content/dam/sydneywater/documents/western-sydney-regional-master-plan.pdf.

United Nations Educational, Scientific and Cultural Organization (UNESCO). (2000). Blue Mountains World Heritage Area. Retrieved from https://whc.unesco.org/en/list/917/.

van Kamp, I., Davies, H., & Stellato, R. K. (2015). Annoyance from transportation noise: Relationships with exposure metrics DNL and DENL and their confidence intervals. Environmental Health, 14(1), 66.

Western Sydney Aerotropolis Development Control Plan. (2022).

Western Sydney Aerotropolis Precinct Plan. (2022).

Western Sydney Airport. (2016). Western Sydney Airport Environmental Impact Statement (EIS) - Appendix M, Socio-economic Assessment. Retrieved from https://www.wsaco.com.au/documents.

Western Sydney Airport. (2016). Health Impact Assessment.

Western Sydney Airport. (2016). Socio-Economic Impact Assessment.

WHO (World Health Organization). (2011). Burden of disease from environmental noise.

Wollondilly Shire Council. (2020). Local Strategic Planning Statement. Retrieved 20 April 2023: https://www.wollondilly.nsw.gov.au/assets/Documents-NEW/Council/Corporate-Planning-and-Reporting/Community-Strategic-Program-CSP/Wollondilly-2033-Community-Strategic-Plan.pdf.

Appendix A

Social impact methodology

A1 Scoping of social impacts

Table A.1 Scoping of social impacts

Impact category	Phase	Impact	Extent	Duration
Way of life	Operation	Changes to way of life caused by loss of residential amenity due to aircraft operation noise during the day or at night, including disruption to working from home, indoor activities and loss of ability to use outdoor areas.	Badgerys Creek, St Marys, Erskine Park, Greendale, Silverdale, Horsley Park and parts of Blacktown	Permanent
Health and wellbeing	Operation	Noise impacts due to airport ground-based operational noise. These impacts would occur during the daytime and night-time and affect dwellings and users of community infrastructure.	Luddenham, Mulgoa, Wallacia, Badgerys Creek, Bringelly and Rossmore, and Horsley Park	Permanent
Health and wellbeing	Pre-operation	Detrimental effects to health and wellbeing, as a result of anxiety, annoyance and stress due to perceived negative effects from aircraft operation.	Luddenham, Mulgoa, Wallacia, Badgerys Creek, Bringelly and Rossmore, and Horsley Park	Temporary
Health and wellbeing	Operation	Detrimental effects to health and wellbeing, including mental stress and interruption to sleep as a result of aircraft operation noise and emissions.	Luddenham, Wallacia, Mulgoa, Greendale, Badgerys Creek, Rossmore, Mount Vernon, Kemps Creek, Bringelly and Badgerys Creek	Permanent
Health and wellbeing	Pre-operation	Changes to wellbeing as a result of increased concern over residential property values and livelihood.	Badgerys Creek, Luddenham	Temporary
Health and wellbeing	Operation	Detrimental effects to health and wellbeing effects on children due to changes on behaviour, attentiveness, enjoyment and cognitive learning as a result of aircraft noise.	School communities at childcare or schools in Luddenham	Unknown
Decision-making systems	Pre-operation	Increased sense of powerlessness, frustration and lack of trust due to lack of understanding of flight paths and potential impacts.	Luddenham, Wallacia, Mulgoa, Greendale, Badgerys Creek, Rossmore, Mount Vernon, Kemps Creek, Bringelly and Badgerys Creek	Temporary

Impact category	Phase	Impact	Extent	Duration
Surroundings	Operation	Negative effects on the region's sense of place due to impacts to the valued quiet/peacefulness of the area, and disruption to people's enjoyment of nature and its sounds as a result of aircraft movement.	Bents Basin Conservation Area, Burragorang State Conservation Area, as well as the Blue Mountains (Blaxland) Luddenham, Badgerys Creek, Mount Vernon, Silverdale and Rossmore	Permanent
Accessibility	Operation	Changes to accessibility of public and private infrastructure due to noise, including the use of parks, recreation areas, and places of worship.	Badgerys Creek, Luddenham	Permanent
Livelihoods	Operation	Perceived detrimental effects to livelihoods due to a decreased number of visitors coming to the Blue Mountains area (and tourism areas), which may be sensitive to noise, including the Jamison Valley, south of Echo Point, the Scenic Cableway, Scenic Skyway and Wentworth Falls Lookout.	Blue Mountains	Permanent
Health and wellbeing	Operation	Negative effects to physical health including hypertension, hearing loss, increased risk of coronary heart disease and stroke as result of increased blood pressure from noise pollution.	Luddenham, Wallacia, Mulgoa, Greendale, Badgerys Creek, Rossmore, Mount Vernon, Kemps Creek, Bringelly and Badgerys Creek	Permanent
Health and wellbeing	Operation	Negative effects to physical health, as a result of increased NO_2 concentrations, leading to respiratory issues.	Luddenham, Bringelly, Kemps Creek, Mulgoa, Wallacia and Rossmore	Permanent
Surroundings	Operation	Loss of the Blue Mountains' aesthetic value, particularly for wilderness, geodiversity, biodiversity, water catchment, bequest, inspiration, spirituality, and existence.	Local, regional and national level	Permanent
Surroundings	Operation	Reduced sense of safety and clean environment due to concerns over fuel dumping in the local area.	Local and regional	Permanent
Culture	Operation	Detrimental effects on Aboriginal culture due to impacts on the connection to Sky for First Nations people.	First Nations communities: Dharug, Dharawal, Deerubbin, Gandangara	Permanent

Impact category	Phase	Impact	Extent	Duration
Way of life	Operation	Potential benefits to those who are currently in Sydney International flight paths, who may experience fewer impacts due to changes that accommodate the new airport's flight paths. Decreased impacts on health, amenity, etc., for those are under the current flight paths.	Sydney Inner West	Permanent
Community	Operation	Increased inequality as some of the streets/suburbs impacted by flight paths may include a higher concentration of people from lower socio-economic backgrounds.	Luddenham Badgerys Creek	Permanent
Community	Operation	Changes to community composition and character due to neighbours moving out of the local area and a potential influx of workers.	Luddenham Badgerys Creek	Permanent
Community	Pre-operation	Detrimental effects to social cohesion due to community division about the project.	Luddenham, Wallacia, Mulgoa, Greendale, Badgerys Creek, Rossmore, Mount Vernon, Kemps Creek, Bringelly and Badgerys Creek	Temporal
Surrounding	Operation	There is potential for an increase in aircrafts flying over the catchment of Warragamba Dam and Prospect Reservoir. There is no evidence of impacts from current aircraft emissions on Sydney's drinking water catchment, or data available which can be used to assess whether emissions from aircraft operations would result in increased loading of contaminants to surface water.	Luddenham, Wallacia, Mulgoa, Greendale, Badgerys Creek, Rossmore, Mount Vernon, Kemps Creek, Bringelly, and Badgerys Creek	Permanent

A2 Baseline indicators

Table A.2 Social data indicators and data sources

Impact category	Description	Indicators	Source
Community	Composition, cohesion, character, how the community functions, and people's sense of place.	Population	ABS 2021 Census of Population and Housing (ABS 2021 Census)
		Age profile	ABS 2021 Census
		Sex distribution	ABS 2021 Census
		Length of residency – usual residence is 5 years	ABS 2021 Census
		Voluntary work and unpaid assistance	ABS 2021 Census Consultation findings
		Community values	Consultation findings LGAs' Community Strategic Plans
		Potentially vulnerable groups	Consultation findings ABS 2021 Census
Way of life	How people live, how they get around, how they work, how they play, and how they interact each day.	Occupied private dwellings	ABS 2021 Census
		Household composition	ABS 2021 Census
		Family composition	ABS 2021 Census
		Social housing	ABS 2021 Census
		Housing structure	ABS 2021 Census
		Vehicle ownership and methods of travel	ABS 2021 Census
Accessibility	How people access and use infrastructure, services and facilities, whether provided by a public, private or not-for-profit organisation.	Level of highest educational attainment	ABS 2021 Census
		Local schools and childcare centres	ACARA 2021 ACECQA 2021
		Health and aged care services (hospitals, medical centres, aged care facilities)	Google Maps
		Emergency services	Google Maps Consultation findings

Impact category	Description	Indicators	Source
		Sports and recreation facilities	LGA Councils' websites Google Maps Land use and planning technical report
		Community services	LGA Councils' websites Google Maps
		Public infrastructure (roads, public transport options, etc.)	Consultation findings LGAs' Community Strategic Plans
Culture	Both Aboriginal and non-Aboriginal culture, including shared beliefs, customs, values and stories, and connections to Country, land, waterways, places and buildings.	First Nations residents	ABS 2021 Census ACHAR findings
		Country of birth	ABS 2021 Census
		Language	Consultation report ABS 2021 Census
Health and wellbeing	Health and wellbeing, including physical and mental health, especially for people vulnerable to social exclusion or substantial change, psychological stress resulting from financial or other pressures, and changes to public health overall.	Health and wellbeing insights	Consultation findings ABS 2021 Census South-Western Sydney (SWS) Local Health Districts (LHDs) report (2019) Nepean Blue Mountains (NBM) Local Health Districts (LHDs) report (2013)
		Need for assistance	ABS 2021 Census
		Long-term health conditions	ABS 2021 Census
Surroundings	Ecosystem services such as shade, pollution control and erosion control, public safety and security, access to and use of the natural and built environment, and aesthetic value and amenity.	Dwelling type	ABS 2021 Census
		Local environment and built form	Land use planning technical paper
		Aesthetic values and amenity	Consultation findings
		Public safety (crime)	NSW Bureau of Crime and Statistics

Impact category	Description	Indicators	Source
Livelihoods	Livelihoods, including people's capacity to sustain themselves through employment or business, whether they experience personal breach or disadvantage, and the distributive equity of impacts and benefits.	Housing stress (mortgage and rent payments/affordability)	ABS 2021 Census
		Short-term rental accommodation	Consultation findings
		Employment status	ABS 2021 Census Consultation findings
		Equivalised household income	ABS 2021 Census
		Socio-economic advantage/ disadvantage	ABS SEIFA 2016
		Tourism industry profile	Consultation findings Blue Mountains City Council Tourism Industry Profile (2021)

A3 Author declaration

This report was prepared by Carla Martinez, Principal – Communities and Social Performance at WSP Australia. Carla holds a Bachelor of Public Administration from the University of Santiago, a Diploma of Environmental Management and a Diploma of Community Relations from the Catholic University of Chile, Master of Development Practice major in Planning for Social Development from the University of Queensland. Carla has also completed a SIA course from the University of Strathclyde.

This assessment was undertaken during the period between June 2022 and June 2023, based on information available at the time of writing. It contains information relevant to the SIA for the project, and to my knowledge does not contain information that is false or misleading.

Carla Martinez, BPA, MDP, GradCertSIA
Principal, Communities and Social Performance, WSP Australia

Appendix B

Consultation findings

B1 Consultation findings

Table B.1 EIS engagement findings

Impact category	EIS engagement findings	Where addressed in this report
Community	Some residents feel the impacts are unfairly concentrated on Wollondilly and not so much on other LGAs surrounding the airport. Concern that Western Sydney would carry the burden of airport impacts without enjoying any of the benefits, or that any benefits would be outweighed by social and environmental impacts. Some respondents indicated they have moved to surrounding areas to get away from the impacts the airport will bring.	Section 6.1.2
Culture	Protecting significant sites of Aboriginal and non-Aboriginal heritage was also important for respondents. Respondents recommended that engagement with First Nations people be undertaken.	Section 6.3.1
Health and wellbeing	Noise from the airport (particularly relating to 24/7 operations and night-time noise) were top concerns. Concerns about unrestricted operations were also a key concern for respondents, noting that it would be difficult to sleep, and that the airport could increase stressors for young people and students. In addition, survey respondents noted that houses in the Blue Mountains often lack substantial soundproofing and students would be disproportionately impacted by noise.	Sections 6.5.1 and 6.5.3
Health and wellbeing	Concern that the topography of the area is unsuitable for an airport. It was raised that the topography could trap air pollution in the Western Sydney Basin and impact those with respiratory issues. Heat was also raised as an issue, noting that Western Sydney was already severely impacted by heat island effects and that this could be exacerbated by the airport. Out of pop-ups hours survey respondents also raised concerns about heat island effects in the area and the loss of green spaces.	Section 6.5
Health and wellbeing	Out of pop-ups hours survey respondents raised concerns about health impacts, noting that Western Sydney has a high percentage of people living with lung diseases and respiratory issues and any increase in air pollution would exacerbate this.	Sections 6.5
Surroundings	Concerns regarding environmental impacts (including emissions, pollution, climate change, air quality, wildlife/habitat, biosecurity, etc.). Survey respondents outside of pop-ups raised concerns about ecological flow-on effects from disturbing species of flying foxes and birds, which pollinate areas of bushland. Concerns were also raised about climate change impacts.	Section 6.6

