



Australian Government
**Department of Infrastructure
and Regional Development**

WESTERN SYDNEY AIRPORT



ENVIRONMENTAL IMPACT STATEMENT

VOLUME 5 SUBMISSIONS REPORT

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Western Sydney Airport Environmental Impact Statement

Proponent	The Australian Government Department of Infrastructure and Regional Development.
EPBC Referral	The action was referred to the Commonwealth Minister for the Environment on 4 December 2014, referral 2014-7391
Proposed action	<p>The proposed Western Sydney Airport would be developed over a number of stages in response to increasing demand.</p> <p>The proposed action is the construction and operation of the first stage of development for the proposed Western Sydney Airport at Badgerys Creek.</p> <p>The environmental impact statement (EIS) provides a detailed consideration of likely environmental impacts arising from the Stage 1 development. The Stage 1 development includes a single runway with associated aviation facilities for approximately 10 million passengers each year and is fully described in the revised draft Airport Plan. The EIS assumes the airport could be operating at this level approximately 5 years after operations commence which for assessment purposes has been assumed to be 2030.</p>
Airport Plan	The Stage 1 development would take place under an Airport Plan determined under Division 4A of Part 5 of the <i>Airports Act 1996</i> .
Airport site	<p>The Airport site covers approximately 1,780 hectares at Badgerys Creek. The Stage 1 development impacts about 1,150 hectares within this site. The Airport site currently comprises the following properties owned by the Commonwealth:</p> <ul style="list-style-type: none">- Lot 1 on DP838361- Lot 1 on DP851626- Lot 2 Section C on DP1451- Lot 17 on DP258581- Lot 22 on DP258581- Lot 23 on DP259698- Lot 32 on DP259698- Lot 33 on DP259698- Lot 7 on DP3050- Lot 8 on DP3050- Lot 9 on DP226448- Lot 3 on DP611519- Lot 11 on DP226448- Lot 1 on DP129674- Lot 1 on DP129675- Lot 1 on DP996420- Lot 2 on DP996420- Lot 28 on DP217001- Lot 1 on DP996379- Lot 2 on DP996379 <p>It is also anticipated that one or more easements and a small amount of additional land would be acquired by the Commonwealth and incorporated into the airport site for operational and safety reasons.</p>
EIS	<p>This EIS has been prepared by the Department of Infrastructure and Regional Development supported by GHD Pty Ltd, RPS Manidis Roberts Pty Ltd and various specialist sub-consultants.</p> <p>The EIS has been prepared in accordance with the <i>Guidelines for the content of a draft environmental impact statement</i> for the proposed airport issued on 29 January 2015. The EIS is divided into five volumes.</p> <p>Volume 1 provides a description of the proposed Stage 1 development. Volume 1 also explains the approvals and community consultation process.</p> <p>Volume 2 provides a detailed impact assessment of the Stage 1 development.</p> <p>Volume 3 provides a strategic level assessment of environmental impacts of an indicative long term development of the airport site. The assessment has been undertaken to provide a broad understanding of the potential impacts facilitated by the Stage 1 development, given that development beyond Stage 1 would be the subject of future approvals processes.</p> <p>Volume 4 contains detailed technical assessments that have informed the assessment of environmental impacts in Volume 2 and Volume 3. Volume 4 also contains the further information about the proponent, the EIS study team and the <i>Guidelines for the content of a draft environmental impact statement</i>.</p> <p>Volume 5 outlines the feedback received from the community and stakeholders. It provides responses to the issues raised and describes how these were addressed in finalising the EIS and revised draft Airport Plan, where relevant.</p>

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Terms and Abbreviations

Term	Definition
05/23	The proposed runway orientation. Refers to a generally north-east/south-west orientated runway at 50 degrees north-east and 230 degrees south-west.
1997-99 EIS	PPK 1997, Draft Environmental Impact Statement Second Sydney Airport Proposal, Commonwealth Department of Transport and Regional Development and PPK Environment and Infrastructure Pty Ltd 1999, Supplement to Environmental Impact Statement Second Sydney Airport Proposal, Volume 3 Supplement. Prepared on behalf of the Department of Transport and Regional Services.
90 th Percentile N60	The N60 value that is exceeded on 10 per cent of nights.
90 th Percentile N70	The N70 value that is exceeded on 10 per cent of days.
ABS	Australian Bureau of Statistics
Acid sulfate soils	Naturally occurring soils or sediments containing iron sulphides, which produce sulfuric acid when exposed to air.
AHD	Australian height datum
Airport Lessee Company	The company that is granted an airport lease over the Airport Site.
Revised draft Airport Plan	Draft plan developed in accordance with the requirements of the <i>Airports Act 1996</i> , setting out the Australian Government's requirements for the initial development of the proposed airport.
Airport site	The site for Sydney West Airport as defined in the <i>Airports Act</i> .
Airports Act	<i>Airports Act 1996</i> (Cth)
Airports Act amendment	<i>Airports Amendment Act 2015</i> (Cth)
ALC	Airport Lessee Company
ANEC	Australian noise exposure concept
ANEF	Australian noise exposure forecast
APU	Auxiliary power unit
ARI	Average recurrence interval – the average or expected value of the periods between exceedances of a given rainfall total accumulated over a given duration.
ATM	Air traffic movement
Australian Height Datum	A common reference level which is approximately equivalent to the height above sea level.
Australian Noise Exposure Concept	Noise exposure contours produced for a hypothetical future airport usage pattern used, for example, in the process of examining flight path options around an airport.
Australian Noise Exposure Forecast	Official forecasts of future noise exposure patterns around an airport. They constitute the contours on which land use planning authorities usually base their controls.
BoM	Bureau of Meteorology
Bulk earthworks	The removal, moving or adding of large quantities of soil or rock from a particular area to another.

Term	Definition
Bund	A constructed retaining wall designed to prevent inundation or breaches from a known source.
BWSEA	Broader Western Sydney Employment Area
CASA	Civil Aviation Safety Authority
Catchment	The area drained by a stream, lake or other body of water.
CO	Carbon monoxide
Construction impact zone	The area that would be directly impacted by construction of the Stage 1 development – indicatively shown in the revised draft Airport Plan.
Continuous descent approaches	A method by which aircraft approach an airport prior to landing that minimises segments of level flight. This type of approach can reduce fuel consumption and noise compared to other conventional descents.
Controlled airspace	Airspace of defined dimensions within which air traffic control services are provided.
Criteria pollutants	Air pollutants that have been regulated and are used as indicators of air quality.
Datum	A level surface used as a reference in measuring elevations.
dBA	A-weighted noise level – an expression of the relative loudness of sounds in air as perceived by the human ear.
DEC	NSW Department of Environment and Conservation (now Office of Environment and Heritage)
DECC	NSW Department of Environment and Climate Change (now Office of Environment and Heritage)
DECCW	NSW Department of the Environment Climate Change and Water (now Office of Environment and Heritage)
Decibel (dB)	A unit of sound.
Direct impact	Direct impacts are caused by an action and occur at the same time and place.
DoE	Australian Government Department of the Environment (now Department of the Environment and Energy)
DP&E	NSW Department of Planning and Environment
DPI	NSW Department of Primary Industries
EEC	Endangered ecological community
EIS	Environmental Impact Statement
EIS guidelines	Guidelines for the Content of a Draft Environmental Impact Statement – Western Sydney Airport
EMS	Environmental management system
Environmental assessment	A formal process of evaluating significant short term, long term and cumulative effects or impacts a project will have on the environment.
Environment Minister	The minister who administers the EPBC Act.
EP&A Act	<i>Environmental Planning and Assessment Act 1979</i> (NSW)
EPA	NSW Environment Protection Authority
EPBC Act	<i>Environment Protection and Biodiversity Conservation Act 1999</i> (Commonwealth)
FTE	Full time equivalent

Term	Definition
Fugitive emissions	Dust derived from a mixture of sources (non-point source) or not easily defined sources. Examples of fugitive dust include dust from vehicular traffic on unpaved roads, materials transport and handling, and un-vegetated soils and surfaces.
GBAS	Ground based augmentation system
GBMWA	Greater Blue Mountains World Heritage Area
GDE	Groundwater dependent ecosystem
GDP	Gross domestic product
General aviation	Name given to the aviation industry that is non-military (both fixed wing and helicopter) and that excludes the larger airlines operating scheduled passenger services. General aviation sector undertakes a diverse range of passenger and freight activities including charter operations, flight training, aerial agriculture, aerial work, private and business flying and sports related activities.
GPS	Global positioning system
Greenfield airport	A new airport on land which was not previously used for aviation purposes.
Grey water	Wastewater stream from all domestic wastewater sources other than the toilet (such as baths, sinks, washing machines, etc.).
Groundwater	Water found below the surface, usually in porous rock, soil or in underground aquifers.
GRP	Gross regional product
GSE	Ground support equipment
Hazard	The potential or capacity of a known or potential risk to cause adverse effects.
Hazardous material	Any item or agent that has the potential to cause harm to humans, animals or the environment.
Hazardous waste	Any waste that is classified as hazardous in accordance with the Waste Classification Guidelines (NSW EPA, 2014). Hazardous waste cannot be disposed to landfill unless it is treated to remove or immobilise the contaminants. – including waste batteries, fertilisers, fuels, herbicides, oils pesticides, paints, solvents, cleaners, clinical and pharmaceutical waste, and waste tyres.
Heavy metal	Any metal or metalloid of environmental concern.
HIAL	High intensity approach lighting
HIPAP	NSW Hazardous Industry Planning Advisory Papers
IAP2	International Association of Public Participation
ICAO	International Civil Aviation Organization – A specialised agency of the United Nations which codifies the principles and techniques of international air navigation and fosters the planning and development of international air transport to ensure safe and orderly growth.
ICAO Standards	Standards and recommended practices concerning air navigation, its infrastructure, flight inspection, prevention of unlawful interference and facilitation of border-crossing procedures for international civil aviation.
Impact	A change in the physical, natural or cultural environment brought about by an action. Impacts can be direct or indirect.
Impervious	Impervious surfaces are surfaces non-permeable to water.

Term	Definition
Indirect impact	As defined in the EPBC Act <i>Significant impact guidelines 1.2</i> , indirect impacts include downstream or downwind impacts, such as impacts on wetlands or ocean reefs from sediment, fertilisers or chemicals which are washed or discharged into river system; upstream impacts, such as those associated with the extraction of raw materials and other inputs which are used to undertake the action; and facilitated impacts which result from further actions (including actions by third parties) which are made possible or facilitated by the action, such as urban or commercial development of an area made possible by a project.
km/h	Kilometres per hour
L _{A90}	The L _{A90} level is the A-weighted noise level which is exceeded for 90% of the sample period. During the sample period, the noise level is below the L _{A90} level for 10% of the time. This measure is commonly referred to as the background noise level.
L _{Aeq}	The equivalent continuous sound level (L _{Aeq}) is the energy average of the A-weighted noise level over a sample period, and is equivalent to the level of a constant noise which contains the same energy as the varying noise environment. This measure is sometimes used to describe aircraft noise, in which case it refers to the noise level that is due to aircraft only, excluding other noise. Variants of this measure have been defined that cover specific time periods, such as L _{Aeq,9am-3pm} , which is used to describe noise affecting school classrooms.
L _{Aeq,9am-3pm}	The equivalent-continuous noise level between 9am and 3pm (it is used to describe the impact of noise on school students and teachers).
Leachate	The liquid that passes through, or is released by, waste.
LEP	Local environmental plan
LGA	Local Government Area
L _{night,outside}	The equivalent-continuous noise level between 11pm and 7am, or L _{Aeq,11pm-7am} (it is used to describe night time noise exposure and assess chronic health impacts associated with exposure)
Long term development	The long term development of the airport, including parallel runways and facilities for up to 82 million passengers annually (nominally occurring in 2063).
LoS	Level of service
m ²	Square metres
Main Construction Works	Main Construction Works means substantial physical works on the airport site (including large scale vegetation clearance, bulk earthworks and the carrying out of other physical works, and the erection of buildings and structures) described in Part 3 of the Airport Plan, other than Preparatory Activities.
Manual of Standards	Standard procedures for the operation of airports issued by the Civil Aviation Safety Authority.
MAP	Million annual passengers
Master plan	Master plan prepared and approved in accordance with the Airports Act.
Maximum noise level (L _{Amax})	L _{Amax} over a sample period is the maximum A-weighted noise level measured during the period. In the context of aircraft noise, L _{Amax} generally means the maximum A-weighted noise level recorded during a specific overflight, measured using "Slow" speed, and can therefore also be written L _{ASmax} . In this report, L _{Amax} denotes the maximum level attained during a single overflight.
MDP	Major development plan prepared and approved in accordance with the Airports Act.
mg/m ³	Milligrams per cubic metre