Impact category	EIS engagement findings	Where addressed in this report
Surroundings	A number of people at some sessions felt strongly about not wanting flight paths over Warragamba Dam. They hold concerns about potential fuel dumping in the Blue Mountains National Park, while in other sessions there was low interest in the flight path impacts on the dam and the park. Pop-ups survey respondents consistently indicated that the proximity of the airport and flight paths to the Warragamba Dam catchment was a concern, noting the potential for water contamination by events such as fuel dumping.	Section 6.6
Surroundings	Concerns about jeopardising the BMCC's UNESCO status, due to increased pollution, disturbance to biodiversity – noting recent impacts of bushfires. It was noted that wildlife and vegetation are very sensitive to changes in their environment, with concern that Aboriginal history and the UNESCO status could be lost. Some concern was raised about overdevelopment and loss of green space, with emphasis on the Blue Mountains heritage, wilderness, and recreation as important values to uphold during all this change. The BMCC area was viewed by survey respondents as an important holiday zone for nearby residents and those in Greater Sydney – noting it is significant for the city's mental wellbeing. There was some concern that activities such as bushwalking, which are reliant on isolation, would be impacted. Similarly, activities such as hang gliding were important recreational activities for the community. A key concern for survey respondents continued to be that the area's fundamental "peace and quiet" character would be changed by the introduction of the airport. There is concern the BMCC area's uniqueness could be impacted by the airport's visual and noise impacts and that these would decrease its attractiveness for visitors.	Section 6.6.1
Livelihoods	Pop-ups survey respondents raised concern over the impact the airport would have on recreational activities such as hang gliding in the Blue Mountains, and how it would interact with other airspaces such as those at Camden or the RAAF base at Richmond.	Section 6.7.2
Livelihoods	One pop-up session saw a strong focus on the ANEC planning controls and the impact this is having on residents in Silverdale who want to develop their land. The feeling is that the planning controls unfairly restrict residents from being able to realise the value of their land because the ANECs take into consideration impacts from the airport at full capacity with dual runways. They don't want their land to be devalued. Increasing property prices as a result of the airport were discussed at multiple pop-up sessions. Other sessions raised the importance of planning controls to minimise impacts of the airport on surrounding communities. Survey respondents outside of pop-ups raised concern over house prices being devalued, with concern about whether noise insulation would be provided to existing houses in impacted areas.	Section 6.7.1

Impact category	EIS engagement findings	Where addressed in this report
Decision-making systems	Concerns around lack of information regarding flight paths. People are keen to see the flight paths to understand individual impacts and particularly what this might mean with the existing planning controls. However, most accept the logic of the flight paths needing to be released alongside an EIS for context and informed feedback. Some are hoping the new EIS will have more detail than the last, which they felt was inadequate – e.g., they would like detail specific on the range of aircraft that will use the airport (old and new). Pop-up survey respondents indicated there was disbelief by some members of the community that the government did not already know the flight paths, given the slated opening of the airport in 2026 and that construction on the airport has already commenced. Survey respondents outside of pop-ups raised concern that the engagement process will not consider feedback, and that it is a 'check-a-box' activity. There was also frustration that the flight paths had not been released and that information on airport operations was not transparent and that true impacts were unknowable without the publication of flight paths.	Section 6.8
Decision-making systems	Some are sceptical about how genuine the consultation is, given the fact the airport is already being built. Most people were pleased to see the project team back out in the community. The provided information was appreciated. Those that with negative views thought the flight paths must be known by now and the Government was keeping them hidden. These people made calls for greater transparency in consultation process. Discussion about flight paths was mostly prompted by the fact that people were told the team were there to talk about the flight path design process. Most people accepted the fact they won't see the flight paths until mid-next year. However, a few expressed concerns that the process was ingenuine because the Airport is already under construction.	Section 6.8

Table B.2 Local councils, health services and education services consultation feedback

Impact category	SIA consultation findings	Where addressed in this report
Way of life	Expected changes to the rural community lifestyle, as well as to the calm and serenity, the sense of place and people's ability to relax, including enjoyment of personal properties as well as open space.	Section 6.2.1
Way of life	The Blue Mountains is a backyard for people living in Western Sydney and allows them to access wilderness. Local people come to the Blue Mountains for domestic recreation (Blue Mountains City Council).	Section 6.2.2
Way of life	It was noted that there are 2 community health centres in Nepean Blue Mountains LHD (in St Clair and St Marys). Service provision in these centres could possibly be affected by the flight paths (SWSLHD).	Section 6.2.2
Community	Concerns about effects on community cohesiveness, due to land acquisition related to noise impacts and people needing to relocate. The existing very well-connected community would change dramatically if existing community were disrupted (Liverpool City Council). The community is currently facing challenges, which include housing affordability and mental health issues (Wallacia service).	Section 6.1.1
Culture	Concerns about direct and cumulative impacts to the cultural and spiritual aspects of Country. Traditional Owners are not in favour of flight paths over the natural wilderness areas (BMCC).	Section 6.3.1
Accessibility	The uncertainty about flight paths is affecting ongoing sustainability of the Luddenham community. There is concern about the continuity of schooling, shopping, etc. Luddenham needs to maintain a certain population level to support ongoing sustainability of the village. There are different views around the amount of development required to sustain the village (Penrith City Council).	Section 6.4.2
Accessibility	Biggest issue is families moving out of the area, and the rapid loss of enrolment numbers. Every student lost means an inability to afford teachers for children with special needs (Luddenham Service).	Section 6.4.2
Accessibility	Concerns about constraints to housing growth. Under the NSW Western City Parklands SEPP, development rights in the section of Horsley Park located under the SEPP ANEC 20 have been removed (e.g., the ability to subdivide a lot into 1 ha portions for new dwellings, dual occupancy and secondary dwellings). Fairfield City Council believes this step is both unreasonable and inequitable given the scale and extent of residential housing that is permitted (and exists) under other SEPP ANEC 20 areas around the country – including near Kingsford Smith Airport, which is under the 20-25 ANEC. Fairfield City Council has required noise insulation measures (in accordance with Australian Standards) in new residential development in Horsley Park. This means most housing under the SEPP ANEC 20 will have acoustic safeguards.	Section 6.4.1
Health and wellbeing	Concern about air quality related to fuel drops and ultra-fine particles from the planes and effects on water tanks. There is also a broader issue of air quality. The air monitoring station in Bringelly has historically registered high concentrations of air pollutants (SWLHD).	Section 6.5

Impact category	SIA consultation findings	Where addressed in this report
Health and wellbeing	Concern about direct impacts on schools, hospitals, and churches was shared across Campbelltown City Council and Fairfield City Council. Concern about noise impacts on children and classroom learning, including being able to communicate indoors and outdoors, and the impacts on childcare and on places where kids are taken out on excursions (Camden City Council, Wallacia service) Concern over flight path/flight movements being a distraction for students. Kids love planes, but they are also a distraction for children with autism and/or with sensory issues and can cause anxiety for some students. Living in a semi-rural area, seeing planes so close by could create anxiety for some students. (Luddenham Service).	Section 6.5.3
Health and wellbeing	Concern that aircraft noise may disturb work at the health clinic. The centre reported that healthcare providers in Luddenham have already observed an increase of construction workers and they see a potential challenge with accessibility for people from surrounding areas who do not have medical centres (Luddenham Medical Centre).	Section 6.5
Health and wellbeing	Concerns over people with cardiovascular disease affected by noise (WSLHD). There needs to be direct consultation with stakeholders and community to ensure their issues and concerns are addressed under this EIS.	Section 6.5
Health and wellbeing	Impacts at night-time were most worrisome from a health point of view. There will be an overall noise threshold, so if the cumulative noise is high enough there will be a threshold for acquisition (WSLHD). Many aged care developments and other sensitive developments are not soundproof – there is a need to look at mitigation for noise management. Concern about how the flightpath may affect sleeplessness, health and wellbeing.	Sections 6.5
Health and wellbeing	There is a high rate of people with asthma (WSLHD and Nepean Blue Mountains), and there is concern about how changes in air quality may affect these people (BMCC, Camden City Council). Many aged care developments and other sensitive developments are not soundproof – there is a need to look at mitigation for noise management. Concern about how the flightpath may affect sleeplessness, health and wellbeing (WSLHD).	Section 6.5

Impact category	SIA consultation findings	Where addressed in this report
Health and wellbeing	Noise can be a trigger for people living with disabilities, mental health issues and people on different spectrums. There is concern about the quality of life for these people (Camden City Council). Concern for people with mental health issues, dealing with changes in community over time (Wallacia service). People caring for people with disabilities – there is concern around flight paths and 24-hr operations – in particular, the impact on children and refugee and asylum seeker populations in Fairfield, Blacktown and Penrith (SWLHD). Concern about how changes in air quality may affect people (BMCC, Camden City Council). The elderly were identified as a vulnerable group to be affected by noise and decreased accessibility to health services (Luddenham Medical Centre and Bush Babies Preschool).	Sections 6.5
Health and wellbeing	Staff living under flight paths likely to have sleep disruption, increased stress and mental distress associated with noise, and interruption of working from home (WFH) activities. Noting that hospitals and health services have significant numbers of shift workers (WSLHD).	Sections 6.5
Health and wellbeing	Concern about flight paths affecting the ability of aircraft to control bush fires (BMCC).	Section 6.5
Health and wellbeing	A daycare centre raised that children are a vulnerable group that will be impacted by noise and pollution (day care service).	Section 6.5.3
Surroundings	Concerns about noise impacts on fauna and how air quality changes will affect the natural environment more broadly (BMCC). Concerns about diminishing tree canopy to reduce risk of bird strikes. State Government's priority is to increase tree canopy across Western Sydney (Camden City Council).	Section 6.6
Surroundings	Concerns about maintaining the World Heritage listing, including cumulative concerns about other projects might also affect the listing (BMCC).	Section 6.6.1
Livelihoods	Impacts on local businesses due to raised noise levels – e.g., hospitality – and reduced customers for outdoor dining (WSLHD).	Section 6.7.2
Livelihoods	Concerns about potential impacts on tourism. (Camden City Council). Direct and indirect employment opportunities from WSI and Aerotropolis for local residents (BMCC, Camden City Council, Campbelltown and Penrith).	Section 6.6.1
Livelihoods	Council is likely to change construction requirements for new dwellings, such as double glazing. This will result in increased cost and further constraints to affordability in the future (Camden City Council). Concerns about potential impacts on tourism. This is one of the areas where Camden would support submission/impacts of neighbouring councils. Camden would endorse/support any submission from them in terms of tourism (Camden City Council).	Section 6.7.1

Table B.3 Resident feedback during field visits

Impact category	SIA consultation findings - residents	Where addressed in this report
Way of life	Resident was mostly ambivalent about noise, noting that *"noise won't stop me from doing my thing"* (Wallacia).	Section 6.2.1
Way of life	Resident grows fruit and vegetables in the backyard but would stop once planes start due to concerns about pollution. Another resident noted they would not want to go to the park as much anymore (Luddenham). There was concern for people that are at home during the day, including parents that are home with children and people working from home who might not have been when the airport was approved (Luddenham).	Section 6.2.1
Community	It was noted that people will leave the area if there is a lot of noise from the airport (a lot of houses already coming up for sale). Some would like to stay but will have to move if there is too much noise (Mt Vernon and Luddenham).	Section 6.1.1
Health and wellbeing	Fuel dumping over residential areas. It was expressed that there will be pollution in Western Sydney and air quality will go down (Mt Vernon).	Section 6.5
Health and wellbeing	24-hour flights were a concern, especially the impact that these would have on families and younger people in the area (Luddenham). *"The uncertainty of what is happening is a concern for the family. It is a waiting game, and it is playing with our minds. The uncertainty is distressing."* (Luddenham).	Section 6.5
Health and wellbeing	Impacts on sleep at night-time and long-term health issues associated with sleep disturbance were a main concern. It was noted that Luddenham is currently very quiet at night. It is unclear whether this will change and it was noted that glazing on windows would not help as residents often sleep with their windows open for airflow (Luddenham).	Section 6.5
Health and wellbeing	Concern was raised over noise levels in school classrooms, noting that teachers may have to raise their voice to speak over flight noise which may cause vocal health issues (Luddenham). It was noted that impacts on parents and children would likely be more prevalent in St Clair (Luddenham).	Section 6.5.3
Health and wellbeing	Concern for sufferers of asthma in Luddenham, noting that symptoms have worsened in last 2 years with construction of roads/airport for one resident and their family. Concern for breathing problems for the elderly in the community was also raised (Luddenham).	Section 6.5
Health and wellbeing	Concern for the local fruit shop and for local people that sell produce to the fruit shop. This was raised as local crops may be impacted by air quality (Luddenham).	Section 6.5
Surroundings	Concerns were raised over flights passing over Warragamba Dam (Wallacia and Warragamba).	Section 6.6
Livelihoods	Concerns were raised over noise impacting property values and the ability to build on land (Warragamba and Luddenham).	Section 6.7.1

Impact category	SIA consultation findings - residents	Where addressed in this report
Livelihoods	A concern was raised about noise and vibration impacts on housing foundations during night-time operations. It was noted that helicopters passing overhead at night can sometimes cause windows to rattle (Luddenham).	Section 6.7.1
Decision-making systems	There is a lot that is unknown about the project, particularly around what noise impacts will be, and people are not discussing it in the community. People don't know what they will do about it (Mount Vernon). There is a lack of knowledge in the Luddenham community about how much noise will be experienced. There is an expectation that noise will be worse in areas like Twin Creeks and Silverdale where the flights will be overhead. High noise levels may cause people to move out of the area (Luddenham).	Section 6.8