Term	Definition
MIKE21 modelling	MIKE21 is a two dimensional hydraulic modelling software program used to simulate surface flow and estimate flood levels and flow velocities.
Infrastructure Minister	The minister who administers the Airports Act.
Mitigation	The action of reducing the severity, seriousness, or painfulness of something.
MNES	Matters of national environmental significance
MOS	Manual of standards
MUSIC modelling	MUSIC is a software program used to estimate the performance of stormwater quality management systems.
N60	N60 is a measure of noise exposure that shows the number of aircraft overflights per day exceeding 60 dBA. N60 is generally used to describe night time noise exposure. In this EIS, unless otherwise noted, N60 values represent the number of aircraft overflights per day exceeding 60 dBA during the period 10pm to 7am.
N70	N70 is a measure of noise exposure that shows the number of aircraft overflights per day (or other specified time period) exceeding 70 dBA. The numbers of overflights are graded in contour lines on a map. N70 contours can be calculated for different time periods; however in this EIS they are presented for 24-hour periods.
NASF	National Airports Safeguarding Framework
National environmental protection measure	Broad framework-setting statutory instruments which outline agreed national objectives for protecting or managing particular aspects of the environment. NEPMs are similar to environmental protection policies and may consist of any combination of goals, standards, protocols, and guidelines.
Nautical mile	A unit of distance. One nautical mile equals 1.852 kilometres.
NEPM	National Environmental Protection Measure
NGER Regulations	<i>National Greenhouse and Energy Reporting Regulations 2008 (Cth)</i>
Nitrogen	Nitrogen is a colourless element that has no smell and is usually found as a gas. It forms about 78% of the earth's atmosphere, and is found in all living things.
NO ₂	Nitrogen dioxide
NO _x	Nitrogen oxide
Non-putrescible	General solid waste including waste cardboard, glass, green waste, metals, paper, plastics, wood and electronic waste.
NPWS Act	<i>National Parks and Wildlife Act 1974 (NSW)</i>
Nuisance dust	Dust which reduces environmental amenity without necessarily resulting in material harm. Nuisance dust comprises particles with diameters nominally from about one millimetre to 50 micrometres (microns).
O ₃	Ozone
Offset measure	A conservation action that is intended to compensate for the negative environmental impacts of an action, such as a development. Offsets can include protecting at-risk environmental assets, restoring or extending habitat for threatened species, or improving the values of a heritage place.
OLS	Obstacle limitation surface – a series of surfaces that define the limits to which structures or objects may project into the airspace to ensure the safety of aircraft in visual flight conditions.
Organic	An organic compound is any member of a large class of gaseous, liquid, or solid chemical compounds whose molecules contain carbon.
PAH	Polycyclic aromatic hydrocarbon

Term	Definition
PANS-OPS	Procedures for air navigation services – aircraft operations
Particulate	A complex mixture of extremely small particles and liquid droplets.
Pathogen	A bacterium, virus, or other microorganism that can cause disease.
Permissible use	A land use which may receive development consent under the <i>Environmental Planning and Assessment Act 1979</i> (NSW). For the airport site, proposed permissible uses that would apply once an airport lease has been granted are set out in the land use plan in Part 2 of the revised draft Airport Plan.
PM	Airborne particulate matter
PM ₁₀	Airborne particulate matter with an aerodynamic diameter of less than 10 µm
PM _{2.5}	Airborne particulate matter with an aerodynamic diameter of less than 2.5 µm
POEO Act	<i>Protection of the Environment Operations Act 1997</i> (NSW)
Point Merge system	A way of synchronising arriving aircraft and directing them to the runway in a structured manner through a single final approach track. By directing aircraft through a series of predictable routes, the vertical and lateral path taken on approach is more accurate and can result in a reduction in the number of level flight segments required at a low altitude.
ppb	Parts per billion
ppm	Parts per million
Preparatory Activities	Preparatory Activities mean the following: <ul style="list-style-type: none"> a. day to day site and property management activities; b. site investigations, surveys (including dilapidation surveys), monitoring, and related works (e.g. geotechnical or other investigative drilling, excavation, or salvage); c. establishing construction work sites, site offices, plant and equipment, and related site mobilisation activities (including access points, access tracks and other minor access works, and safety and security measures such as fencing); and d. enabling preparatory activities such as: <ul style="list-style-type: none"> i. demolition or relocation of existing structures (including buildings, services, utilities and roads) provided they are demolished or relocated in accordance with applicable environmental impact mitigation measures specifically referable to demolition or relocation of the relevant structures; ii. the relocation of cemeteries in accordance with an approved cemeteries relocation management plan; and iii. Application of environmental impact mitigation measures.
Proposed airport	The proposed airport at Badgerys Creek and assessed in the Western Sydney Airport Environmental Impact Statement.
PSZ	Public safety zone
Putrescible	In relation to waste, material that may decay or putrefy.
RAAF	Royal Australian Air force
Ramsar Convention	An intergovernmental treaty that provides the framework for national action and international cooperation in wetland conservation. The treaty is named after the city of Ramsar in Iran, where it was signed.
Receivers	See sensitive receiver.
Receptors	See sensitive receiver.
Residual risk	Residual risk is the level of risk that remains after proposed mitigation and management measures are implemented.

Term	Definition
Restricted airspace	Restricted airspace includes all airspace that has restrictions placed on its use. This is generally associated with military installations or other situations where safety is an issue, for example explosives storage facilities such as the Defence Establishment Orchard Hills.
Reticulated	In relation to water or another utility, transferred from one place to another.
Reverse thrust	A temporary redirection of aircraft engines so that the direction of exhaust is reversed, usually to provide a braking effect during landings. Reverse thrusting generally produces an increase in noise during landing.
SACL	Sydney Airport Corporation Limited
SEIFA	Socioeconomic Indexes for Areas
Sensitive receiver	A place occupied by people that is sensitive to impacts. This term is usually used in air and noise studies to refer to dwellings, businesses, schools and the like. Also termed sensitive receptor.
SEPP	NSW State Environmental Planning Policy
SES Officer	An SES employee under the <i>Public Service Act 1999</i>
Significant impact	As defined in the EPBC Act <i>Significant impact guidelines 1.2</i> , a 'significant impact' is an impact which is important, notable, or of consequence, having regard to its context or intensity. Whether or not an action is likely to have a significant impact depends upon the sensitivity, value, and quality of the environment which is impacted, and upon the intensity, duration, magnitude and geographic extent of the impacts.
SO ₂	Sulfur dioxide
SO _x	Sulfur oxides
Stage 1 development	The initial stage in the development of the proposed airport, including a single runway and facilities for approximately 10 million annual passengers. (the EIS assumes the airport could be operating at this level approximately 5 years after operations commence which for assessment purposes has been assumed to be 2030).
Stage 1 operations	The airport operating at the Stage 1 capacity as defined in the revised draft Airport Plan.
STM3	Strategic Travel Model (Version 3)
SWRL	South West Rail Link
Sydney Airport	Sydney (Kingsford Smith) Airport
Sydney Basin	The Sydney Basin extends over approximately 350 kilometres of coastline from Newcastle in the north, to Durras Lake in the south. To the west the boundary runs in a line through Lithgow along the Liverpool Range to about 80 kilometres north of Muswellbrook and back to the coast at Newcastle. The total land area of the basin is approximately 44,000 square kilometres and the centre lies about 30 kilometres west of the Sydney CBD at Fairfield.
Sydney CBD	Sydney Central Business District
Sydney West Airport	The proposed airport. Note: this is the name used in the Act. The Airport is also commonly known as Western Sydney Airport.
TAPM	The Air Pollution Model
Taxiways	Defined paved areas provided for the surface movement of aircraft between runways and aprons.
The Department	Australian Government Department of Infrastructure and Regional Development
The Proponent	The proponent for the development and operation of the airport is the Australian Government Department of Infrastructure and Regional Development.

Term	Definition
The proposed airport	The proposed Western Sydney Airport.
Threatened species	Species of animals or plants that are at risk of extinction, or becoming endangered within the next 25 years ('vulnerable species'), defined by the <i>Threatened Species Conservation Act 1995</i> and the <i>Environment Protection and Biodiversity Conservation Act 1999</i>
TSC Act	<i>Threatened Species Conservation Act 1995 (NSW)</i>
TSP	Total suspended particulates
µg/m ³	Micrograms per cubic metre
UNESCO	United Nations Educational, Scientific and Cultural Organisation
USEPA	United States Environmental Protection Agency
VOC	Volatile organic compounds
Western Sydney Airport	The proposed airport. The airport is referred to as Sydney West Airport under the Airports Act.
Western Sydney Region	Western Sydney is a major region of Sydney, New South Wales. Defined by the Western Sydney Regional Organisation of Councils (WSROC) as ranging from Auburn to the Blue Mountains and from Liverpool to Hawkesbury, with a total land area of about 5,400 square kilometres.
WHS	Work health and safety
WM Act	<i>Water Management Act 2000 (NSW)</i>
WSEA	Western Sydney Employment Area
WSIP	Western Sydney Infrastructure Plan
WSU	Western Sydney Unit, Australian Government Department of Infrastructure and Regional Development

Executive Summary

On 15 April 2014 the Australian Government announced that Commonwealth-owned land at Badgerys Creek will be the site for a second Sydney airport. The Badgerys Creek airport site was selected following extensive studies completed over a number of decades and culminating in the release of the *Joint Study on Aviation Capacity in the Sydney Region* (Joint Study) (Department of Infrastructure and Transport 2012) in March 2012 and *A Study of Wilton and RAAF Base Richmond for Civil Aviation Operations* (Department of Infrastructure and Transport, 2013) (the Wilton and Richmond Study) in April 2013.

Stakeholder and community consultation activities undertaken for the proposed Western Sydney Airport draft Environmental Impact Statement (EIS) and draft Airport Plan were undertaken in three distinct phases of engagement:

- **Phase 1:** the preparation of the draft EIS and draft Airport Plan, from September 2014 to October 2015;
- **Phase 2:** the public exhibition of the draft EIS and draft Airport Plan, from 19 October 2015 to 18 December 2015; and
- **Phase 3:** the finalisation of the EIS and preparation of the revised draft Airport Plan, from 19 December 2015 onwards, including consultation associated with publication of the finalised EIS.

During the three phases, a number of community and stakeholder engagement activities were undertaken to raise awareness, provide further information and answer questions raised by community members about the project. Opportunities for engagement included information sessions and community information stalls held at locations across Western Sydney and the Blue Mountains. These were supported by a range of communications products including a series of fact sheets and the project website, which provided a comprehensive, clear and accessible source of information.

The public exhibition of the draft EIS and draft Airport Plan took place from 19 October 2015 to 18 December 2015. During this period a comprehensive programme of community and stakeholder consultation activities took place. The programme of activities was designed to provide consistent and accurate information and answer questions raised by community members. Engagement activities undertaken during the exhibition period were designed to engage communities throughout western Sydney and through a number of mediums. A summary of the activities is provided in Figure E–1 below.

Further detail of the engagement activities for the proposed airport are outlined in Chapter 2 of this volume as well as Chapter 8 (Volume 1) of the finalised EIS.



Figure E-1 Summary of engagement activities during the exhibition period

A number of methods were available to make a submission. Submission options included:


- web form on the dedicated website, westernsydneyairport.gov.au;
- email to dedicated submission email address, wsasubmission@infrastructure.gov.au;
- hardcopy submission form submitted at community information sessions; and
- hardcopy submission form or free form submission.

All submissions received were reviewed and catalogued. The content of each submission received was reviewed and categorised according to a key issue (e.g. overflight noise or human health) and then further categorised into sub-issues (e.g. flight paths and asthma), if possible.

As outlined in Section 3.2 of this Volume, the total number of submissions made and the number of individuals or groups who raised them is different. This is due to some individuals or groups making multiple unique submissions and why there were 4,975 submissions made from 3,973 submitters.



Figure E-2 Total number of submissions received and the number of unique submitters



From the 4,975 submissions, a total of 48 separate issues were raised. The five most frequently raised issues were:

- Greater Blue Mountains World Heritage Area;
- flight paths;
- emergency fuel jettison;
- general health impacts; and
- overflight noise.

This Submissions Report has been prepared to address the submissions received during the exhibition of the draft EIS and draft Airport Plan for the proposed Western Sydney Airport. This report will provide:

- a summary of opportunities the community and stakeholders had to engage during the exhibition period;
- details of how many submissions were made during the exhibition period;
- a summary of issues raised;
- responses to issues;
- identification of relevant changes to the proposal and the potential impact of these changes (where relevant); and
- new information in response to issues raised from the submissions received.

1 Introduction

This chapter outlines the Western Sydney Airport proposal and the purpose and structure of this Report.

1.1 Background

1.1.1 Overview of the Western Sydney Airport project

The proposed Western Sydney Airport 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. An airport in Western Sydney would also provide long term economic and employment opportunities in the surrounding area and accelerate the development of critical infrastructure and urban development. The proposed airport is planned to be operational by the mid-2020s and would service both domestic and international markets. The development of the proposed airport would be staged in line with ongoing growth in aviation demand.


The draft EIS assessed the proposed airport in the context of an indicative airport site layout, demand forecasts, regulatory framework and the contemporary regional setting for Western Sydney.

The airport site covers an area of approximately 1,780 hectares at Badgerys Creek in Western Sydney. The site is located within the Liverpool local government area (LGA), around 50 kilometres west of Sydney's central business district (CBD) and 15 to 20 kilometres from major population centres including Liverpool, Fairfield, Campbelltown and Penrith, and 30 kilometres from Parramatta.

Aviation Capacity

According to the 2012 Joint Study on Aviation Capacity in the Sydney Region (Joint Study) (Department of Infrastructure and Transport), in the absence of additional aviation capacity in the Sydney region:

- by 2020, all weekday slots for periods at Sydney Airport between 6.00 am and 12 noon and between 4.00 pm and 7.00 pm would be fully allocated;
- by around 2027, all slots at Sydney Airport would be allocated, so new entrants cannot be accommodated, unless another service were cancelled; and
- by around 2035, there would be practically no scope for further growth of regular passenger services at Sydney Airport.



Demand for aviation services is anticipated to continue to increase to service Sydney's ongoing growth in population and business activities. Any shortfall in capacity to meet demand would affect future economic growth, productivity and employment. It would also affect amenity and social values, as record numbers of Australians choose to travel by air for leisure. Notably, the Joint Study found that the economic cost of not meeting the expected increased demand would be substantial. By 2060, the economy-wide (direct and flow-on) impacts across all sectors of the Australian economy could total \$59.5 billion in foregone expenditure and \$34.0 billion in foregone gross domestic product (based on 2010 dollars). The NSW economy would be especially heavily affected, with losses across all industries totalling \$30.6 billion in foregone expenditure and \$17.5 billion in foregone gross state product.

Strategic alternatives to the development of a new airport in Western Sydney have been assessed over a long period of time. Commonly referenced alternatives include increasing the capacity of Sydney Airport or other existing airport facilities, establishing a new airport outside the Sydney basin or using high speed rail as a substitute for aviation services. While these alternatives have demonstrated potential to provide marginal capacity benefits, they would not replace the need for the proposed airport. Detailed studies have been undertaken over a number of decades to assess these alternative options and have consistently found that the most effective way to address increased aviation demand, while mitigating environmental and social impacts, is to develop a new airport at Badgerys Creek.

1.2 Purpose of this report

This Submissions Report has been prepared to address the submissions received from the community, Australian and NSW government agencies, local councils and other stakeholders during the exhibition of the draft EIS for the proposed Western Sydney Airport. This report provides:

- a summary of opportunities for community and stakeholders had to engage during the exhibition period;
- details of how many submissions were made during the exhibition period;
- a summary of issues raised;
- responses to issues; and
- identification of relevant changes to the EIS, the potential impact of these changes (where relevant) and new information in response to issues raised in the submissions received.

1.2.1 Structure of this report

This report has been structured into four parts:

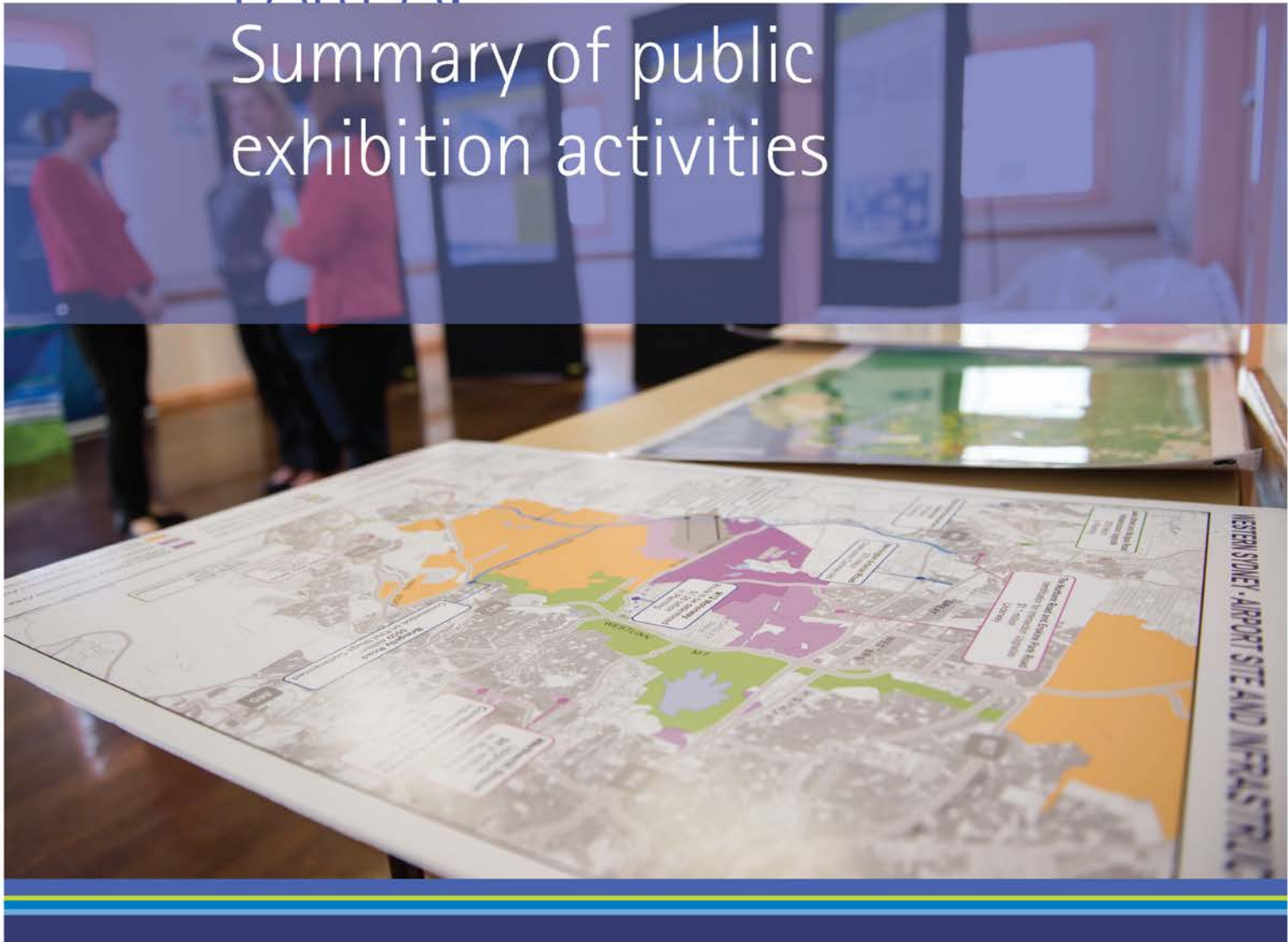
Part A: *Summary of consultation activities undertaken during the exhibition of the draft EIS* – this section provides a comprehensive outline of the activities undertaken by the Department of Infrastructure and Regional Development (DIRD) to engage and consult with the community and stakeholders.

Part B: *Submissions statistics* – this section provides statistics on the submissions received as well as providing a high-level summary of the issues raised by respondents.

Part C: *Detailed issues analysis* – this section provides detailed analysis of the issues raised in response to each chapter of the draft EIS. This section also addresses how and where specific issues are addressed in the finalised EIS.

Part D: *Conclusion* – this section provides a conclusion to the report.

PART A: Summary of public exhibition activities





2 Consultation activities

This chapter summarises the community and stakeholder consultation activities undertaken during the exhibition of the draft EIS from 19 October 2015 to 18 December 2015.

During the exhibition of the draft EIS, a number of different methods were used to inform community and stakeholders of the availability of the draft EIS for review and comment. These activities included distribution of postcards, newsletters, and letters, stakeholder briefings and over 50 advertisements placed in metropolitan and local newspapers. Local and broader Western Sydney community events were hosted by the project team throughout the exhibition period. Table 2–1 below provides a summary of activities undertaken during the period of exhibition.

Table 2–1 Consultation and engagement summary

Activity	Detail
Community information sessions	The project team set up and staffed community information sessions at 16 locations in Western Sydney and the Blue Mountains. Each session provided local community members with the opportunity to review the draft EIS and draft Airport Plan, look at detailed maps, use the noise modelling tool, and speak to a member of the project team. Other government agencies also attended sessions in locations where local projects were occurring.
Static displays at local libraries	The draft EIS and draft Airport Plan, as well as summary information and other resources, were displayed at 19 local libraries across Western Sydney and the Blue Mountains, as well as 3 in the Sydney CBD and Canberra.
Website content and updates (www.westernsydneyairport.gov.au)	The westernsydneyairport.gov.au site was updated regularly throughout the exhibition period. Throughout the exhibition period accessible copies of the draft EIS, draft Airport Plan, noise modelling tool, summary document, fact sheets, community newsletter and responses to frequently asked questions were available online. Visits to the website during the exhibition period included over 36,000 individual user sessions comprised of almost 83,000 page views. Information about community information sessions and static displays was also available on the website.
Noise modelling tool	An online interactive mapping tool was launched during the exhibition period. It provided community members and stakeholders the opportunity to look up a specific address and provided a visual representation of the noise mapping information in the draft EIS and draft Airport Plan.
Project summary document	A plain English summary of the draft EIS and draft Airport Plan was developed for stakeholders and the community. It was available at all community information sessions, online and at static display locations.
Fact sheets	Twelve fact sheets were developed for a number of key topics to assist in the explanation of the outcomes of the draft EIS and the draft Airport Plan.
Community newsletter	The Spring 2015 community newsletter was released to coincide with the exhibition of the draft EIS and draft Airport Plan. The newsletter was sent to 7,500 local residential properties, provided to community members at community information sessions and static display locations, emailed to website subscribers, distributed to councils and made available on the project website.
Stakeholder briefings and meetings	Over 100 stakeholder briefings and meetings were held with government agencies, local councils, representatives from industry and the community, Federal and State MPs and Senators, and other stakeholders. These briefings provided information on aspects of the draft EIS and draft Airport Plan and were part of the whole-of-government approach, ensuring community members received consistent information from different sources.

Activity	Detail
Doorknocking	On Tuesday 20 October 2015, 75 properties that shared a boundary with the airport site or were in close proximity were doorknocked by the project team to provide project information and invite residents to the local community information session in Luddenham.
Letters	Letters were sent out to 75 residences near the airport site, 70 local organisations and 79 political representatives at the beginning of the exhibition period, providing information on the draft EIS and draft Airport Plan and engagement opportunities.
Postcard	A postcard was distributed to over 430,000 residential properties and was available at static displays and from local councils. It was used to inform the community of the exhibition of the draft EIS and draft Airport Plan and the opportunities to engage with the project.
Newspaper notifications	Consistent with publication requirements of the EPBC Act and Regulations, 59 notifications were placed in 14 national, Sydney metropolitan and local newspapers and 10 foreign language newspapers. Each notification provided details of the draft EIS and draft Airport Plan exhibition activities.
Emails	Throughout the exhibition period, six informative emails were sent to over 600 individuals who provided an email address to be kept informed of the project.
USB copies of the EIS	The draft EIS and draft Airport Plan were available on USB drives. Any community member who requested a copy of the draft documents was provided a USB.
Translation services	Translation services were available throughout the exhibition period in languages spoken in Western Sydney. A language translation symbol was available on project documents and the project website offered translation assistance. Ten languages were selected according to analysis of linguistic diversity in Western Sydney, including: Arabic; Assyrian/Aramaic; Dari; Greek; Hindi; Italian; Serbian; Simplified Chinese; Spanish; and Vietnamese.
Information line and email to project team	The project team continually monitored calls and emails during the exhibition period. A total of 162 calls and 64 emails were received.
Surveys	A further round of research was conducted in December 2015, two weeks before the end of the exhibition period. The research was used to gauge community attitudes towards the project since the previous round of research in June 2015. 502 participants representative of age, gender and location in Western Sydney were surveyed, with results indicating greater awareness and an increase in positive sentiment towards the airport.