Table B.4 Community organisation feedback

Impact category	SIA consultation findings – Community organisations	Where addressed in this report
Way of life	Direct impacts on way of life. Some of the feedback received included: *"We all moved here for the semi-rural peace and quiet, but we feel like we are being bombarded by developments. That isn't what we signed up for when we moved to Wallacia". "Noise impacts should be considered from an indoor and outdoor space perspective. While house insulation makes a difference when inside the house, most of us chose to live here because of the outdoor space and being outside"* (Wallacia Progress Association). *"The thing that attracted me to Luddenham is the semi-rural aspect. You have the advantages of residential living, with some limited retail and services, while still having the space around you. The peace and quiet, of course – but we understand what will come with the airport and we're not fighting it*" (Luddenham Progress Association). "*There is so much data and literature on how biodiversity contributes to wellness, both physical and mental. Being able to connect with local nature and not needing to travel a long way for this. People in their busy lives don't understand that we need a balanced ecosystem for clean water and a healthy environment*" (Mulgoa Valley Landcare).	Sections 6.2.1 and 6.2.2
Way of life	Concern about noise, impact on houses, liveability, changing nature of the place, poor information, lack of education, concern about rezoning and constraints of aircraft noise, land tax and rates (Community Commissioner).	Sections 6.1.1, 6.2.1, 6.2.2
Community	Concern about some people choosing to leave the area due to noise, acknowledging that for others this is their home and they will choose to stay (Wallacia Progress Association). Concern that the Kemps Creek community will be heavily affected while currently not being considered as such (Aerotropolis CCC).	Section 6.1.1
Community	Concern about disparity between west and east Sydney. The view is that the east gets a curfew and cap on flight paths, and that will not be the case in the west. Inequality between Kingsford Smith Airport and the regulation and the lack of regulation applied (RAWSA).	Section 6.1.2

Impact category	SIA consultation findings – Community organisations	Where addressed in this report
Community	Concern about increased domestic violence in areas that flown over. Views that domestic violence has become worse during the pandemic and is anticipated to be worsened by airport noise (RAWSA).	Section 6.1.2
Health and Wellbeing	It was noted that Mt Wilson and Mt Irvine communities are aging and there are people with medical conditions. The area is basically silent compared to being in Sydney, and there is concern that noise will have a big impact on the environment (Mt Wilson Progress Association and Mt Irvine Progress Association).	Section 6.5.1
Health and Wellbeing	Concern that acquisition is to be undertaken as a noise measure, which can lead to anxiety for CALD people. Similar concern with regard to the costs related to complying with new insulation policies (Ethnic Communities Council).	Section 6.5.1
Health and Wellbeing	Concern that everyone is going to be impacted by sleep disruption and long-term effects from sleep deprivation. Interviewee acknowledged that there are studies of impacts on children from overflight noise, as well as impacts on cardiovascular illnesses for people with pre-existing conditions (RAWSA).	Section 6.5.1
Health and Wellbeing	Concern about air quality being affected (Penrith Valley Chamber of Commerce).	Section 6.5.1
Health and Wellbeing	Concerns about the 24-hour operation. Reporting experiences of residents that can hear the airport activities during construction. Uncertainty around what noise should be expected and whether residents will be able to live with the reality of being within the ANEC 20 (Luddenham Progress Association). Concern about aircraft noise taking off and landing and fear that its volume would be unbearable because of 24-hour operations (Aerotropolis CCC).	Section 6.5.1
Health and Wellbeing	Wallacia was noted as an unusual suburb with a caravan park that is home to many people. These people have recently experienced major flooding. The caravans that people are living in often don't have substantial insulation and will be severely impacted by noise. This can be quite complex for people in terms of strata (Wallacia Progress Association).	Sections 6.5.1
Health and Wellbeing	Concerns about water quality accumulated in rainwater tanks, as well as agriculture and soil quality (fuel dumping) (Community Commissioner).	Section 6.5.1
Health and Wellbeing	Concerns about impacts to emergency services, in particular aerial firefighting (Penrith Valley Chamber of Commerce).	Section 6.5
Accessibility	Concern about the future of Luddenham. *"Our future is very uncertain. The lack of flight path information is putting Luddenham's future on hold... The State Government's plan (Luddenham Village Interim strategy) for the area has been put on hold from the Western Sydney Airport's objection to the communities preferred options of 3 or 4, due to not knowing the flight paths"* (Luddenham Progress Association).	Section 6.4.2

Impact category	SIA consultation findings – Community organisations	Where addressed in this report
Surroundings	Concern about Water quality. "*I'm not sure how much of a thing fuel dumping is for water quality, but we manage a large part of Sydney's water catchment*" (Greater Blue Mountains Area World Heritage Advisory Committee). Some people (e.g., living at Dwyer Road) do not have proper access to drinking water and use water from tank. This may be worsened by the pollution from airplane operation (Aerotropolis CCC).	Section 6.6
Surroundings	Concern about the loss of the Blue Mountains World Heritage listing. There is an understanding that there will be flight paths and planes overhead, but there is a question mark over whether this would impact the listing status (Blue Mountains Accommodation and Tourism Association).	Section 6.6.1
Surroundings	Concern about impacts to the Blue Mountain recreational uses. Interviewees outlined that Western Sydney residents visit the Blue Mountains for picnicking, hiking and enjoying the general nature (Luddenham Progress Association, Wallacia Progress Association, Mt Wilson Progress Association, Mt Irvine Progress Association and RAWSA).	Section 6.6.1
Livelihoods	Concerns about people's perception of property values loss and limited communication about the considerations and mitigations that are in place. As an example, it was stated that KSA is in a densely populated neighbourhood, and this hasn't really impacted property values (Business Western Sydney). Uncertainty around property valuation is one of the concerns. For many people their property is one of the few assets that they have, and they put significant efforts to maintain and improve it. So, unfair valuation and compensation would be detrimental for these families. In addition, insulation of the properties might take significant investments, especially in Twin Creeks (Aerotropolis CCC).	Section 6.7.1
Decision Making	Concern that there is a large number of residents that don't grasp that WSI will be a 24/7 operation and that aircraft will fly over through the night. Interviewee stated the need for information about how often flights will be and hours of operation (Penrith Valley Chamber of Commerce).	Section 6.8
Decision Making	Interviewees raised the need to provide accurate and transparent information. Some specific recommendations included: "*The EIS should be transparent, present the case for and against all options, and be easy to understand*" (RAWSA). "*Looking at the comments that the Advisory Committee made back in 2017 in their submission on the airport construction, I want to see something that is transparent and presents the case for and against all of the options in a way that is easily understood*" (GBMAWHAC). In addition, concern was raised about engagement being primarily focused on information delivery and it being unclear what the community can influence – this was paired with consultation fatigue and the need for more education around noise (Community Commissioner).	Section 6.8

Table B.5 Summary of feedback about potential management measures

Impact category	Summary of feedback about potential management measures
Community	• Opportunity to transfer learnings for new and emerging communities, and build a sense of community around the airport and apply those learnings. There is also opportunity to look at the needs and who will come and make up the community, particularly the community of people who live, work, play around the airport. They will have specific and different needs (Camden City Council). • WSI is a 'city shaping' project that will play a significant role in creating a new identity and character for the emerging Western Parklands City. WSI will help raise the profile and international awareness of Western Sydney, including opportunities for both new and existing commercial activities, industry and agribusiness (Fairfield City Council).
	Suggestions for mitigating inequality-related impacts: • support schemes for impacted communities were noted as important initiatives that the Australian Government could provide. This was focused on noise abatement schemes, and noise insulation measures. However, this also included providing support for First Nations communities and providing more funding for the local councils • provide sound-proofed indoor recreation venues to enable residents to remain active.
	To support the socio-economic sustainability of Luddenham, the following was proposed: • provide a response to Luddenham state plans • provide measures that support residential growth in Luddenham to sustain the village; the community does not want Luddenham to become another Bradfield • acknowledge that uncertainty about flight paths is affecting the sustainability of Luddenham village.
Health and wellbeing	To mitigate noise, the following was recommended: • consider that older properties have very poor insulation and insulation should be retrofitted at no cost to property owners • windows' double-glazing for educational services and compensation for the residents • noise mitigations need to be considered from indoor and outdoor space perspectives, i.e., consider how noise impacts can be mitigated in outdoor recreation spaces • planning controls should require all new homes in noise-affected areas to have acoustic insulation; insulation would have an added benefit of preparing homes for climate change extremes, i.e., cold and heat • consider using aircrafts with lower levels of noise – regulate which aircraft can operate out of the airport on this basis • consider a tax on noise emissions for the airport operators • night-time noise criteria should be consistent with health evidence, and there should be a threshold for acquisition if cumulative noise is high enough • Western Sydney will require additional funds for mental wellbeing and cardiovascular disease services to allow them to address increasing health impacts • investment in research and technologies for low noise/low carbon plane designs.

Impact category	Summary of feedback about potential management measures
Surroundings	To mitigate impacts to biodiversity values the following was recommended: • provide funding to conserve other areas in Western Sydney, including foraging areas and support initiatives to protect the environment • find and invest in biodiversity offsets that will be able to help the affected species • consider measures to address cumulative effects from Warragamba Dam and other developments in the Aerotropolis • ongoing monitoring and early warning monitoring system with the main goal of protecting the Blue Mountain National Park.
	Recommended mitigations for social services included: • there should be a budget provision for noise attenuation at schools and childcare centres in affected areas, as well as any other vulnerable population locations including homes, tertiary education institutions, aged care facilities, community facilities, and healthcare facilities • funding should be provided for soundproofing (windows, doors, walls, and roofs). Mitigations should be introduced early to prevent health impacts rather than once the airport is open • schools and childcare centres may require some sort of anti-shock measure in buildings as any vibration impacts could be distracting for young children • mitigation for environmental health concerns in outdoor areas should be considered i.e., pollution • proactive communication with stakeholders is a key mitigating factor to allow them to prepare. Understanding of what the flight path will be is very important to determine whether modifications or adjustments need to be made. Following confirmation and communication of flight paths, ongoing regular communication will be required.
Livelihoods	Suggestions for residential property mitigations: • ensuring acquisition or compensation payments are fair and won't leave those affected in financial difficulties. It was noted that compensation should be provided for lower property/business values • providing clarity around planning and residential development controls, ensuring that residential development is limited in impacted areas.
Livelihoods	Tourism-related impacts and suggestions: • Blue Mountain's Council noted that Council does not have the revenue base to pay for multimillion dollar tourism attractions in the Blue Mountains to support the anticipated increase in tourism, and that these types of upgrades would need to occur elsewhere. There is a need to provide funding from the Commonwealth or State governments for visitor infrastructure updates and sustainable maintenance of Blue Mountains • opportunity for funding to assist in aligning councils in Western Sydney. Blue Mountains Council noted that there is a need for a tourism strategy that brings all of the councils together. Far North Queensland was mentioned as an example of where this is working, with Cairns as the centre containing the main airport for the region. This is proposed as an opportunity for Destination NSW.

Impact category	Summary of feedback about potential management measures
Decision-making systems	Regarding the Draft EIS the following was recommended: • disclose the flight paths and noise impacts prior to Draft EIS submission • provide full and accurate disclosure of the adverse effects • provide meaningful and referenced supported assessments of benefits and impacts • liaise with wider group for more comprehensive submission to EIS process • clearly document modelling assumptions • incorporate measurable and validated statements of outcomes of flight paths.
	The following were recommended to enhance engagement with local community and vulnerable groups: • tap into existing networks, run focus groups and information sessions on specific topics • use different mediums of communication to engage (videos, podcasts) • certain populations including elderly people, people with lower levels of education, and CALD communities may require alternative forms of communication to engage with the material, i.e., elderly people may be more reliant on print media as they are less digitally literate • improve people's understanding of what living with noise would actually look like • provide clarity and certainty for the community through information that is clear and easily understandable and have conversations as soon as something tangible is available to all people to plan for their futures, particularly with regard to potential acquisitions • inform the community of what impact their feedback can have on the EIS/design.
	To mitigate decision-making impacts, the following is recommended: • information provided to communities needs to be accurate and transparent – communities are aware, informed, and want to make meaningful contributions to the planning process • information needs to be short and in plain language to ensure the community can provide informed feedback • the community wants to see cases for and against all available options • communication should clearly state what the community can influence as opposed to merely delivering information • more education is need around noise.

Appendix C

Social baseline data

C1 Community

Composition, cohesion, character, how the community functions, and people's sense of place.