3 Submissions process

This chapter provides details of how community members were able to provide submissions to the project team as well as the process undertaken by the project team to manage, log and interpret the submissions for use in this Submissions Report.

3.1 Submissions process for community members

From Monday 19 October 2015 to close of business Friday 18 December 2015, community members and stakeholders were encouraged to make a submission on either the draft EIS or draft Airport Plan.

A number of methods were available to make a submission. Submission options included:

- web form on the dedicated website, westernsydneyairport.gov.au;
- email to dedicated submission email address, wsasubmission@infrastructure.gov.au;
- hardcopy submission form submitted at community information sessions; and
- hardcopy submission form or free form submission.

3.2 Process for submissions management


All submissions including those made by community, government, special interest groups, peak bodies, community action groups, businesses and other stakeholders were reviewed by the project team. The content of each submission was reviewed and categorised according to the key issue (e.g. overflight noise or human health) and sub-issues (e.g. flight paths or asthma) raised.

Each issue is presented as a summary of the specific issues raised by individual submissions, meaning that, while the exact wording of a particular submission may not be presented in the summary of the issue, the intent of each individual issue raised (as it appeared from the submission) has been captured.

A number of form letters were received as submissions during the exhibition period. Each of these submissions have been treated as individual submissions.

3.2.1 Difference between submissions and submitters

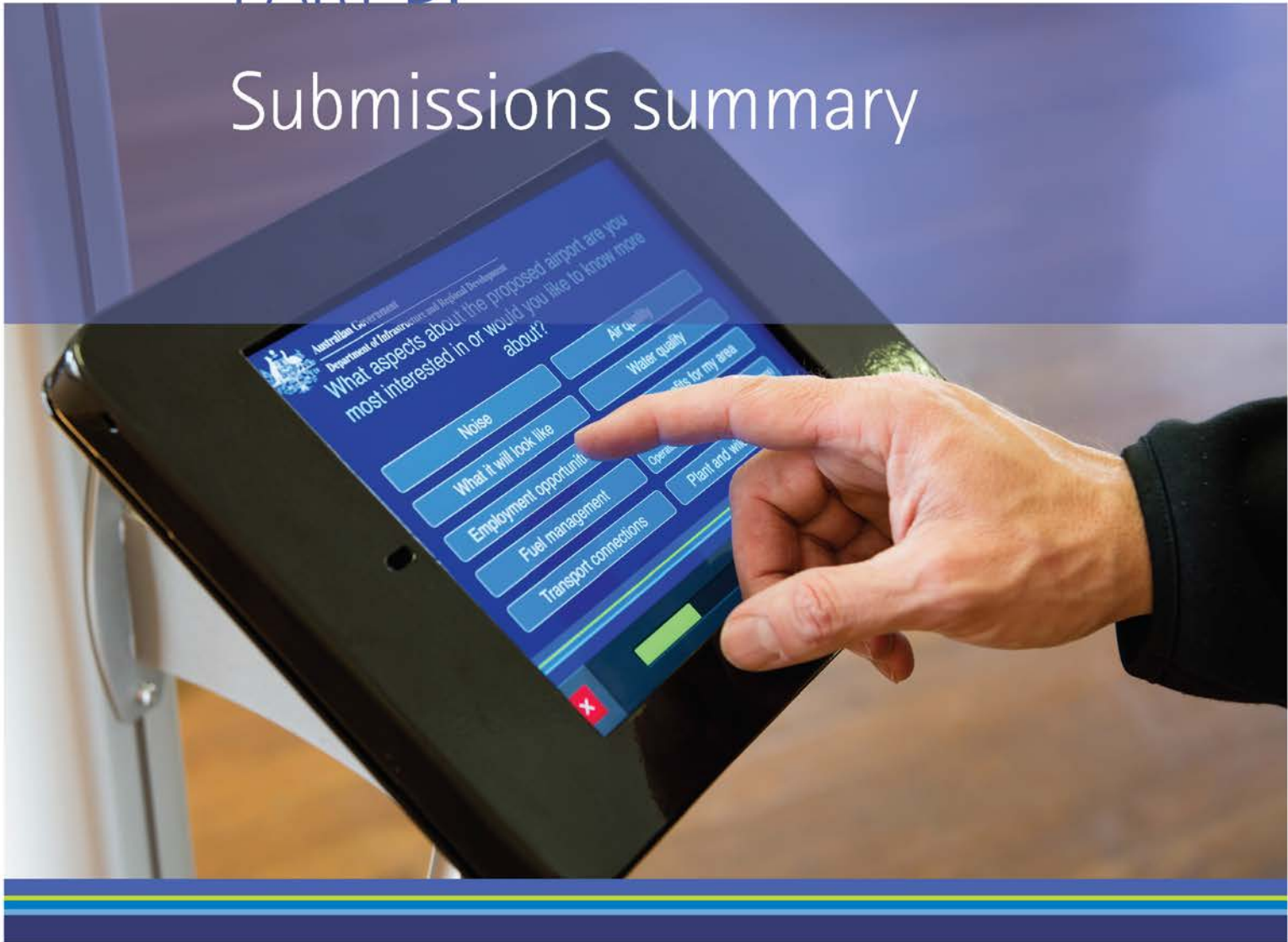
There was a difference between the total number of submissions made and the number of individuals or groups who made submissions. This means that some individuals or groups made multiple unique submissions. To provide accurate results, statistics in this document will be reported against total number of submitters (those who made submissions) rather than the total number of submissions received.

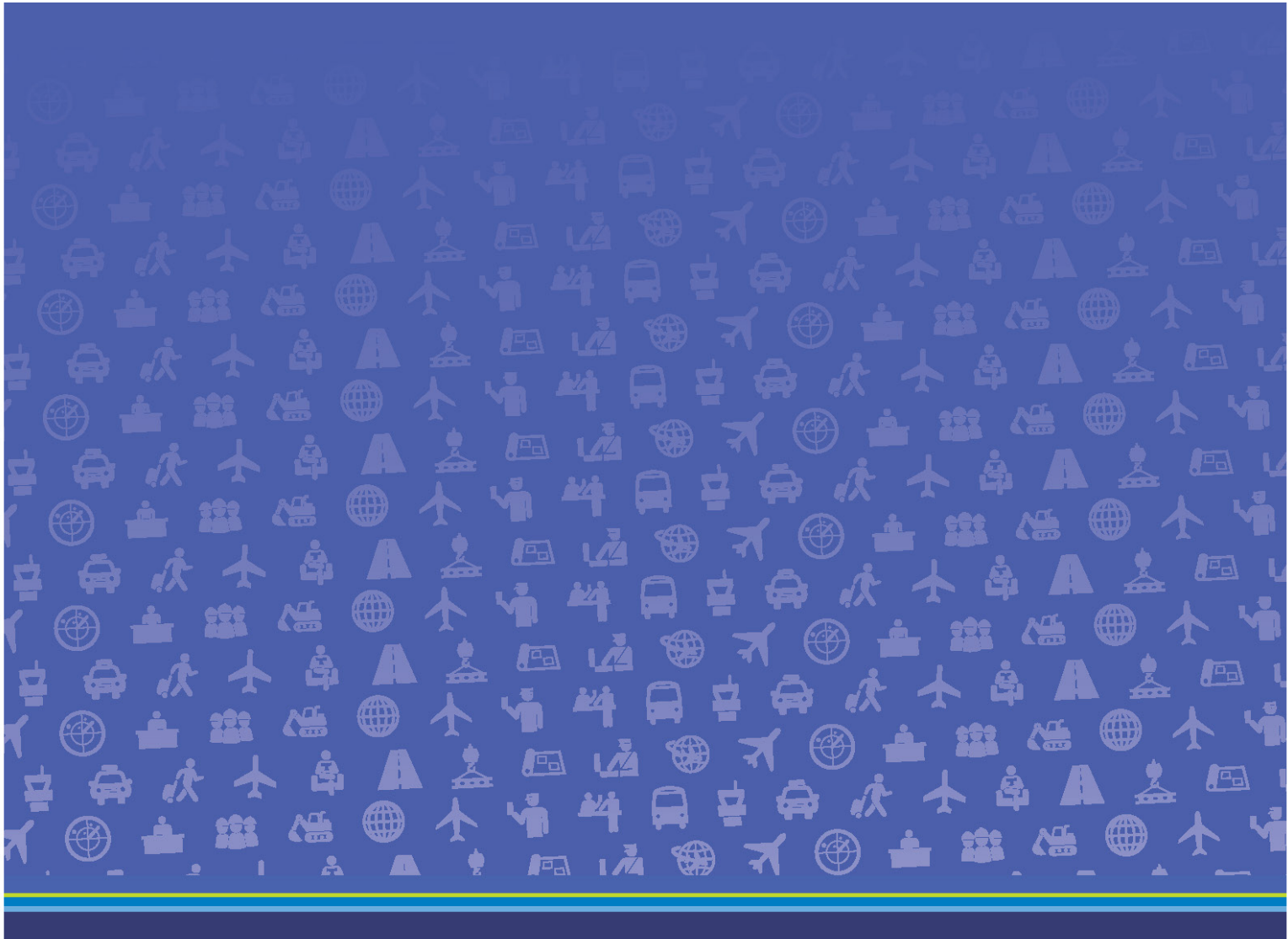


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PART B:

Submissions summary





4 Overview of submissions

A total of 4,975 submissions were received during the exhibition period from 19 October 2015 to 18 December 2015. The 4,975 submissions were made from 3,973 individuals or groups (which are called submitters in this document).



4.1 Submission statistics

4.1.1 Submissions by stakeholder

Of the 4,975 submissions 4,810 were from community members, 43 from government and 122 from organisations (including special interest groups, peak bodies, community action groups, businesses and other stakeholders).

Community members and other stakeholders were able to make a submission to the project team on the draft EIS and draft Airport Plan via a number of methods. 1,708 submissions were received via the web form, 3,237 were mail or email submissions and 30 were provided at information sessions held during the exhibition period.

4.1.2 Origin of submissions

The origin of submissions varied across NSW, with the most from the Sydney metropolitan area. The majority of submissions, approximately 80 per cent, originated from the Blue Mountains local government area, this is displayed in Figure 4–1 and Table 4–1 below. The proof-of-concept indicative flight paths, including location of the proposed merge point above the lower Blue Mountains and subsequent impacts on the local community and the Greater Blue Mountains World Heritage area, were the top issues of concern for those making a submission.

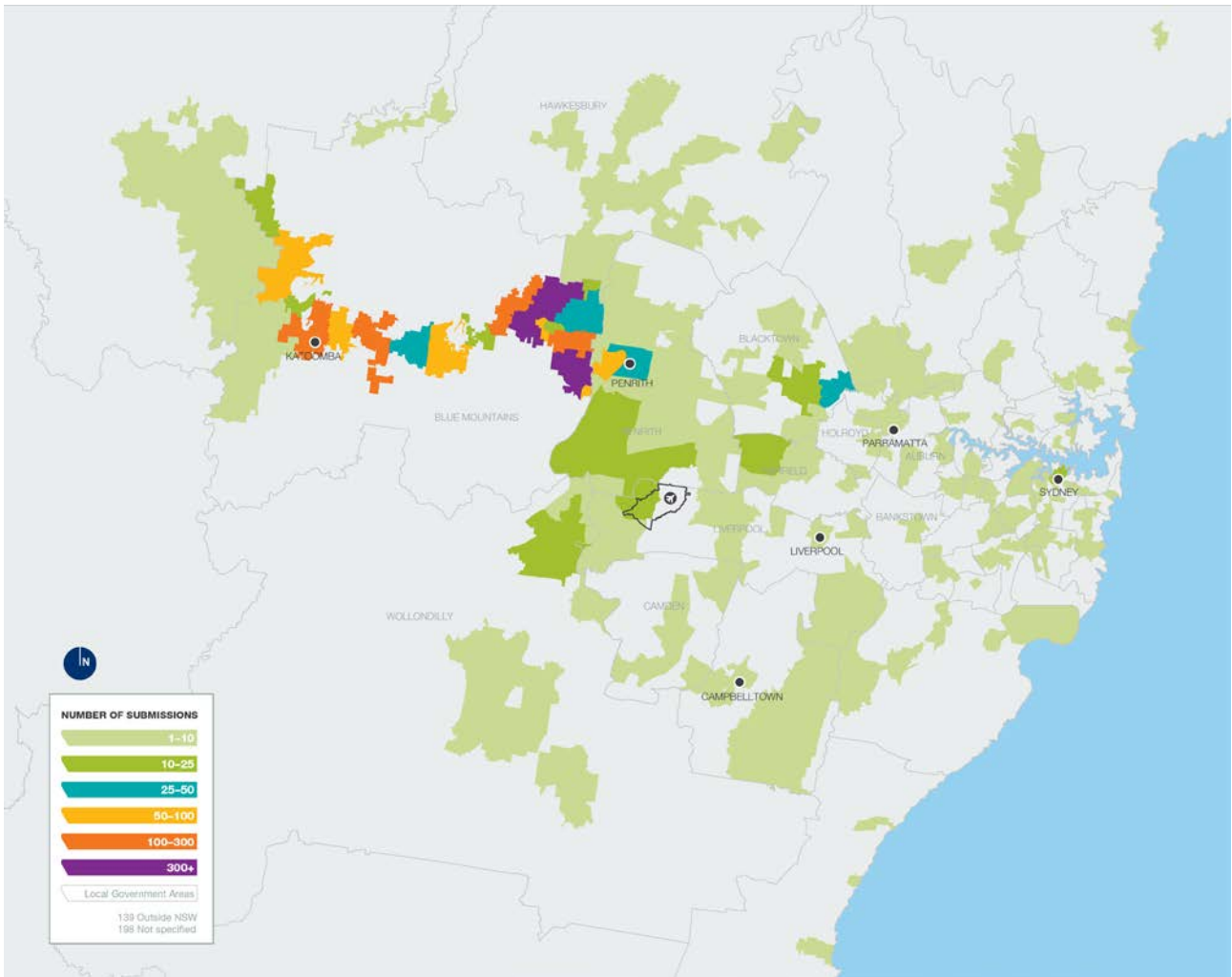


Figure 4-1 Origin of submissions by volume

Table 4-1 Top 20 – origin of submissions

Submission Origin (suburb)	Count	LGA
Blaxland	930	Blue Mountains
Glenbrook	595	Blue Mountains
Springwood	553	Blue Mountains
Winmalee	320	Blue Mountains
Falconbridge	274	Blue Mountains
Warrimoo	227	Blue Mountains
Mount Riverview	210	Blue Mountains
Not specified	198	-
Katoomba	131	Blue Mountains
Wentworth Falls	109	Blue Mountains
Hazelbrook	92	Blue Mountains

Submission Origin (suburb)	Count	LGA
Woodford	87	Blue Mountains
Blaxland East	86	Blue Mountains
Emu Plains	83	Penrith
Blackheath	82	Blue Mountains
Valley Heights	83	Blue Mountains
Lapstone	80	Blue Mountains
Leura	63	Blue Mountains
Lawson	49	Blue Mountains
Yellow Rock	41	Blue Mountains

4.2 Summary of issues

All submissions received were reviewed and catalogued. As outlined in Section 3.2 of this Volume, there is a difference between the total number of submissions made and the number of individuals or groups who made them. This means that some individuals or groups made multiple unique submissions and explains why there were 4,975 submissions made from 3,973 submitters.

From the 4,975 submissions, a total of 48 separate issues were raised. The five most raised issues were:

- Greater Blue Mountains World Heritage Area;
- flight paths;
- emergency fuel jettison;
- general health impacts; and
- overflight noise.


A full summary of all 48 issues raised is outlined in Table 4–2 below.

Table 4–2 A full summary of all 48 issues raised

Issue	Number of times raised	Percentage
Greater Blue Mountains World Heritage Area	3,539	71.1%
Airspace architecture and operation – flight paths	3,301	66.4%
Airspace architecture and operation – emergency fuel jettison	2,666	53.6%
Human health – general health impacts	2,484	49.9%
Aircraft noise – overflight	2,202	44.3%
Airspace architecture and operation – hours of operation	1,700	34.2%
Air quality and greenhouse gases	1,533	30.8%
Traffic, transport and access- rail	1,442	29.0%

Issue	Number of times raised	Percentage
Approach to impact assessment (methodology)	1,265	25.4%
Need for Western Sydney Airport – alternative proposals	1,097	22.1%
Economic – tourism impacts	983	19.8%
Traffic, transport and access – freight	850	17.1%
Biodiversity	847	17.0%
Traffic, transport and access – road network	690	13.9%
Social	674	13.5%
Need for Western Sydney Airport – project justification	640	12.9%
Airspace architecture and operation – merge point	602	12.1%
Airspace architecture and operation – altitude	593	11.9%
Community and stakeholder engagement – display period	506	10.2%
Human health – sleep deprivation	496	10.0%
Economic – jobs	424	8.5%
Aircraft noise – methodology	413	8.3%
Hazard and risk – hazard reduction and aerial firefighting	409	8.2%
Hazard and risk – fuel storage and transport	392	7.9%
Environmental management framework (mitigation measures)	383	7.7%
Approvals framework	372	7.5%
Community and stakeholder engagement – EIS Consultation	339	6.8%
Hazard and risk – general hazards & risk	304	6.1%
Economic – property prices	273	5.5%
Airspace architecture and operation – operating modes	245	4.9%
Topography, geology and soils	218	4.4%
Landscape and visual amenity	170	3.4%
Human health – asthma	152	3.1%
Airspace architecture and operation – meteorological impacts	145	2.9%
Aboriginal heritage	141	2.8%
Planning and land use	114	2.3%
Aircraft noise – take-off/landing	85	1.7%
Stage 1 development	75	1.5%
Cumulative impact assessment	67	1.3%
Land use plan	67	1.3%

Issue	Number of times raised	Percentage
Noise – ground operations	63	1.3%
Community and stakeholder engagement – notifications and information sessions	57	1.1%
Construction	39	0.8%
European heritage	37	0.7%
Noise – road	20	0.4%
Resources and waste	17	0.3%
Surface water and groundwater	16	0.3%
Noise – construction	11	0.2%

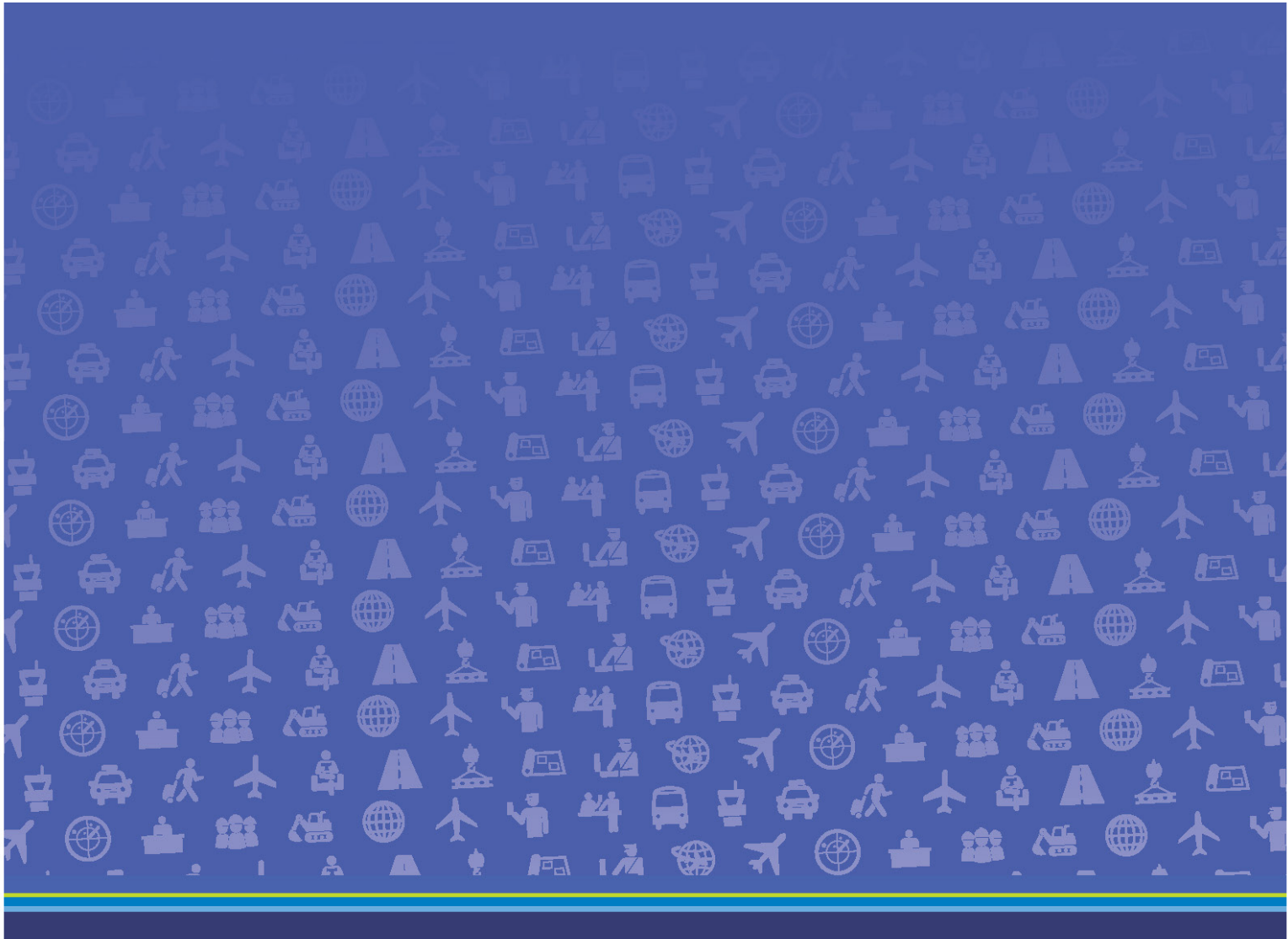


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PART C:

Detailed issues analysis





5 Need for Western Sydney Airport

Volume 1 (Project Background), Chapter 2 (The need for Western Sydney Airport) of the draft EIS provided a review of the need for an airport in Western Sydney and the process that led to the selection of the Commonwealth owned land at Badgerys Creek as the airport site.