C1.1 Population demographics

Table C.1 Total population regional study area, 2016–2021

Regional study area LGAs	2016*	2021**	Total change	% change	Av. annual growth (%)
Blacktown	336,962	396,776	59,814	17.8%	3.6%
Blue mountains (C)	76,904	78,121	1,217	1.6%	0.3%
Camden (A)	78,218	119,325	41,107	52.6%	10.5%
Fairfield	198,817	208,475	9,658	4.9%	1.0%
Hawkesbury	64,592	67,207	2,615	4.0%	0.8%
Liverpool	204,326	233,446	29,120	14.3%	2.9%
Penrith	196,066	217,664	21,598	11.0%	2.2%
Wollondilly	48,519	53,961	5,442	11.2%	2.2%
Regional study area	**1,204,404**	**1,374,975**	**170,571**	**14.2%**	**2.8%**
NSW	**7,480,228**	**8,072,163**	**591,935**	**7.9%**	**1.6%**

*Source: *ABS 2016, QuickStats: People; **ABS 2021, Quickstats: People*

Table C.2 Total population, local study area, 2016–2021

	2016*	2021**	Total change	% change	Av. annual growth (%)
Austral	3,024	6,847	3,823	126.4%	25.3%
Rossmore	2,286	2,241	-45	-2.0%	-0.4%
Mulgoa	1,898	2,044	146	7.7%	1.5%
Cecil Park	771	815	44	5.7%	1.1%
Cobbitty	2,063	4,206	2,143	103.9%	20.8%
Bringelly	2,507	2,433	-74	-3.0%	-0.6%
Glenmore Park	23,004	25,021	2,017	8.8%	1.8%
Orchard Hills	1,877	1,798	-79	-4.2%	-0.8%
St Clair	19,897	19,942	45	0.2%	0.0%
Silverdale	3,682	4,543	861	23.4%	4.7%
Greendale	348	314	-34	-9.8%	-2.0%
Warragamba	1,241	1,202	-39	-3.1%	-0.6%
Wallacia	1,627	1,711	84	5.2%	1.0%
Luddenham	1,828	1,927	99	5.4%	1.1%
Badgerys Creek	225	168	-57	-25.3%	-5.1%
Kemps Creek	2,268	2,121	-147	-6.5%	-1.3%
Mount Vernon	1,192	1,235	43	3.6%	0.7%
Horsley Park	1,837	1,790	-47	-2.6%	-0.5%
Local study area	**71,575**	**80,358**	**8,783**	**12.3%**	**2.5%**
NSW	**7480230**	**8072163**	**591,933**	**7.9%**	**1.6%**

*Source: *ABS 2016, QuickStats: People; **ABS 2021, Quickstats: People*

Table C.3 Population projections, local study area, 2023–2041

Small areas	2023	2041	Total change 2023–2041	% change 2023–2041	Annual growth (%)
Austral	13,567	68,771	55,204	406.9%	81.4%
Greendale, Luddenham, Silverdale, Wallacia (Liverpool City Council)	6,430	35,620	29,190	454.0%	90.8%
Wallacia – Warragamba – Silverdale (Wollondilly Shire Council)	6128	7,838	1,710	27.9%	5.6%
Lowes Creek Precinct	541	17,401	16,860	3,116.5%	623.3%
Marylands Precinct	184	48,978	48,794	26,518.5%	5,303.7%
Grasmere – Ellis Lane – Cawdor – Bickley Vale – Cobbitty Hills	4378	5,753	1,375	31.4%	6.3%
Horsley Park – Cecil Park	2581	2,570	-11	-0.4%	-0.1%
Local study area	**33,809**	**186,931**	**153,122**	**452.9%**	**90.6%**

Source: DPE 2021, projection explorer

Table C.4 Social housing in the regional study area

	Blacktown	Blue Mountains	Camden	Fairfield	Hawkesbury	Liverpool	Penrith	Wollondilly	Regional study area
Social housing	5.9	1.7	1.3	7.3	3.2	6.1	3.9	1.0	4.8

Table C.5 Age profile, regional study area 2021

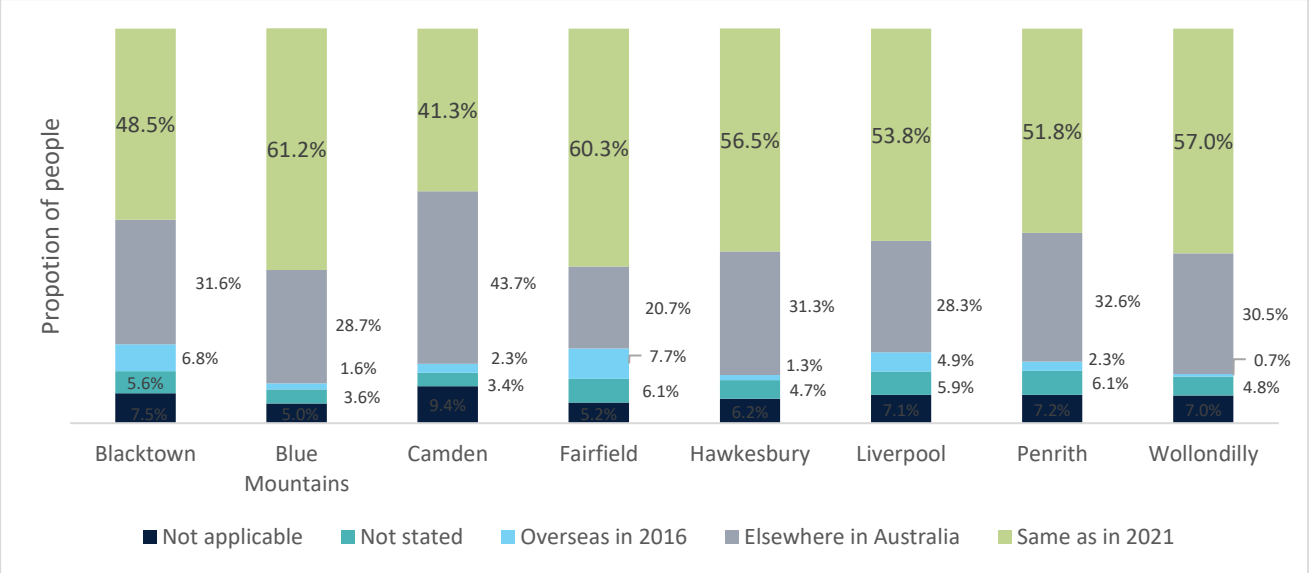
	Regional study area	%
0-4 years	96,055	9.5%
5-9 years	68,864	6.8%
10-14 years	68,210	6.8%
15-19 years	64,440	6.4%
20-24 years	63,801	6.3%
25-29 years	66,084	6.6%
30-34 years	69,351	6.9%
35-39 years	70,085	7.0%
40-44 years	63,856	6.3%
45-49 years	64,167	6.4%
50-54 years	61,240	6.1%
55-59 years	58,298	5.8%
60-64 years	54,638	5.4%
65-69 years	45,120	4.5%
70-74 years	37,731	3.7%
75-79 years	24,826	2.5%
80-84 years	16,255	1.6%
85 years and over	15,060	1.5%

Source: ABS 2021, TableBuilder, AGEP

Table C.6 Age profile by service age groups, local study area 2021

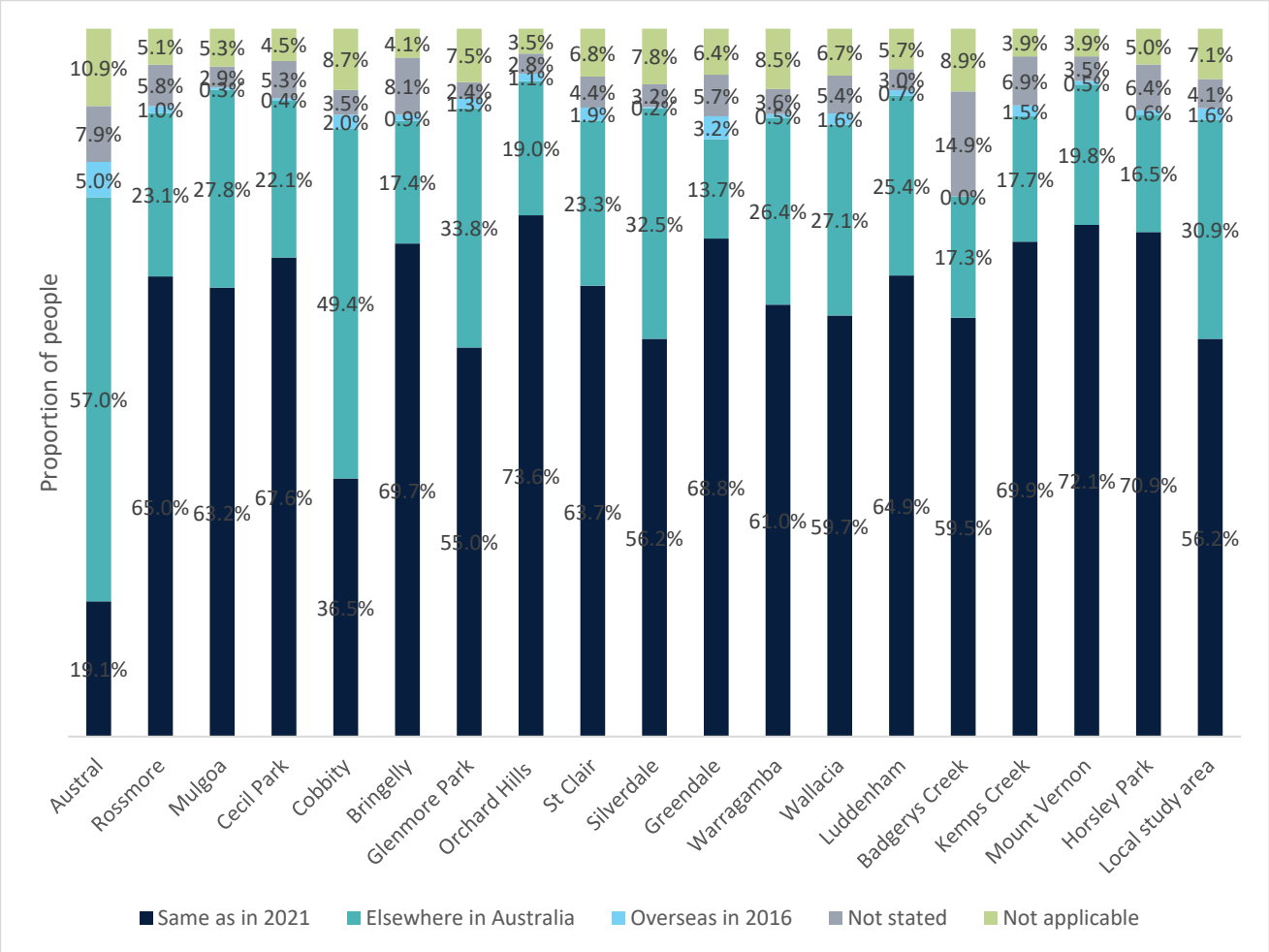
	0–4 years	5–11 years	12–17 years	18–24 years	25–34 years	35–49 years	50–59 years	60–69 years	70–84 years	85 years and over
Austral	10.8%	10.7%	7.2%	7.3%	21.8%	21.7%	7.7%	5.4%	5.2%	2.1%
Rossmore	5.0%	8.1%	9.8%	9.9%	10.2%	18.5%	13.3%	10.9%	12.1%	1.6%
Mulgoa	5.4%	9.2%	10.1%	9.6%	9.1%	19.6%	13.2%	11.4%	10.7%	1.0%
Cecil Park	4.7%	6.7%	7.1%	10.2%	10.4%	16.2%	16.1%	11.3%	11.4%	2.5%
Cobbitty	8.5%	9.6%	7.9%	7.8%	16.0%	19.8%	9.8%	9.6%	9.7%	0.9%
Bringelly	3.8%	8.1%	8.8%	10.6%	10.6%	16.9%	14.7%	14.0%	10.8%	1.3%
Glenmore Park	7.6%	11.2%	9.8%	9.6%	12.9%	23.2%	12.0%	8.4%	**4.6%**	0.6%
Orchard Hills	3.4%	6.8%	7.6%	11.7%	9.5%	14.3%	18.3%	11.7%	**13.8%**	2.3%
St Clair	6.8%	9.9%	8.1%	8.6%	14.3%	20.0%	12.1%	12.9%	**6.5%**	0.7%
Silverdale	8.1%	10.3%	9.4%	8.7%	13.3%	20.6%	12.8%	10.6%	**6.1%**	0.6%
Greendale	6.4%	7.6%	8.3%	7.3%	11.1%	14.0%	20.4%	9.9%	**12.1%**	0.0%
Warragamba	8.4%	9.5%	5.1%	8.0%	18.2%	17.3%	14.2%	9.6%	**6.5%**	1.0%
Wallacia	6.7%	9.9%	8.1%	8.8%	11.2%	18.5%	13.5%	11.6%	**12.0%**	1.1%
Luddenham	5.5%	10.7%	9.7%	10.1%	10.5%	19.5%	14.8%	9.4%	**6.3%**	0.6%
Badgerys Creek	7.1%	10.7%	4.2%	4.2%	14.3%	27.4%	6.5%	14.3%	**13.7%**	2.4%
Kemps Creek	3.8%	8.1%	7.9%	10.3%	10.2%	17.2%	14.8%	13.1%	**10.6%**	2.5%
Mount Vernon	4.4%	8.3%	11.4%	12.2%	10.0%	16.8%	15.6%	11.7%	**9.2%**	1.4%
Horsley Park	4.9%	8.2%	6.3%	9.8%	10.4%	17.4%	14.7%	11.6%	**14.4%**	2.7%
Local study area	**7.1%**	**10.1%**	**8.7%**	**9.1%**	**13.7%**	**20.6%**	**12.3%**	**10.3%**	**7.0%**	**1.0%**