5.1 About the submissions on this chapter



Table 5–1 Submissions related to the need for the Western Sydney Airport

Issue	Number of times the issue was raised	Percentage of total submissions
Project justification	640	12.9%
Alternative proposals	1,097	22.1%

5.1.1 Origin of submissions

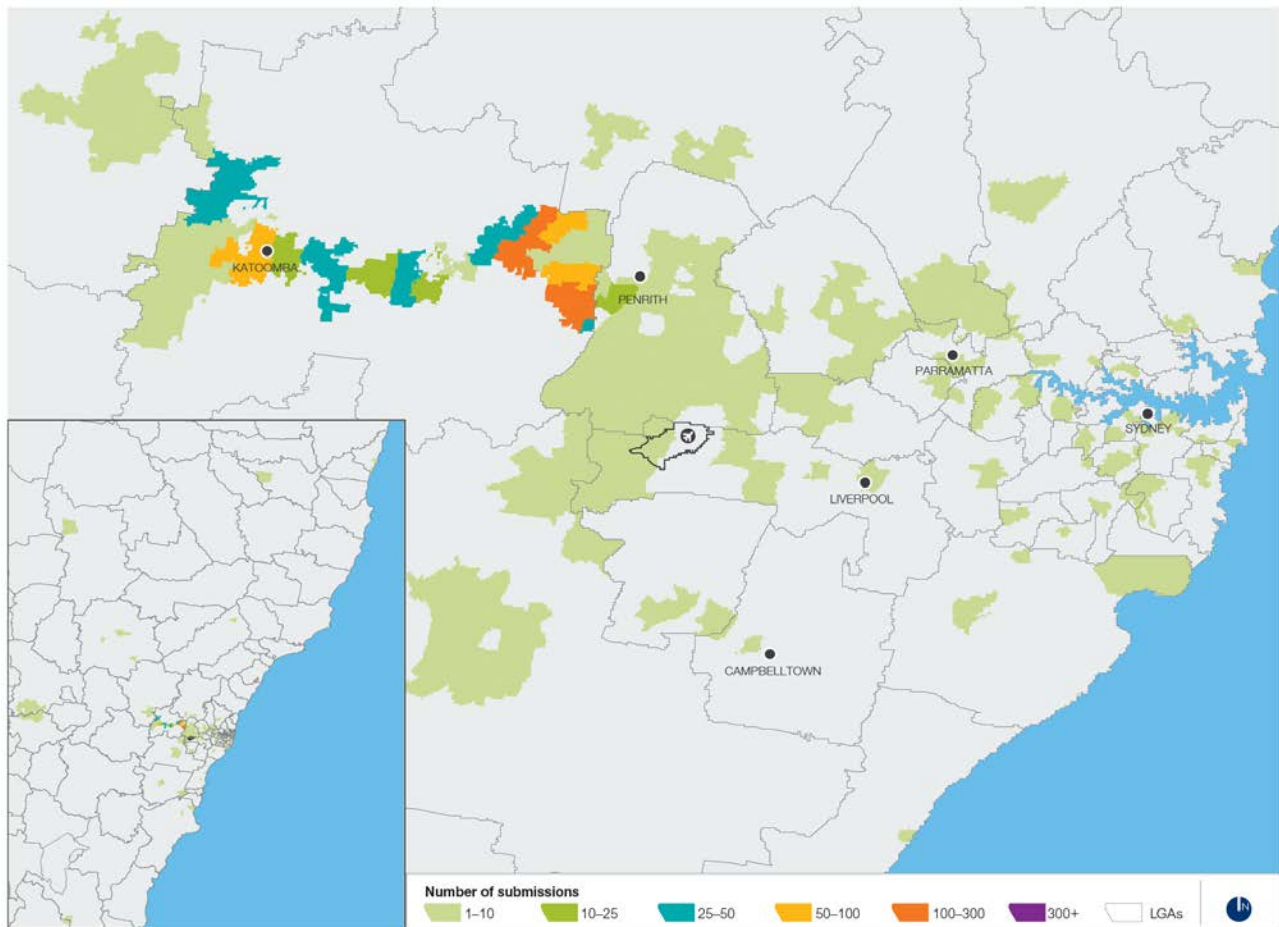


Figure 5–1 Map depicting origin of submissions in relation to Chapter 2 of the draft EIS

5.2 Summary and response

5.2.1 Overarching summary of submissions

Submissions were received that were supportive of the proposed airport and submissions were also received that were not supportive of the airport proposal. These statements are summarised in section 5.2.2 and 5.2.3.

The key themes from the submissions are summarised under the following headings:

- justification for the proposal;
- location of the proposed airport at Badgerys Creek; and
- consideration of alternatives.

These are summarised in further detail in section 5.2.5.

5.2.2 Support for the proposed airport

A broad range of submitters stated their support for the proposed Western Sydney Airport and its location at Badgerys Creek. This extends across the NSW Government, local councils, organisations in the aviation, tourism and business industries, major surrounding landowners, large-scale educational institutions and some of the community.

Submissions included supporting statements that the proposed Western Sydney Airport:

- is the preferred option for providing additional aviation capacity in the Sydney basin;
- is seen as alleviating pressure on the existing Sydney (Kingsford Smith) Airport at Mascot and, in the long term, may become the primary airport for the Sydney basin area;
- would be a major catalyst for economic and employment growth in Western Sydney, the Sydney Metropolitan Region and wider NSW;
- is necessary to provide more accessible air transport services for the people of Western Sydney; and
- would bring significant social, economic and tourism benefits for the Western Sydney region and beyond it, including areas like the Illawarra and the Blue Mountains.

Submissions from some Western Sydney local councils indicated broad or conditional support for an airport in Western Sydney and acknowledged that the airport would drive significant and enhanced economic and social outcomes for the future of Western and South-Western Sydney. These submissions questioned elements of the operating concept for the proposed airport (such as 24-hour operations) and sought more information and assurances on transport connections to major centres, and the assessment processes for the final flight paths.

5.2.3 Objections to the need for the airport

Submissions were received that stated that they did not support and/or opposed the Western Sydney Airport and its location at Badgerys Creek. These submissions were received from some councils in Western Sydney, peak environmental groups, educational associations, community members, environmental and community groups in the Blue Mountains and other locations.

Submission statements opposing the proposed Western Sydney Airport were made most often on the following basis:

- that the flight paths presented in the draft Airport Plan and draft EIS were indicative only;
- that there was uncertainty due to the indicative flight paths and the associated impacts on noise, human health, the Greater Blue Mountains World Heritage Area (GBMWA), air and water quality in Western Sydney, the tourism economy and general social amenity;
- that capacity at Sydney Airport is not yet fully utilised and the proposed airport should not be considered until operational changes are made at Sydney Airport; or
- that travel demand should be met through alternative options like high speed rail.

5.2.4 Overarching response to issues raised

Following publication, Chapter 2 (Volume 1) of the EIS was updated with minor changes to reflect new NSW local council names and the appropriateness of high speed rail as a viable alternative to the development of a greenfield airport. The additional content is included in Chapter 2 (Volume 1) of the finalised EIS.

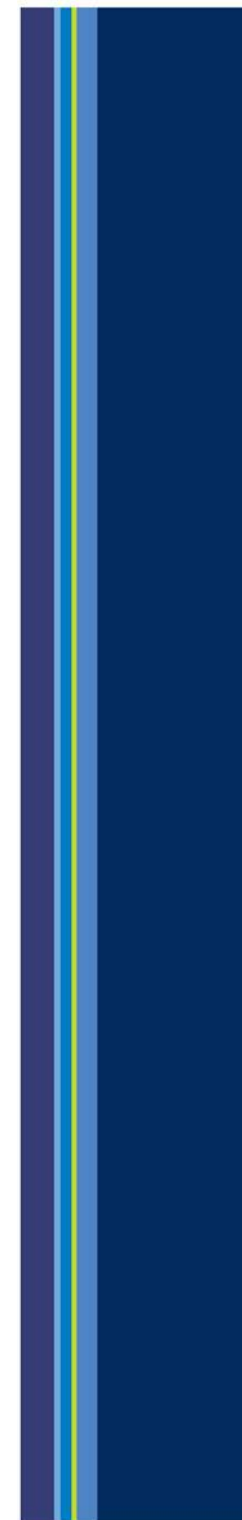
Theme	Stakeholders	Summary of issue	Response
Justification for the proposal	Peak business groups Environmental groups Residents	<p>Aviation demand</p> <p>Submissions were received that supported the increased demand for aviation services in the Sydney region and that an airport in Western Sydney should service this demand.</p> <p>Conversely, some submissions questioned the validity of the growth assumptions in aviation demand given the rise of the digital economy. These submissions stated that the National Broadband Network and other technology would reduce the demand for domestic travel in the business sector, lessening the aviation demand for an airport in Western Sydney.</p>	<p>Chapter 2 (Volume 1) discusses the expected increase in demand for aviation services in the Sydney region. Existing major airports, including Sydney (Kingsford Smith) Airport will continue to play a significant role in accommodating current and future growth in aviation activity. However, a number of studies completed over several decades, including the <i>Joint Study on Aviation Capacity in the Sydney Region</i> conducted in 2012 (the Joint Study), have shown that current capacity for aviation services in Sydney is insufficient in the long term and the development of a greenfield airport at Badgerys Creek is the best solution to address expected increases in demand.</p> <p>The four main factors driving demand for aviation in Sydney are population growth, economic growth, increased competition, low cost carrier penetration and increasing international tourism demand, particularly from Asia.</p>
Justification for the proposal	Peak business groups Environmental groups Residents	<p>Aviation demand forecasts</p> <p>Submissions questioned the validity of the growth assumptions in aviation demand given passenger growth numbers at Sydney Airport, and requested the split of anticipated domestic and international trips at the proposed airport. Other submissions questioned demand forecasts in the context of the findings of a 2015 report by Deutsche Bank on passenger number forecasts.</p>	<p>Demand for aviation services within Australia, particularly in Sydney has grown significantly in recent decades, largely driven by population growth, economic growth, increased competition and growth in international tourism.</p> <p>Section 5.3 (Volume 1) and Sections 2.1.4 and 3.1 of the revised draft Airport Plan provide details of the Stage 1 development of the proposed airport, including a single runway and facilities for approximately 10 million annual passengers. The EIS assumes the airport could be operating at this level approximately 5 years after operations commence which for assessment purposes has been assumed to be 2030. The revised draft Airport Plan indicates that in the early years it is expected around 80 per cent of passenger demand at the airport would be for domestic travel.</p>
Justification for the proposal	Peak business groups Environmental groups Local councils	<p>Population forecasts</p> <p>Submissions received from business groups supported the population growth assumptions in the EIS and the impact of population growth on the demand for aviation services.</p> <p>In contrast, environmental organisations questioned the population growth assumptions used and the sustainability of building infrastructure to service the predicted high population growth in Western Sydney. Some submissions suggested that the population projections be further tested and refined in the final EIS.</p>	<p>Chapter 2 (Volume 1) considers the expected population growth in Australia, particularly in Sydney. The final EIS assumes a growth in Australia's population of 1.3 per cent per year to 2054-55, based on the forecast patterns of migration, fertility and mortality within the 2015 Intergenerational Report (IGR).</p> <p>SGS Economics and Policy completed an analysis of population growth and demographics in Western Sydney and forecast significant growth in Sydney, with a 96 per cent increase in population over the next 60 years. In particular, Western Sydney is expected to experience substantial growth, becoming home to an additional one million residents by around 2030.</p>

Theme	Stakeholders	Summary of issue	Response
Justification for the proposal	Peak business groups Tourist organisations Environmental groups	<p>Tourism demand</p> <p>Submissions supported having the necessary tourism related infrastructure in place to support the growing international and Asian tourism market. These submissions considered international demand for recreational, business and family related travel.</p> <p>Other submissions questioned the need for an additional airport based on the small contribution international tourism makes to Australia's gross domestic product and were sceptical of the claimed benefits of increased international tourism in the Blue Mountains area. Environmental groups stated that international tourism is likely to decline given changes in international economies, the decline of the international resource sector and current passenger numbers at Sydney Airport.</p>	<p>Demand for international tourism is expected to continue growing in the medium to long term, increasing demand for aviation services in Sydney. In particular, passenger demand between Sydney and key Asian markets has grown by 7.3 per cent over the last three years. Economic growth and improvement in living standards in neighbouring countries will continue to drive growth in demand for aviation services in Sydney. Tourism makes an important contribution to the Australian economy, contributing 6 per cent to Australia's GDP in 2012-2013 (Tourism Research Australia (2014a)).</p>



Theme	Stakeholders	Summary of issue	Response
Location of the proposed airport at Badgerys Creek	Aviation industry Community groups Residents Local councils	<p>Location at Badgerys Creek</p> <p>Some submissions explicitly indicated their support for the decision to develop the proposed airport at Badgerys Creek.</p> <p>In contrast, concerns or objections were raised about the siting of the proposed airport at Badgerys Creek, based on impacts on surrounding environmental areas.</p>	<p>As highlighted in Section 2.6 of Chapter 2 (Volume 1), a number of studies, including the Joint Study, found that a new greenfield airport at Badgerys Creek is the most effective site to locate the proposed Western Sydney Airport.</p> <p>Importantly, one of the key factors that makes Badgerys Creek the preferred location for a greenfield airport is that the site has been protected from incompatible and noise-sensitive development for decades through planning policy.</p> <p>It is noted that the issues raised in submissions fundamentally reflect that the development of an airport is a major, complex and long term infrastructure project. In particular, many of the variables used in the EIS are based on assumptions about future aircraft types, technology use and air traffic demand forecasts. While these assumptions are based on accurate sources available to the EIS project team and best-practice methodology, the realisation of these assumptions depends on global events and trends, business decisions of airlines and other industry participants, decisions by international organisations such as the International Civil Aviation Organization (ICAO), and other factors which are outside the control of any airport developer or operator.</p> <p>The assessment of ground-based construction and operational impacts in the EIS is based on the indicative airport site layout presented in the revised draft Airport Plan and this may be refined through the process of detailed design (see Chapter 3 (Volume 1)).</p> <p>To address this, the EIS and revised draft Airport Plan focus on providing certainty on key activities and impacts of the Stage 1 development, including: the scale of construction and operation of the proposed development; the location of bulk earthworks and land clearing of areas within the construction impact zone; and development of the Land Use Plan in the revised draft Airport Plan (see also Chapter 4 (Volume 1)) to manage future development and environmental conservation on the airport site. In addition, the development of the Environmental Management Framework (as outlined in Chapter 28 (Volume 2b)), the identification of the specific developments to be authorised for the proposed airport in Part 3 of the revised draft Airport Plan (see also Chapter 5, Volume 1), as well as the existing Airports Act regulatory framework, provide certainty about how a future airport would be developed and how environmental impacts would be managed for construction and operation of the Stage 1 development.</p>