Source: ABS 2021, TableBuilder, AGEP



Source: ABS 2021, TableBuilder, UAI5P

Figure C.1 Length of residency – usual address 5 years ago, regional study area, 2021



Source: ABS 2021, TableBuilder, UAI5P

Figure C.2 Length of residency – usual address 5 years ago, local study area, 2021

C2 Way of life

Table C.7 Average household size, regional study area, 2021

	Average household size
Blacktown	3.1
Blue Mountains	2.4
Camden	3.1
Fairfield	3.2
Hawkesbury	2.8
Liverpool	3.2
Penrith	2.8
Wollondilly	3
NSW	2.6

Source: ABS 2021, QuickStats, All private dwellings

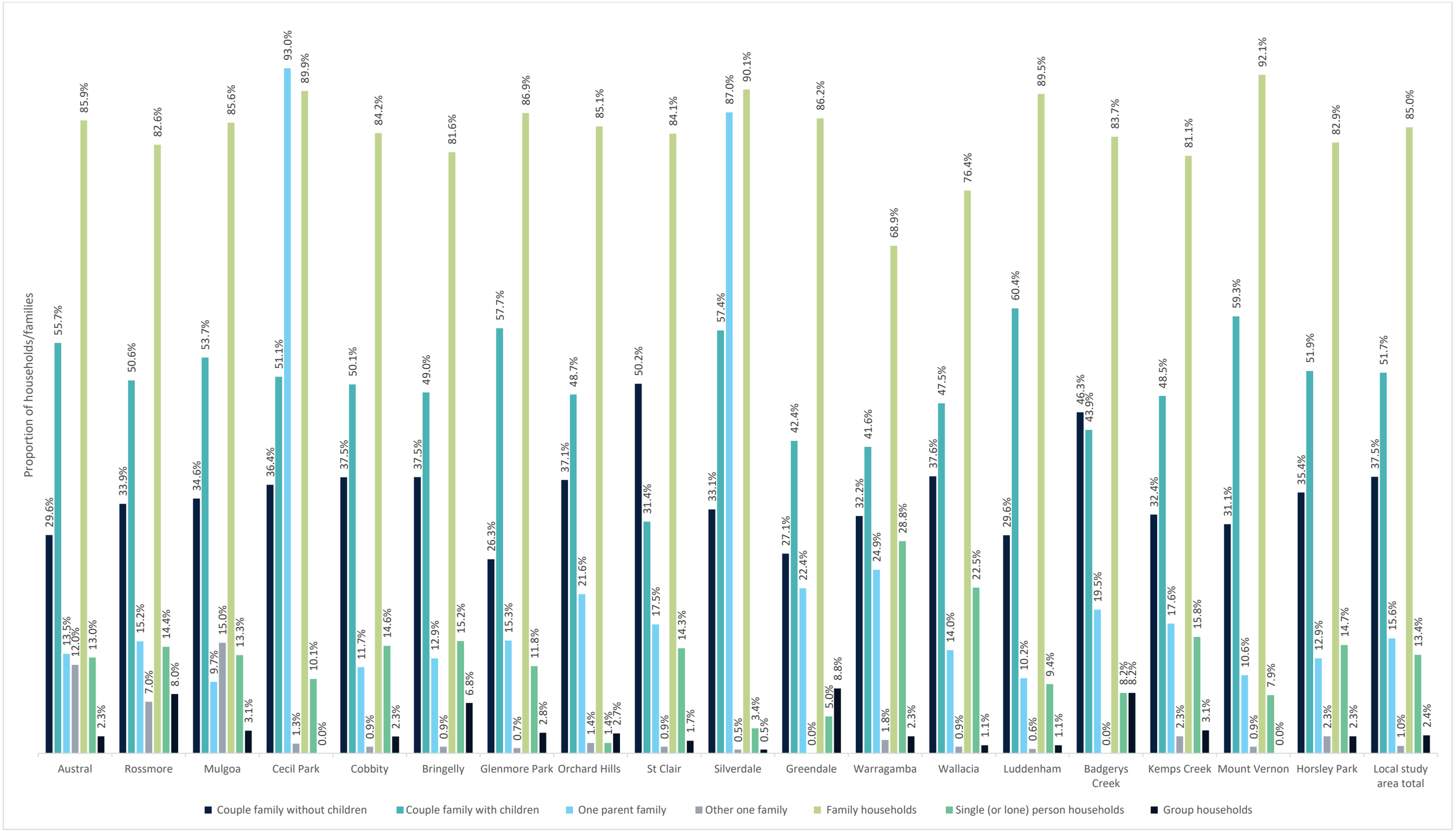
Table C.8 Dwellings, local study area, 2021

		Occupied private dwellings	Unoccupied private dwellings	Total private dwellings
Austral	No	1,992	142	2,261
	%	93.4%	6.7%	–
Rossmore	No	609	60	707
	%	90.9%	9.0%	–
Mulgoa	No	585	31	642
	%	95.1%	5.0%	–
Cecil Park	No	218	5	245
	%	94.8%	2.2%	–
Cobbitty	No	1,406	51	1,495
	%	96.4%	3.5%	–
Bringelly	No	689	53	791
	%	93.1%	7.2%	–
Glenmore Park	No	7,801	218	8,174
	%	97.3%	2.7%	–

		Occupied private dwellings	Unoccupied private dwellings	Total private dwellings
Orchard Hills	No	558	31	603
	%	94.4%	5.2%	–
St Clair	No	6,327	181	6,748
	%	97.3%	2.8%	–
Silverdale	No	1,342	45	1,428
	%	96.8%	3.2	–
Greendale	No	83	8	98
	%	92.2%	8.9	–
Warragamba	No	466	35	514
	%	92.6%	7.0	–
Wallacia	No	564	23	614
	%	95.9%	3.9	–
Luddenham	No	528	35	577
	%	93.8%	6.2	–
Badgerys Creek	No	51	9	68
	%	86.4%	15.3	–
Kemps Creek	No	595	40	681
	%	93.7%	6.3	–
Mount Vernon	No	313	8	331
	%	97.2%	2.5	–
Horsley Park	No	519	55	598
	%	90.7%	9.6	–
Local study area	No	**24,646**	**1,030**	**26,575**
	%	**92.7%**	**3.9%**	**–**
Regional study area		439,243	25,643	**464,886**
		94.5%	5.5%	**–**

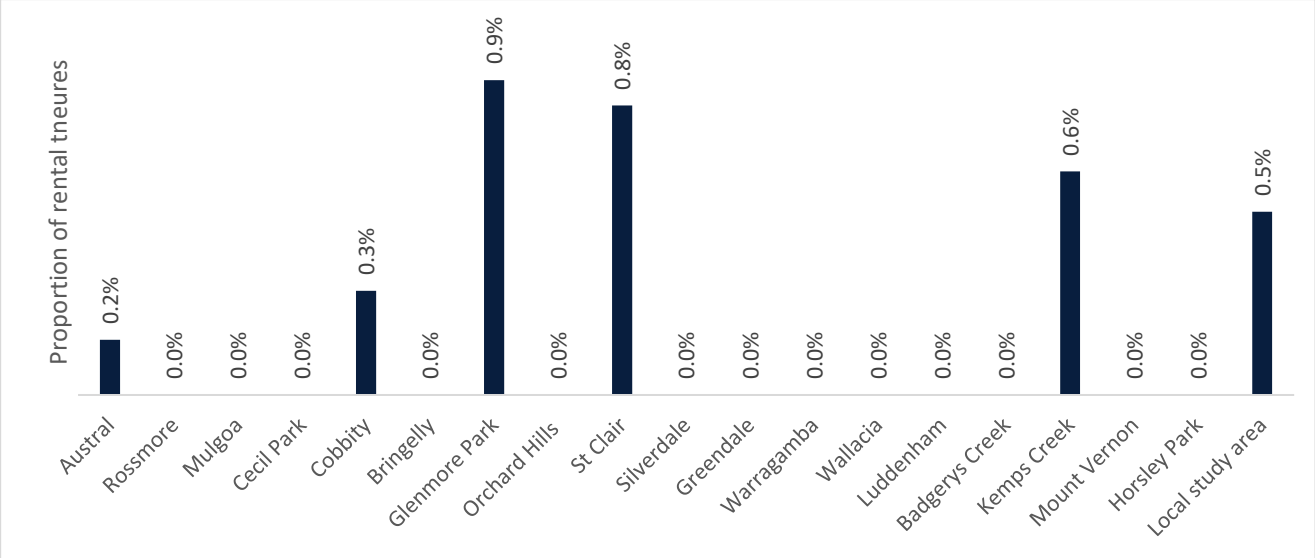
Source: ABS 2021, QuickStats: Dwellings

Notes ABS notes a data use consideration for this indicator: there is a data error with this variable, with a small number of people with incorrectly coded migratory, off-shore, or shipping statuses, as well as difficulties in determining dwelling type for dwellings with mixed occupancy or where contact with residents was not possible to confirm dwelling types. This results in many of the occupied and unoccupied private dwelling totals not equalling 100% of the total private dwellings.



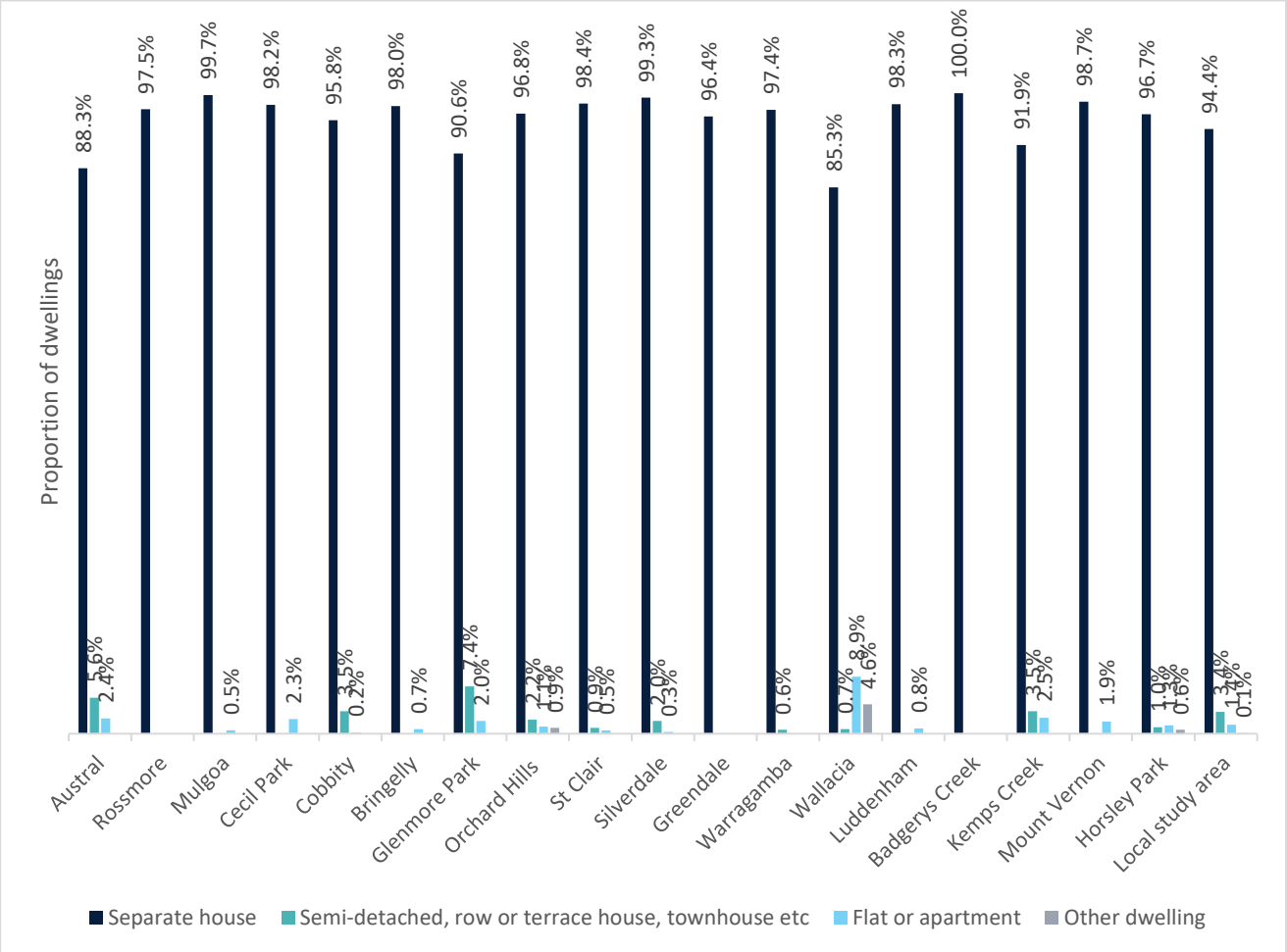
Source: ABS 2021, QuickStats: Families and Housing