Theme	Stakeholders	Summary of issue	Response
Location of the proposed airport at Badgerys Creek	Community groups Educational groups Residents	<p>Alternative sites outside the Sydney basin</p> <p>Submissions suggested that the site for an additional airport for Sydney should be considered outside the Sydney basin at some time in the future. Locations suggested included Goulburn, Newcastle and the Central Coast.</p> <p>Other submissions suggested that an additional airport should only be built in a coastal location to drive aircraft flight paths over water and away from residential areas.</p>	<p>The Joint Study, consistent with previous studies as mentioned in the EIS, found that the Commonwealth owned land at Badgerys Creek was the most suitable site to develop a greenfield airport. The EIS notes in Section 2.6 (Volume 1), that the Joint Study considered 80 sites across 18 locations in the Greater Sydney region. Locations that were assessed as part of this study included sites in Hawkesbury and the Blue Mountains, the Southern Highlands, within the Sydney Basin and on the Central Coast. Chapter 2 (Volume 1) discusses the analysis and results of the Joint Study.</p>
Location of the proposed airport at Badgerys Creek	Community groups Residents Local councils	<p>Alternative sites at other airports</p> <p>Submissions suggested the upgrade of existing airports located at Camden, Bankstown, Richmond and Sydney Airport as an alternative to the proposed Western Sydney Airport.</p> <p>Others explicitly objected any consideration of locating a major airport at the Australian Government's RAAF Base at Richmond.</p>	<p>Chapter 2 (Volume 1) discusses the potential of other existing airports to increase aviation capacity in the Sydney region.</p> <p>Relocation of some aircraft movements to these airports or expansion of these airports may create some additional capacity at Sydney (Kingsford Smith) Airport. However, any increases in capacity would be ancillary to Sydney Airport and would not address Sydney's long term aviation capacity issues.</p>



Theme	Stakeholders	Summary of issue	Response
Consideration of alternatives	Aviation industry Peak business groups Local councils	<p>Implications for operations at Sydney (Kingsford Smith) Airport</p> <p>Submissions discussed the importance of Sydney Airport's economic contribution, the importance of protecting the jobs that it creates, and the need for the final EIS to clearly articulate how this will be achieved.</p> <p>Submissions discussed the need to continue maximising the growth and efficient use of Sydney Airport, and that the airspace architecture for the proposed Western Sydney airport should not negatively impact on efficient airspace operations at Sydney Airport.</p>	<p>It is noted that the issues raised in submissions fundamentally reflect that the development of an airport is a major, complex and long term infrastructure project. In particular, many of the variables used in the EIS are based on assumptions about future aircraft types, technology use and air traffic demand forecasts. While these assumptions are based on accurate sources available to the EIS project team and best-practice methodology, the realisation of these assumptions depends on global events and trends, business decisions of airlines and other industry participants, decisions by international organisations such as the International Civil Aviation Organization (ICAO), and other factors which are outside the control of any airport developer or operator.</p> <p>The development of the Environmental Management Framework (as outlined in Chapter 28, Volume 2b), the identification of the specific developments to be authorised for the proposed airport in Part 3 of the revised draft Airport Plan (see also Chapter 5 (Volume 1)), as well as the existing Airports Act regulatory framework, provide certainty about how a future airport would be developed and how environmental impacts would be managed.</p> <p>A preliminary airspace management analysis prepared by Airservices Australia was conducted to establish whether safe and efficient operations could be introduced at the proposed Western Sydney Airport through the development of indicative air traffic management designs and flight paths. This analysis indicates that the Stage 1 development and Sydney (Kingsford Smith) Airport can safely operate independently as high capacity airports, within existing airspace arrangements in the Sydney basin. Flight paths for the proposed airport will be refined and finalised as part of a comprehensive airspace planning and design process and will be subject to a separate environmental assessment and approvals process. Chapter 7 (Volume 1) of the final EIS provides additional information about the future airspace planning and design process to be completed before the commencement of airport operations. The Department of Infrastructure and Regional Development will be responsible for delivering the flight path design for the proposed airport, working in close collaboration with Airservices Australia and the Civil Aviation Safety Authority (CASA). The airspace design process will be conducted in an open and transparent manner that provides ongoing opportunities for further comprehensive community and stakeholder consultation to provide a greater level of certainty.</p>

Theme	Stakeholders	Summary of issue	Response
Consideration of alternatives	Environmental groups Community groups Residents	<p>Capacity at Sydney (Kingsford Smith) Airport</p> <p>Contrasting views were submitted about the available capacity at Sydney Airport. Some suggestions questioned the available capacity and performance of Sydney Airport, stating that the airport is operating significantly under capacity. These submissions stated that a proposed airport in Western Sydney should be deferred until Sydney Airport's full capacity is taken up, and studies undertaken into alternative options.</p> <p>Other submissions suggested that the Australian Government should commit to an alternative study to increase capacity at Sydney Airport, with some submissions suggesting additional runways be constructed into Botany Bay.</p>	<p>Chapter 2 (Volume 1) discusses the capacity constraints at Sydney (Kingsford Smith) Airport. The capacity of Sydney Airport is further limited by that airport site's relatively small size and geographical location amid surrounding urban development. There is no real opportunity to provide additional capacity through physical expansion as any significant expansion of the airport site or realignment of runways would be extremely difficult to achieve due to the physical and environmental constraints associated with the airport.</p>
Consideration of alternatives	Community groups Residents Aviation industry Tourism industry	<p>Changing the curfew at Sydney (Kingsford Smith) Airport</p> <p>Submissions suggested that the curfew of Sydney Airport should be removed or modified to accommodate aviation demand there, before developing the proposed Western Sydney Airport.</p> <p>Some submissions suggested that the AM shoulder curfew movements should be increased up to the maximum permitted by the <i>Sydney Airport Curfew Act 1995</i>.</p>	<p>A curfew has been in place at Sydney Airport since 1963. The <i>Sydney Airport Curfew Act 1995</i> allows a small number of movements in the shoulder periods, including a maximum of 35 international passenger aircraft arrivals between 5.00 am and 6.00 am and 14 international passenger aircraft movements between 11.00 pm and midnight, or to such lower levels as set out in regulations. The current regulations set a limit of no more than 24 movements per week between 5.00 am and 6.00 am and zero movements between 11.00 pm and midnight. In total, this means that the regulated level for curfew shoulder movements is currently 1,248 movements per year; however, the absolute maximum curfew shoulder level allowed under the <i>Sydney Airport Curfew Act 1995</i> is equivalent to 2,548 movements per year.</p> <p>The effectiveness of refinements to the curfew is dependent on the demand for international landings. Changes to the curfew would likely reduce some of the pressure on airport and passenger infrastructure. However, early morning and late night flights are principally driven by seasonal international demand. As a result, changes to the curfew would have a limited impact on increasing the operational capacity at Sydney airport and would not address Sydney's long term aviation capacity issues.</p>

Theme	Stakeholders	Summary of issue	Response
Consideration of alternatives	Aviation industry Peak business groups	<p>Changing the aircraft movement cap at Sydney (Kingsford Smith) Airport</p> <p>Submissions opposed public statements from some stakeholders that the aircraft movement cap at Sydney Airport be reduced from the existing 80 flights per hour to 60. This reduction was viewed as a potential negative impact on Sydney's economy, tourism industry and associated jobs. Some submitters suggested that the statutory movement cap at Sydney Airport be increased to at least 90 flights per hour to reinforce the economic value of the airport.</p>	<p>Chapter 2 (Volume 1) discusses the existing aircraft movement cap at Sydney Airport. A demand management system currently operates at Sydney airport, allowing a maximum of 80 aircraft movements per hour.</p> <p>The EIS considers the impacts of increasing the cap on aircraft movements. Although increasing the cap on aircraft movements would provide some additional capacity at Sydney airport in the short term, it is not a long term solution to Sydney's aviation capacity issues.</p> <p>In addition, an increase in peak movements to 85 or 90 aircraft movements would place added strain on airside infrastructure.</p>
Consideration of alternatives	Environmental groups Community groups Residents Local councils	<p>High speed rail</p> <p>Submissions requested more information and consideration of alternative proposals to the proposed Western Sydney Airport. Many submissions suggested that a high speed rail line between Brisbane, Sydney and Melbourne should be given further consideration as an alternative to the proposed airport.</p> <p>Support for high speed rail as an alternative was based on views that it could cater for domestic travel along the east coast of Australia and that international travel could be facilitated through existing airports in capital cities linked to the rail line. Specific questions were raised on the capital costs presented in the draft EIS for high speed rail options and whether international expertise from experienced countries in Europe and Asia was used to quantify these cost assumptions.</p>	<p>Chapter 2 (Volume 1) discusses the use of high speed rail as an alternative to the development of a proposed Western Sydney Airport. Studies commissioned by the Australian Government in 2010 investigated the feasibility of a high speed rail network linking capital cities and regional centres on the east coast: the <i>High Speed Rail Study Phase 1 Report (2011)</i> and the <i>High Speed Rail Study Phase 2 Report (2013)</i>. These reports and the Joint Study found that while a high speed rail network may provide an alternative for some domestic travel, a high speed rail would not address other key drivers of aviation demand, including international travel and travel to destinations not on the east coast of Australia.</p> <p>The two forms of transport are considered complementary, rather than alternatives and consideration of a future high speed rail network on the east coast does not remove the need to provide additional aviation capacity. Additionally, the substantial cost associated with the construction and operation of a high speed rail network and its inability to cater for international and some domestic travel means that it would not provide the same benefits as additional aviation capacity within the Sydney basin.</p>

6 Approvals framework

Volume 1 (Project Background), Chapter 3 (Approvals framework) of the draft EIS provided information on the Commonwealth environmental assessment and approvals framework that applies to the development of the proposed airport.