Figure C.3 Family and household composition local study area 2021



Source: ABS 2021, TableBuilder: LLDD

Figure C.4 Social housing tenure (State/Territory and community housing providers) in the local study area, 2021



Source: ABS 2021, QuickStats, Dwellings

Figure C.5 Dwelling structure, 2021

C3 Culture

Table C.9 First Nations population, 2021

	No	%
Austral	244	1.4%
Rossmore	165	2.1%
Mulgoa	76	2.1%
Cecil Park	36	0.0%
Cobbitty	186	3.4%
Bringelly	132	2.3%
Glenmore Park	1037	3.7%
Orchard Hills	109	2.9%
St Clair	1052	3.8%
Silverdale	164	4.6%
Greendale	16	3.2%
Warragamba	69	7.9%
Wallacia	83	3.9%
Luddenham	54	2.3%
Badgerys Creek	15	0.0%
Kemps Creek	169	2.5%
Mount Vernon	48	1.9%
Horsley Park	129	1.8%
Local study area	**2,658**	**3.3%**
Regional study area	**39,686**	**2.9%**

Source: ABS 2021, QuickStats: Indigenous status

Table C.10 Country of birth, 2021

	No	%
Australia	64,066	79.7%
England	1,574	2.0%
India	1,180	1.5%
New Zealand	956	1.2%
Italy	891	1.1%
Iraq	632	0.8%
Philippines	502	0.6%
Malta	490	0.6%
Lebanon	303	0.4%
Nepal	297	0.4%
China (excludes SARs and Taiwan)	216	0.3%
Germany	31	0.0%
Croatia	25	0.0%
Ireland	20	0.0%
Fiji	19	0.0%
Cambodia	9	0.0%
Netherlands	8	0.0%
Tonga	5	0.0%

Source: ABS 2021, QuickStats: Country of birth

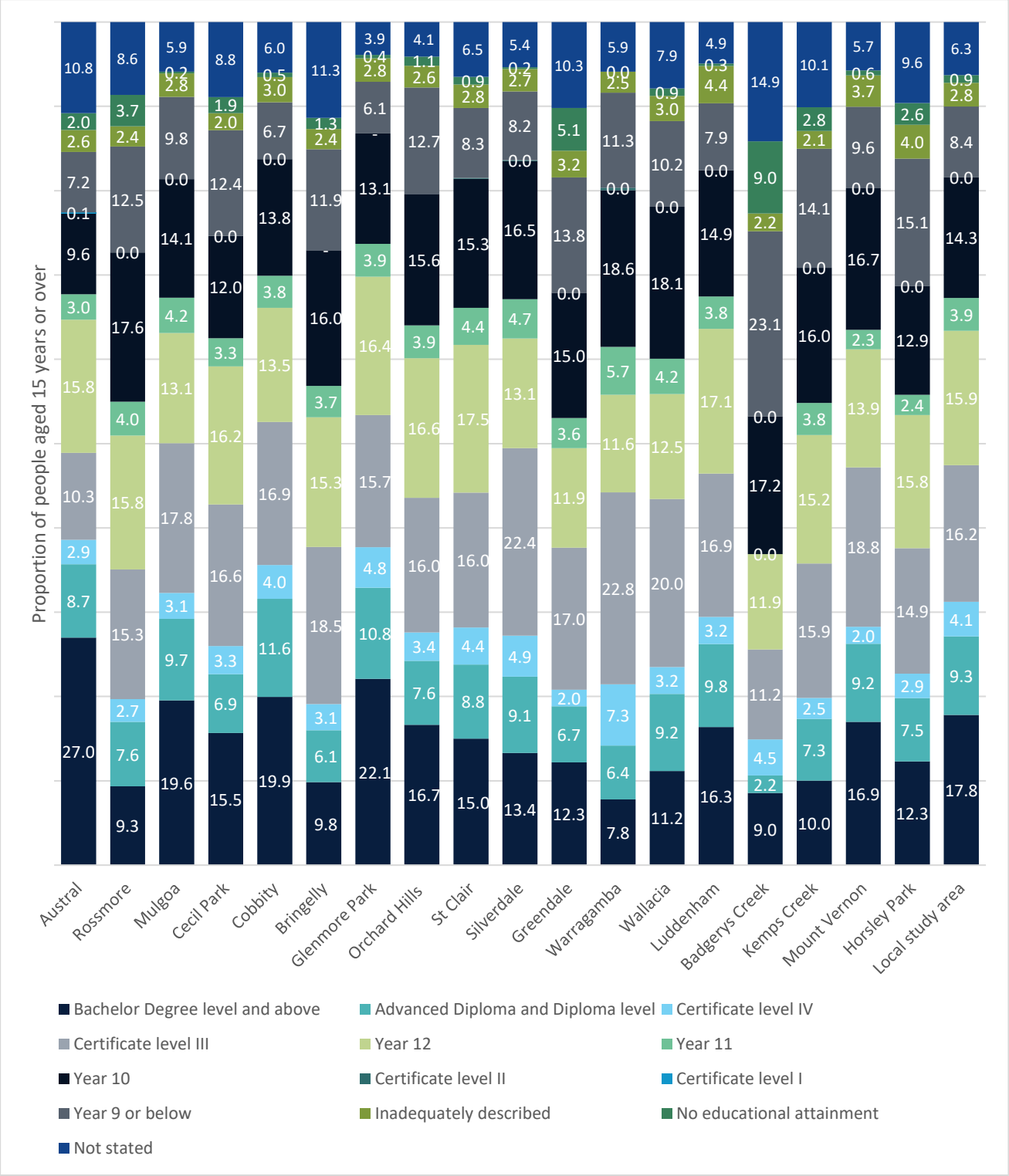
Table C.11 Languages spoken at home, 2021

	Local area	
	No.	%
Arabic	2,873	3.6%
Italian	1,223	1.5%
Tagalog	616	0.8%
Punjabi	597	0.7%
Hindi	473	0.6%
Napoli	342	0.4%
Maltese	331	0.4%
Cantonese	298	0.4%
Samoan	246	0.3%
Mandarin	243	0.3%
Urdu	226	0.3%
Assyrian-Neo Aramaic	225	0.3%
Croatian	223	0.3%
Spanish	123	0.2%
Greek	71	0.1%
Vietnamese	46	0.1%
Serbian	32	0.0%
Khmer	9	0.0%
Dutch	4	0.0%

Source: ABS 2021, QuickStats, Cultural diversity

C4 Accessibility

C4.1 Education



Source: ABS 2021, QuickStats: Level of highest educational attainment

Figure C.6 Level of highest educational attainment, 2021

C4.2 Social infrastructure

Table C.12 Schools in suburbs within 10 km of Western Sydney Airport, 2022-2023

Suburb	Name of school	Sector	Type of school	Enrolments 2022–2023
Austral	Al-Faisal College - Liverpool	Non-government	Combined	1193
	Arrahman College	Non-government	Primary	38
	Austral Public School	Government	Primary	424
	ST Anthony of Padua Catholic College	Non-government	Combined	871
	Unity Grammar School	Non-government	Combined	1161
Badgerys Creek	No schools			
Bringelly	Bringelly Public School	Government	Primary	106
Cobbitty	Aspect Macarthur School	Non-government	Special	120
	Cobbitty Public School	Government	Primary	311
	Macarthur Anglican School	Non-government	Combined	995
Cecil Park	Irfan College	Non-government	Combined	321
Greendale	No schools			
Glenmore Park	Bethany Catholic Primary School	Non-government	Primary	605
	Caroline Chisholm College	Non-government	Secondary	1030
	Fernhill School	Government	Special	130
	Glenmore Park High School	Government	Secondary	1013
	Glenmore Park Public School	Government	Primary	632
	Surveyors Creek Public School	Government	Primary	517
Horsley Park	Horsley Park Public School	Government	Primary	87
	Marion Catholic Primary School	Non-government	Primary	210
	St Narsai Assyrian Christian College	Non-government	Secondary	647
Kemps Creek	Christadelphian Heritage College Sydney	Non-government	Combined	247
	Mamre Anglican School	Non-government	Combined	721
	Kemps Creek Public School	Government	Primary	119
	Trinity Catholic Primary School	Non-government	Primary	221
	Emmaus Catholic College	Non-government	Secondary	772

Suburb	Name of school	Sector	Type of school	Enrolments 2022–2023
Luddenham	Holy Family Primary School	Non-government	Primary	218
	Luddenham Public School	Government	Primary	55
Mount Vernon	No schools			
Mulgoa	Mulgoa Public School	Government	Primary	92
Orchard Hills	Mongrove College	Non-government	Combined	573
	Orchard Hills Public School	Government	Primary	205
	Penrith Anglican College	Non-government	Combined	972
	Penrith Christian School	Non-government	Combined	696
Rossmore	Bellfield College	Non-government	Combined	774
	Rossmore Public School	Government	Primary	58
Silverdale	No schools			
St Clair	Banks Public School	Government	Primary	384
	Blackwell Public School	Government	Primary	550
	Clairgate Public School	Government	Primary	386
	Holy Spirit Primary School	Non-government	Primary	362
	St Clair High School	Government	Secondary	653
	St Clair Public School	Government	Primary	282
Wallacia	Wallacia Public School	Government	Primary	54
Warragamba	Warragamba Public School	Government	Primary	389
Total	**41**			**19,185**

Source: ACARA 2023, MySchool: Find a school

Table C.13 Number of childcare centres in suburbs within 10 km of the Western Sydney Airport, 2022–2023

Suburb	Count of centres
Austral	10
Badgerys Creek	Nil
Bringelly	1
Cobbitty	Nil
Cecil Park	Nil
Glenmore Park	13
Greendale	1
Horsley Park	3
Kemps Creek	4
Luddenham	2
Mount Vernon	1
Mulgoa	2
Orchard Hills	6
Rossmore	3
Silverdale	1
St Clair	Nil
Wallacia	1
Warragamba	3
Total	**51**

Source: ACECQA 2023, Service search

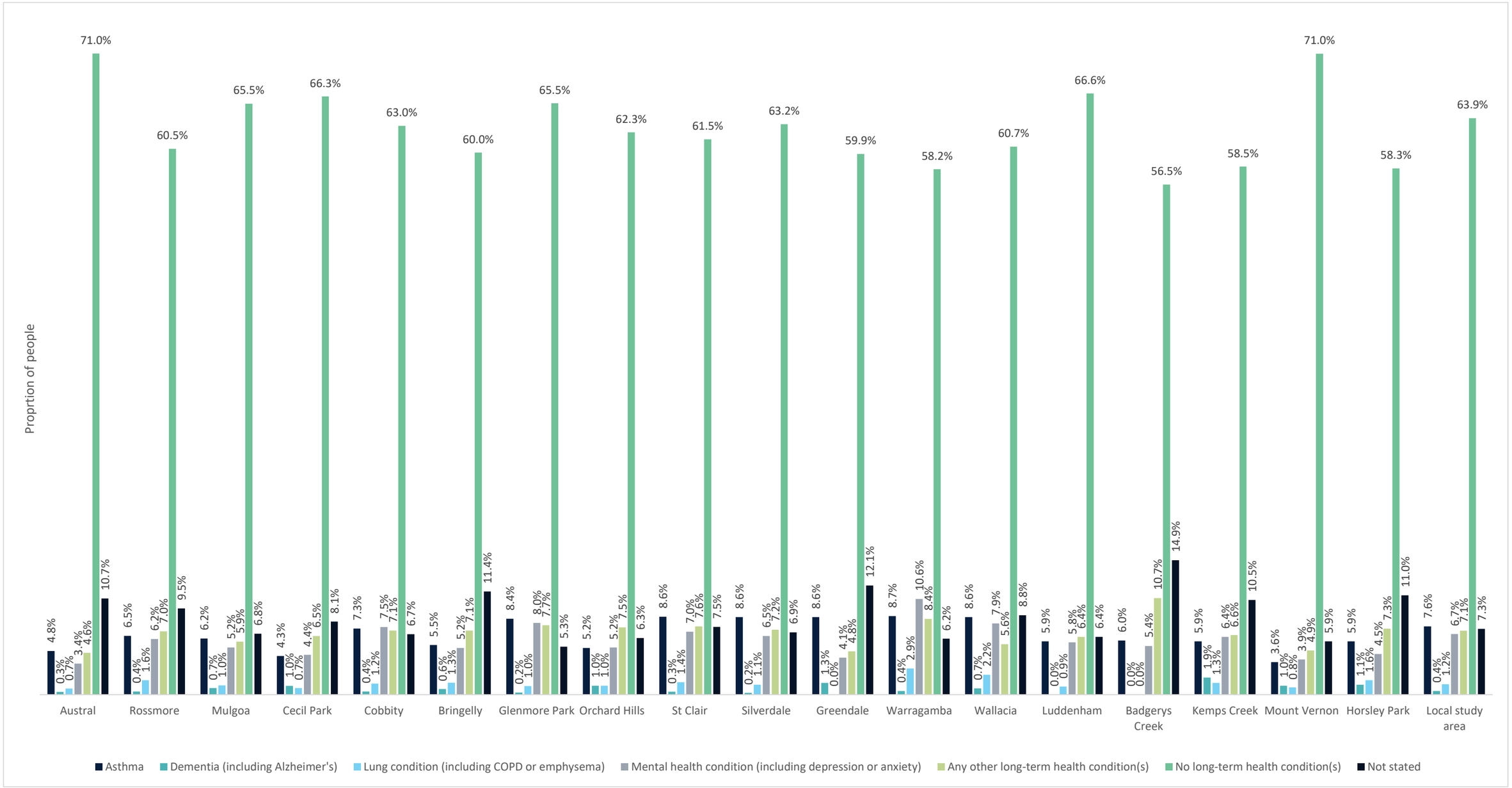
Table C.14 Places of worship in the local area

Suburb	Place of worship
Austral	Shree Ram Krishna Temple
	Austral Church of Christ
	St Anthony's Catholic Church
	St Rafqa's Parish
	Mosque (no name)
Badgerys Creek	No
Bringelly	Sasanadhaja Monastery
	Bringelly Vineyard Church
	Vietnamese Catholic Community
Cobbitty	Saint Paul's Anglican Church
	Mater Dei Chapel
	Macarthur Christian Reformed Church
Cecil Park	St Peter and Paul Assyrian Church of the East
Glenmore Park	Church of Christ
	Grace West Anglican Church
	Lifeway Westside
	St Padre Pio Parish
Greendale	Free Church of Tonga
	St Francis Xavier Church
Horsley Park	Horsley Park Christian Church
	Our Lady of Victories Horsley Park
	Graceway Church
	Bethel Mar Thoma Church
Kemps Creek	BAPS Shri Swaminarayan Mandir
	Imam Bargah
Luddenham	Luddenham United Church
	Holy Family Church
Mount Vernon	No

Suburb	Place of worship
Mulgoa	St Thomas Anglican Church
	St Mary's Catholic Church
	Mount Schoenstatt Shrine
Orchards Hill	Orchard Hills Kingdom Hall of Jehovah's Witnesses
	Imagine Nations Church
	Mt Hope Uniting Church Orchard Hills
Rossmore	Rossmore Khmer Buddhist Temple
	Lin Yim Buddhist Institute Sydney Inc.
	Rossmore Anglican Church
	Crossroads Baptist Church
Silverdale	Grace West Anglican Church - Silverdale
St Clairs	Holy Spirit Parish
	St Clair Baptist Church
	Uniting Church St Clair
	Pottershouse St Clair
	St Clair Anglican Church
Wallacia	Sabian Mandaean Mendi Temple
	Mount Schoenstatt Shrine
Warragamba	Sacred Heart Catholic Church Warragamba
	Warragamba Baptist Church
Total	**46**

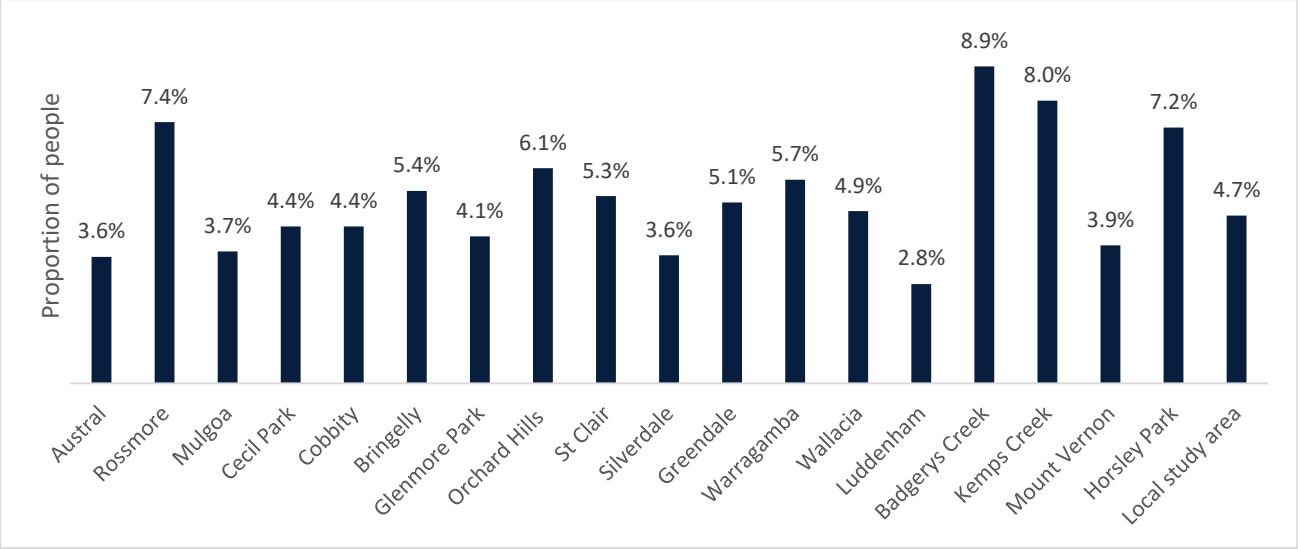
Source: Google Maps 2023

C5 Health and wellbeing



Source: ABS 2021, QuickStats: Type of long-term health condition

Figure C.7 People in the local study area with long-term health conditions, 2021



Source: ABS 2021, Community profiles: Core activity need for assistance(a) by age by sex

Figure C.8 Need for assistance with core activities, local study area, 2021

C6 Livelihoods

Table C.15 Household income and housing costs, local study area, 2021

	Household income (weekly)	Rent payments (weekly)	Mortgage repayments (monthly)
Austral	$2,168	$520	$2,535
Rossmore	$1,827	$500	$1,950
Mulgoa	$2,533	$450	$2,750
Cecil Park	$1,446	$400	$2,700
Cobbitty	$2,313	$530	$2,700
Bringelly	$1,833	$500	$2,167
Glenmore Park	$2,526	$480	$2,400
Orchard Hills	$2,279	$450	$2,550
St Clair	$2,067	$440	$2,167
Silverdale	$2,654	$500	$2,600
Greendale	$1,958	$483	$2,850
Warragamba	$1,548	$380	$1,784
Wallacia	$2,004	$400	$2,500
Luddenham	$2,968	$480	$3,000
Badgerys Creek	$1,271	$505	$1,300

	Household income (weekly)	Rent payments (weekly)	Mortgage repayments (monthly)
Kemps Creek	$1,753	$470	$1,875
Mount Vernon	$3,177	$495	$3,000
Horsley Park	$2,135	$428	$3,250
NSW	**$1,829**	**$380**	**$1,986**

Source: ABS 2021, QuickStats: Income and work & Housing

Table C.16 Median property price and price growth in the suburbs within the local study area, 2022–2023

Suburb	Median price (Apr 2022-March 2023)	Growth in the past 12 months
Austral	$951,500	18.1%
Badgerys Creek	No data	No data
Bringelly	$5,600,000	40.0%
Cobbitty	$1,157,500	20.6%
Cecil Park	No data	No data
Glenmore Park	$1,000,000	8.1%
Greendale	No data	No data
Horsley Park	$3,500,000	-5.9%
Kemps Creek	No data	No data
Luddenham	$2,700,000	-18.8%
Mount Vernon	No data	No data
Mulgoa	No data	No data
Orchard Hills	$3,230,000	-23.3%
Rossmore	No data	No data
Silverdale	$1,120,000	-1.7%
St Clair	$892,500	1.4%
Wallacia	$1,675,000	30.9%
Warragamba	$715,000	4.4%

Source: Neighbourhood Profiles, 2023 (realestate.com.au)

Table C.17 Mortgage repayments and rent payments, regional study area, 2021

Regional study area LGAs	Mortgage repayments (monthly)	Rent payments (weekly)
Blacktown	$2383	$400
Blue Mountains	$1842	$350
Camden	$2035	$400
Fairfield	$2000	$390
Hawkesbury	$2200	$400
Liverpool	$2200	$400
Penrith	$2167	$400
Wollondilly	$2363	$415
NSW	$2167	$420

Source: ABS 2021, QuickStats: All private dwellings

Table C.18 Population mobility, local study area, 2021

		Same as in 2021	Elsewhere in Australia	Overseas in 2016	Not stated	Not applicable
Austral	No.	1,306	3,905	342	541	747
	%	19.1%	57.0%	5.0%	7.9%	10.9%
Rossmore	No.	1,457	517	22	131	114
	%	65.0%	23.1%	1.0%	5.8%	5.1%
Mulgoa	No.	1291	569	7	60	109
	%	63.2%	27.8%	0.3%	2.9%	5.3%
Cecil Park	No.	551	180	3	43	37
	%	67.6%	22.1%	0.4%	5.3%	4.5%
Glenmore Park	No.	1,534	2,076	84	148	364
	%	36.5%	49.4%	2.0%	3.5%	8.7%
Cobbitty	No.	1,697	423	21	196	100
	%	69.7%	17.4%	0.9%	8.1%	4.1%
Bringelly	No.	13,755	8,456	321	599	1,886
	%	55.0%	33.8%	1.3%	2.4%	7.5%
Orchard Hills	No.	1,323	341	19	51	63
	%	73.6%	19.0%	1.1%	2.8%	3.5%

		Same as in 2021	Elsewhere in Australia	Overseas in 2016	Not stated	Not applicable
St Clair	No.	12,706	4,655	370	871	1,350
	%	63.7%	23.3%	1.9%	4.4%	6.8%
Silverdale	No.	2,552	1,478	9	146	356
	%	56.2%	32.5%	0.2%	3.2%	7.8%
Greendale	No.	216	43	10	18	20
	%	68.8%	13.7%	3.2%	5.7%	6.4%
Warragamba	No.	733	317	6	43	102
	%	61.0%	26.4%	0.5%	3.6%	8.5%
Wallacia	No.	1,022	463	27	92	114
	%	59.7%	27.1%	1.6%	5.4%	6.7%
Luddenham	No.	1,251	489	14	57	110
	%	64.9%	25.4%	0.7%	3.0%	5.7%
Badgerys Creek	No.	100	29	-	25	15
	%	59.5%	17.3%	0.0%	14.9%	8.9%
Kemps Creek	No.	1,482	376	32	147	83
	%	69.9%	17.7%	1.5%	6.9%	3.9%
Mount Vernon	No.	890	244	6	43	48
	%	72.1%	19.8%	0.5%	3.5%	3.9%
Horsley Park	No.	1,269	295	11	115	90
	%	70.9%	16.5%	0.6%	6.4%	5.0%
Local study area	No.	**45,135**	**24,856**	**1,304**	**3,326**	**5,708**
	%	**56.2%**	**30.9%**	**1.6%**	**4.1%**	**7.1%**

Source: ABS 2021, Census of Population and Housing

Table C.19 Housing affordability stress, local study area, 2021

	Rent payments greater than or equal to 30% of household income	Mortgage repayments greater than or equal to 30% of household income
Austral	42.2%	28.5%
Rossmore	40.9%	22.8%
Mulgoa	31.2%	18.9%
Cecil Park	28.1%	26.3%
Cobbity	26.8%	18.4%
Bringelly	39.7%	19.8%
Glenmore Park	27.4%	14.5%
Orchard Hills	33.3%	19.6%
St Clair	32.0%	18.1%
Silverdale	36.4%	17.5%
Greendale	34.8%	0.0%
Warragamba	37.9%	20.6%
Wallacia	36.0%	20.5%
Luddenham	27.5%	22.2%
Badgerys Creek	36.8%	37.5%
Mount Vernon	29.4%	17.6%
Horsley Park	35.3%	28.6%
Local study area	32.2%	39.3%
NSW	**35.5%**	**17.3%**

Source: ABS 2021, QuickStats: Housing

Table C.20 Median mortgage and rental payments, regional study area, 2021

Regional study area LGAs	Mortgage repayments (monthly)	Rent payments (weekly)
Blue Mountains	$1842	$350
Blacktown	$2383	$400
Camden	$2035	$400
Fairfield	$2000	$390
Hawkesbury	$2200	$400
Liverpool	$2200	$400
Penrith	$2167	$400
Wollondilly	$2363	$415
NSW	$2167	$420

Source: ABS 2021, QuickStats: All private dwellings

Table C.21 Proportion of low-income households (less than $650), regional study area, 2021

Regional study area LGAs	Proportion of low-income households (less than $650), 2021
Blacktown	21.1
Blue Mountains	15.8
Camden	8.2
Fairfield	19.2
Hawkesbury	13.5
Liverpool	14.1
Penrith	12.7
Wollondilly	11
NSW	15.3

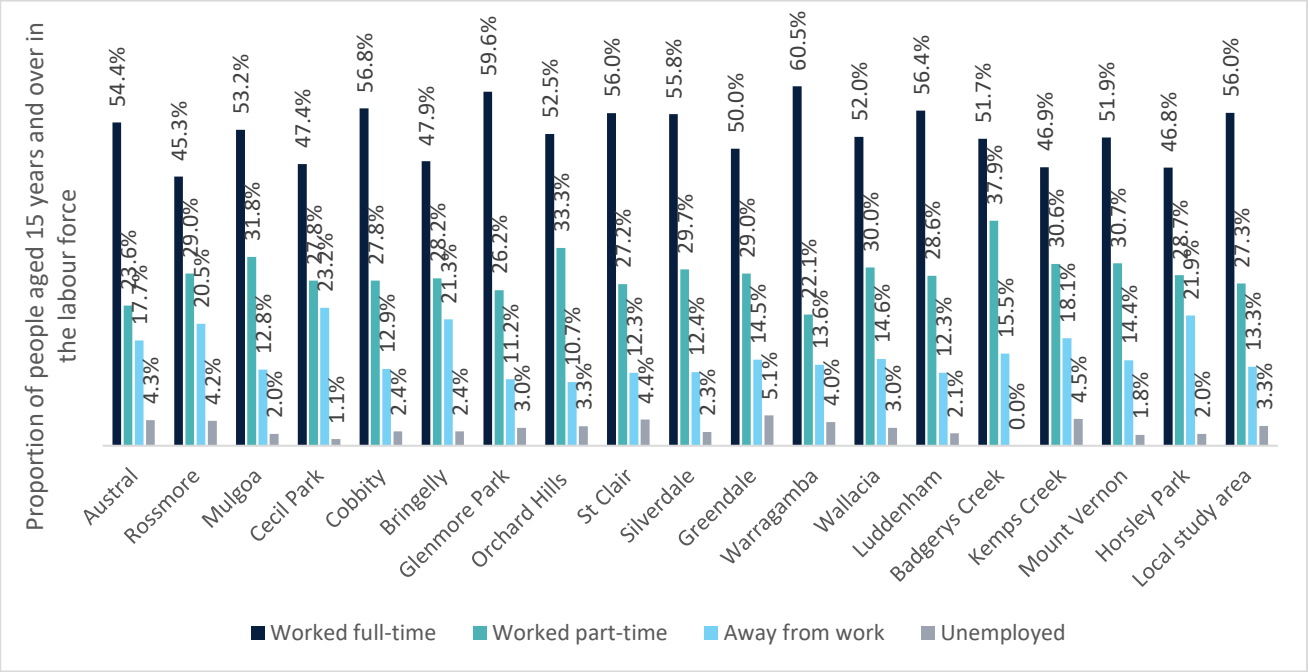
Source: ABS 2021

Table C.22 Low- and high-income households (equivalised weekly household income), local study area, 2021

	Less than $650 total equivalised household weekly income	Greater than $3000 total equivalised household weekly income
Silverdale	12.5%	4.4%
Greendale	29.6%	0.0%
Warragamba	23.5%	1.4%
Wallacia	22.0%	3.9%
Luddenham	14.2%	7.8%
Badgerys Creek	25.0%	0.0%
Kemps Creek	26.5%	2.3%
Mount Vernon	11.5%	6.9%
Horsley Park	24.2%	5.0%
Linden	15.6%	4.9%

Source: ABS 2021, TableBuilder: HIED

C6.1 Employment



Source: ABS 2021, QuickStats: Employment status

Figure C.9 Employment status, 2021

C6.2 Socio-economic status

Note: Data for 2021 Socio-Economic Index for Areas (SEIFA) has not been released yet. As such, data form 2016 has been used. This information should not be taken as an accurate representation of the current populations in the study area.

No data is available for Cobbitty – Bringelly SA2 for 2016 as the SA2 boundaries for Cobbitty and Bringelly were different at that time.

Table C.23 Indications of high and low SEIFA scores, 2016

IRSD		IRSAD	
Low	**High**	**Low**	**High**
Many households with low income; Many people with no qualifications; or Many people in low skill occupations	Few households with low incomes; Few people with no qualifications; or Few people in low skilled occupations	Many households with low incomes, or many people in unskilled occupations, and Few households with high incomes, or few people in skilled occupations.	Many households with high incomes, or many people in skilled occupations, and Few households with low incomes, or few people in unskilled occupations.
IER		**IEO**	
Low	**High**	**Low**	**High**
Many households with low income, or many households paying low rent, and Few households with high income, or few owned homes.	Many households with high income, or many owned homes, and Few low-income households, or few households paying low rent.	Many people without qualifications, or many people in low skilled occupations or many people unemployed, and Few people with a high level of qualifications or in highly skilled occupations.	Many people with higher education qualifications or many people in highly skilled occupations, and Few people without qualifications or few people in low skilled occupations.

Source: ABS 2018, Census of Population and Housing, SEIFA, 2016

C6.2.1 Regional study area SEIFA

Table C.24 SEIFA percentile rankings, regional study area, 2016

Regional study area LGA	IRSD	IRSAD	IER	IEO
Blacktown	58	74	76	58
Blue Mountains	90	88	89	90
Camden	92	90	99	78
Hawkesbury	83	81	94	67
Fairfield	8	12	18	8
Liverpool	35	60	72	48
Penrith	68	71	82	44
Wollondilly	88	85	198	66

Table C.25 SEIFA percentile rankings, local study area, 2016

	IRSD	IRSAD	IER	IEO
Austral	25	34	46	18
Badgerys Creek	*13*	22	35	22
Bringelly	53	56	84	25
Cecil Park	75	72	95	36
Cobbitty	**94**	**95**	**98**	75
Glenmore Park	**86**	**89**	**94**	61
Greendale	30	44	41	31
Horsley Park	52	63	86	32
Kemps Creek	31	42	66	24
Luddenham	**85**	**90**	**99**	54
Mount Vernon	**95**	**94**	**100**	58
Mulgoa	**93**	**92**	**98**	68
Orchard Hills	**76**	**81**	**94**	47
Rossmore	28	41	55	26
Silverdale	**87**	**84**	**99**	37
St Clair	58	53	68	23
Wallacia	71	67	87	30
Warragamba	20	*14*	*25*	*6*

Source: ABS 2016, SEIFA

C6.3 Tourism industry

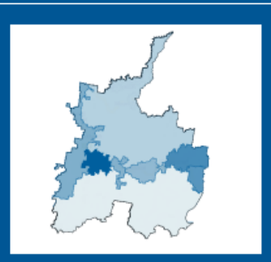
What does tourism bring to the Blue Mountains?

- 4.4 million visitors
- 2,400 jobs (one 1 in 10)
- $484M in turnover
- $169M turnover for supply-chains
- 800 registered businesses (1 in 8)
- $121M in local wages and salaries

Where are tourism businesses concentrated?

Key localities for tourism businesses are Leura – Katoomba, Springwood – Winmalee and Blaxland - Warrimoo – Lapstone.

Blackheath, Mount Victoria and Mount Irvine also play a substantial role in Blue Mountains tourism.



How has the fall in tourism activity due to recent natural disasters and COVID-19 impacted the local economy?

- Direct loss in revenue $118M over 2019/2020 and 2020/2021
- ...total fall in gross revenue of $186M
- ...total contraction in workforce of 599 jobs

(inclusive of direct, supply-chain and consumption effects)

More than 4 million people have visited the Blue Mountains every year since 2016.

2019 saw visitation peak at 4.6 million.

Visitation has since plunged by 40%, falling to 2.8 million in 2020.

Source: BMCC 2021, Tourism Industry Profile 2021

Employment

Approximately 19,513 jobs are supported by the various industry sectors in the Blue Mountains (Table 1). More than half of all employment is concentrated in four industry sectors: Health Care and Social Assistance: 3,442 jobs (17.6% of total), Tourism: 2,365 jobs (12.1%), Education and Training: 2,223 (11.4%), and Retail Trade: 1,982 (10.2%).

Between 2011 and 2016, employment in the Blue Mountains increased approximately 686 jobs. The largest increase in jobs numbers by industry sector occurred in Tourism with an additional 370 jobs supported in 2016 compared to 2011, an increase of 18.5%.

Further detail is presented in Appendix B.

Employment Attributable to Tourism

Tourism is the second largest employing industry in the Blue Mountains (Figure 2).

More than two in three jobs supported by tourism occur within the 'Accommodation & Food Services' sector which supports 1,612, or 68.2% of all tourism-related employment. This is followed by 'Retail Trade' which supports 202 tourism-related positions and 'Transport, Postal and Warehousing' (162 jobs) (see Figure 3).

Full Time Equivalent Jobs

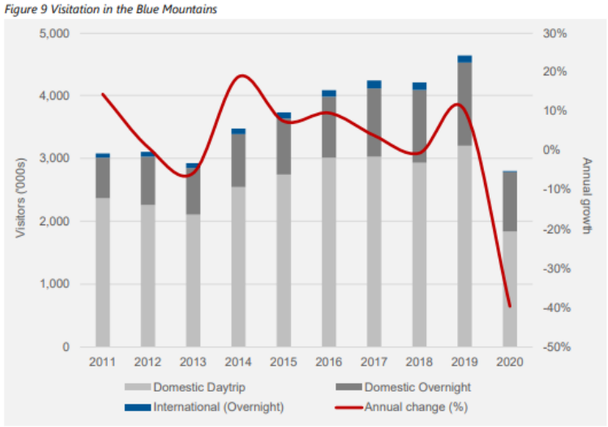
The 2,365 jobs supported by tourism are estimated to be the equivalent of 1,816 Full-Time Equivalent (FTE) jobs (based on an FTE of 35 hours, as defined by the ABS), accounting for one in ten FTE jobs (10.8%) in the Blue Mountains.

Figure 3 includes the FTE of jobs by industry that directly support tourism activity. For example, 1,612 jobs in the 'Accommodation & Food Services' sector that is directly supported by tourism activity is the equivalent of 1,188 FTE jobs.

Figure 2 Employment for largest 10 industries

Figure 3 Employment attributable to Tourism

Figure 9 Visitation in the Blue Mountains



Source: Destination NSW Regional Tourism Statistics.

Figure 13 Share of Total Blue Mountains Tourism Output by Local Area

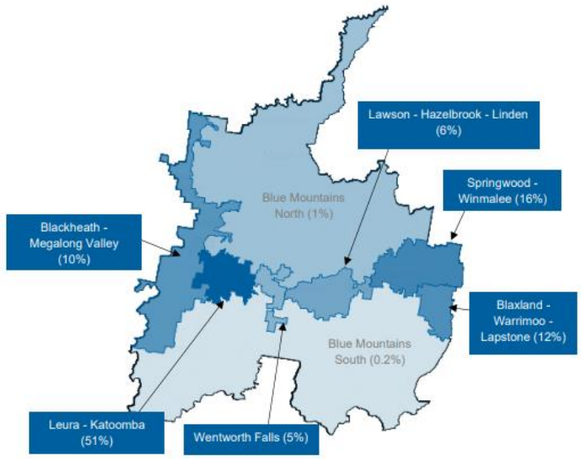
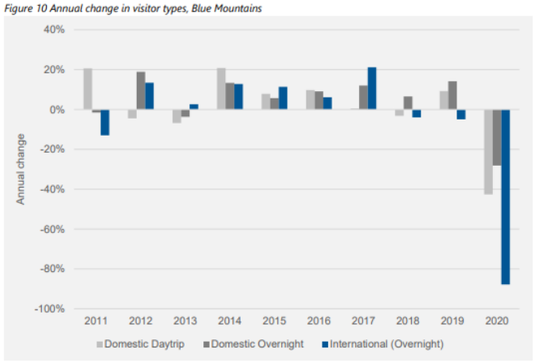


Figure 10 Annual change in visitor types, Blue Mountains



Source: Destination NSW Regional Tourism Statistics.

Table 1 Employment by Industry, Blue Mountains

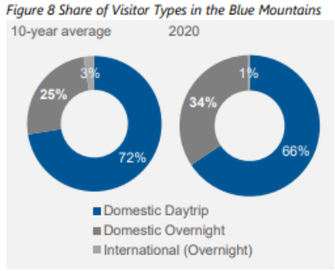
	2016 Jobs		% change 2011 to 2016
	No.	% of total	
Tourism	***2,365***	***12.1%***	***18.5%***
Agriculture, Forestry & Fishing	225	1.2%	27.1%
Mining	16	0.1%	433.3%
Manufacturing	356	1.8%	-31.4%
Electricity, Gas, Water & Waste Services	99	0.5%	-2.9%
Construction	1,617	8.3%	-3.3%
Wholesale Trade	227	1.2%	-35.5%
Retail Trade	1,982	10.2%	-11.2%
Accommodation & Food Services	1,048	5.4%	16.6%
Transport, Postal & Warehousing	456	2.3%	-6.9%
Information Media & Telecommunications	266	1.4%	1.1%
Financial & Insurance Services	291	1.5%	-2.7%
Rental, Hiring & Real Estate Services	441	2.3%	43.6%
Professional, Scientific & Technical Services	1,247	6.4%	1.7%
Administrative & Support Services	649	3.3%	8.9%
Public Administration & Safety	1,328	6.8%	12.1%
Education & Training	2,223	11.4%	6.4%
Health Care & Social Assistance	3,442	17.6%	8.7%
Arts & Recreation Services	439	2.2%	7.9%
Other Services	793	4.1%	-5.1%
Ownership of Dwellings	3	0.0%	-72.7%
Total Blue Mountains Employment	**19,513**	**100.0%**	**3.6%**

Note: jobs estimates based on 2016 Census.

Blue Mountains' Tourism directly supports:

- 1 in 10 jobs
- $121M in wages
- $484M in turnover
- $221M in GRP

Figure 8 Share of Visitor Types in the Blue Mountains



Source: Destination NSW Regional Tourism Statistics.

Australian Government

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