6.1 About the submissions on this chapter



Table 6–1 Submissions related to the approvals framework

Issue	Number of times the issue was raised	Percentage of total submissions
Approvals framework	372	7.5%

6.1.1 Origin of submissions

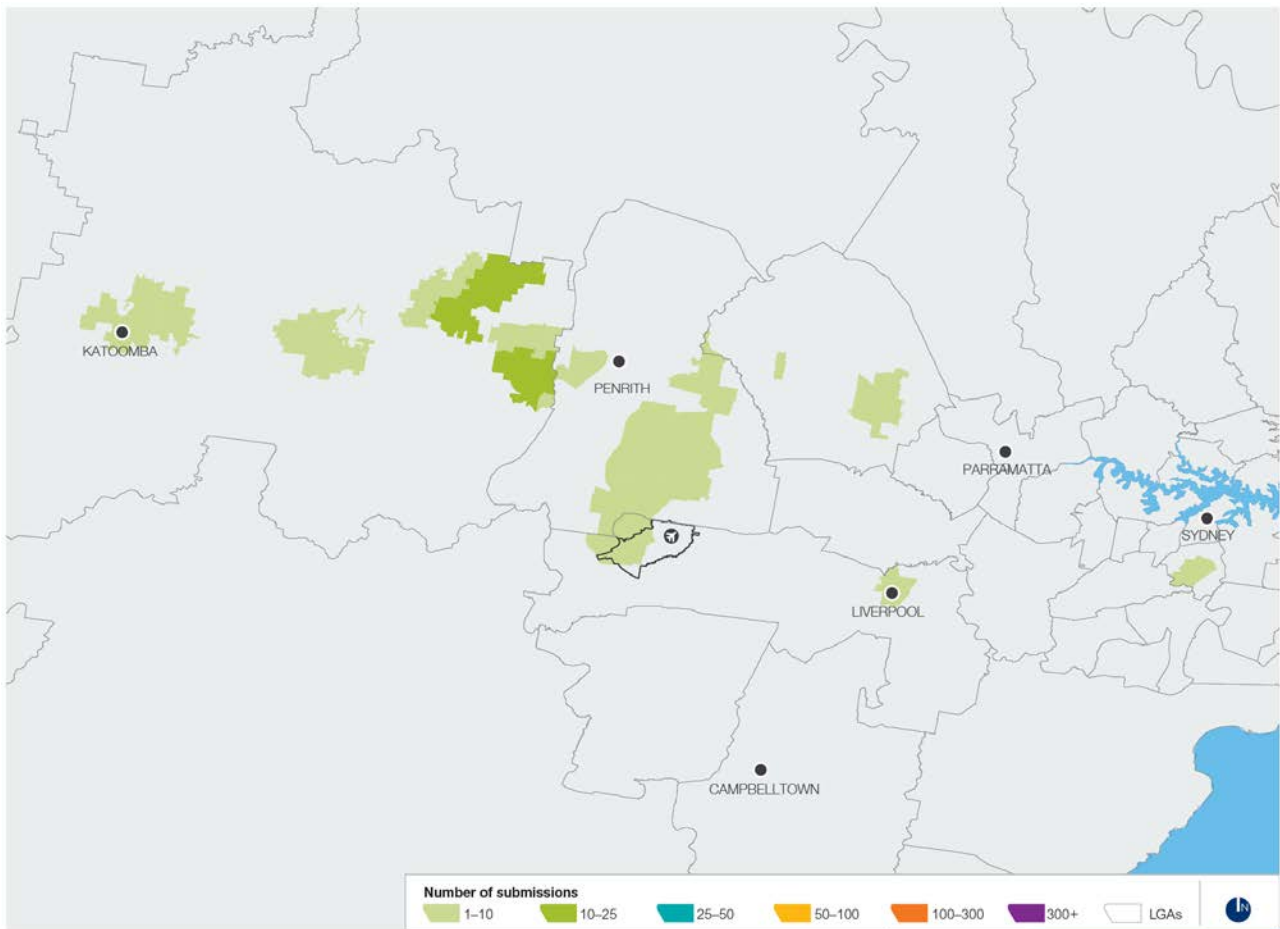



Figure 6–1 Map depicting origin of submissions in relation to Chapter 3 of the draft EIS

6.2 Summary of response

6.2.1 Overarching summary of submissions

Submissions received on this chapter suggested that the draft EIS has not been undertaken in compliance with the requirements of the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) or the *Airports Act 1996* (Airports Act). Other submissions contend that the draft EIS did not meet the *Guidelines for the Content of a Draft Environmental Impact Statement* (EIS Guidelines), as issued by the Environment Minister.

More information was requested on the amendments made to the Airports Act, the next steps to finalise and/or approve the EIS, and further details for assessing and confirming flight paths.



Submission comments that address the approvals framework outlined in the draft EIS cover three main topics:

- the approvals framework for the Stage 1 development, including the assessment timeframe;
- the broader planning framework for the airport, including future assessment processes and planning controls; and
- the commercial framework.

The submission comments are summarised and addressed in Section 6.2.3.

6.2.2 Overarching response to issues raised

Following publication, Chapter 3 of the draft EIS was updated to provide greater clarity about the approval process for the Stage 1 development including determination of an Airport Plan, airspace design and future major development plans. Chapter 3 was also updated to reflect changes to the planning initiatives affecting the region such as the Western Sydney Priority Growth Area that is adjacent and complementary to the Western Sydney Employment Area. This additional content is included in Chapter 3 of the finalised EIS.

Theme	Stakeholders	Summary of issue	Response
Approvals framework	NSW Government Local councils Community Groups	<p>Assessment timeframe</p> <p>Submissions from the NSW Government and some Western Sydney councils questioned the assessment timeframe for the draft EIS. Alternative timeframes were suggested: either a 10-year post opening planning horizon, or that the final EIS should consider the level of operational activity to the theoretical maximum operational movements that a single runway could accommodate (for example, to 2050).</p>	<p>The assessment of potential environmental impacts in the EIS is based on a particular scale of infrastructure development and a corresponding level of aviation activity. The scale of development adopted for the EIS is the Stage 1 development as outlined in the revised draft Airport Plan. The Stage 1 development incorporates a single runway and support facilities to cater for an operational capacity of approximately 10 million annual passengers and approximately 63,000 air traffic movements per year. The EIS assumes the airport could be operating at this level approximately 5 years after operations commence which for assessment purposes has been assumed to be 2030.</p> <p>As detailed in Chapter 3 (Volume 1), major infrastructure developments beyond the scope of the Stage 1 development do not form part of the development outlined in the revised draft Airport Plan and would be subject to additional approvals in accordance with the Airports Act.</p> <p>The EIS recognises that approval of the Stage 1 development would directly facilitate growth of the proposed airport over time and this has the potential to increase the level of impacts associated with the airport, particularly the impact of aircraft noise exposure on surrounding communities. A strategic level assessment was undertaken of the impacts arising from the long term development (which could occur around 2063). The EIS acknowledges the uncertainty in predicting impacts that may occur nearly 50 years into the future and therefore notes the additional approval requirements for all future development.</p> <p>In addition, the EIS recognises that aircraft noise is one of the most sensitive issues associated with the development of the proposed airport and an increase in air traffic movements has the potential to increase the level of noise disturbance experienced by the surrounding community. Taking this into account, the EIS assesses aircraft noise impacts for a 2050 scenario where the single runway is operating at or near full capacity of around 37 million annual passengers or approximately 185,000 aircraft movements per year. This scenario allows an assessment of the extent of noise exposure and associated potential impacts from the maximum forecast capacity of the single runway.</p>

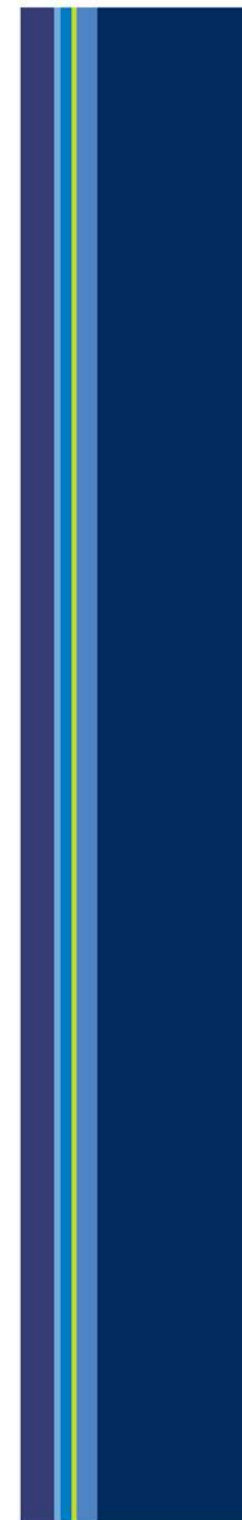
Theme	Stakeholders	Summary of issue	Response
Approvals framework	Local councils Residents	<p>The EPBC Act</p> <p>Submissions questioned the presentation of indicative flight paths in the draft EIS and whether this satisfied the requirements of the EPBC Act. Similarly, a number of submissions from individual community members suggested that the draft EIS had not been undertaken in compliance with the requirements of the relevant legislation, such as the EPBC Act and the Airports Act.</p> <p>Some councils and individual community members stated that the draft EIS did not meet the guidelines for the Content of a Draft Environmental Impact Statement, as issued by the Environment Minister.</p>	<p>The EIS was prepared in accordance with the requirements of the EPBC Act and the <i>Guidelines for the Content of a draft Environmental Impact Statement – Western Sydney Airport</i> (EIS Guidelines) that were issued by the Department of the Environment on 29 January 2015.</p> <p>The impact assessment methodology for each environmental, social and economic value was developed to meet the requirements of the EIS Guidelines and consider the intent and objectives of relevant New South Wales regulations and guidelines, where appropriate.</p> <p>Due to the complex nature of greenfield airport developments, it is recognised that there are limitations associated with addressing some potential environmental issues. For example, this assessment is based on the indicative airport site layout presented in the revised draft Airport Plan and this may be refined through the process of detailed design (see Chapter 3 (Volume 1)). Similarly, the assessment of impacts from aircraft overflight operations is based on proof-of-concept indicative air traffic management designs and flight paths which will be refined and finalised as part of a future comprehensive airspace and flight path planning and design process. A preferred airspace design concept developed through this process will be subject to a separate environmental assessment and approvals process (see Chapters 3 and 7 (Volume 1)).</p> <p>The draft EIS was provided to the Department of the Environment, now called the Department of the Environment and Energy (DoEE), for an adequacy review against the requirements of the EIS Guidelines prior to exhibition.</p>
Approvals framework	Residents	<p>Implications of amendments to the Airports Act</p> <p>Submissions requested more information in the final EIS on the changes to airport legislation and what this means for the assessment and engagement process for future developments at the airport, beyond Stage 1.</p>	<p>Chapter 3 (Volume 1) discusses the introduction of the <i>Airports Amendment Act 2015</i>. The amendment provides for the preparation of an Airport Plan to guide the development of the airport and a transparent mechanism to authorise the Stage 1 development of the airport. In addition, the amendment strengthens the Environment Minister's role under the Airports Act.</p> <p>Major infrastructure developments beyond the scope of the Stage 1 development do not form part of the development outlined in the revised draft Airport Plan and would be subject to additional approvals in accordance with the Airports Act.</p>

Theme	Stakeholders	Summary of issue	Response
Approvals framework	Residents	<p>Australian Government's role as proponent and determining authority</p> <p>Submissions raised concern that there could be a conflict of interest, given the Australian Government was the proponent for the project and draft EIS, and the determining authority.</p>	<p>The EIS was prepared in accordance with the requirements of the EPBC Act and the <i>Guidelines for the Content of a draft Environmental Impact Statement – Western Sydney Airport</i> (EIS Guidelines) that were issued by the Department of the Environment on 29 January 2015.</p> <p>Chapter 3 (Volume 1) discusses the role of the Environment Minister in considering the EIS. The Environment Minister can impose conditions on the proposed development to protect the environment, based on this EIS and these must be accepted by the Infrastructure Minister in determining the final Airport Plan.</p> <p>As the proponent for the proposed Western Sydney Airport, the Department of Infrastructure and Regional Development prepared the impact assessment methodology for each environmental, social and economic value. The assessment was developed to meet the requirements of the EIS Guidelines and consider the intent and objectives of relevant New South Wales regulations and guidelines, where appropriate. This process was similar to that undertaken by other developers for projects that fall under the EPBC Act.</p> <p>Further, although the Australian Government is named as the proponent for the referral of the proposed airport under the EPBC Act, the Australian Government will become a landlord and regulatory agency once the airport lease is granted.</p>
Approvals framework	Aviation industry	<p>Right of first refusal</p> <p>Submissions received expressed support for the proposed airport and also sought clarity on how value for money is considered in the right of first refusal process, that funding should be market tested and that any financial assistance to the airport operator should be funded directly from the Australian Government's consolidated revenue and not through additional taxes to passengers.</p>	<p>Commercial arrangements surrounding the development and operation of the proposed airport will be set out in contracts between the Australian Government, the ALC and other relevant parties.</p> <p>Charges for airport users are the responsibility of the ALC and are not considered in this environment impact assessment.</p>

Theme	Stakeholders	Summary of issue	Response
Broader planning framework	Local councils Residents	<p>Future development and approvals processes</p> <p>Submissions requested more information on future approval processes, specifically once an ALC is in place for the airport.</p> <p>Questions were raised on the future use of the EPBC Act and what obligations would be placed on the ALC for future community and stakeholder engagement.</p> <p>Other comments suggested the use of demand triggers in the airport master plan that place a regulator obligation on the ALC for the timing and phasing of future investment in capacity increases.</p>	<p>Chapter 3 (Volume 1) outlines the regulatory framework and key approval process going forward for a future ALC. Any significant expansion of the proposed airport is expected to require major development plans, which would include environmental assessment, a period of community consultation and a requirement for approval by the Infrastructure Minister.</p> <p>Chapter 28 (Volume 2b) outlines the legislative framework for the implementation of the mitigation measures and environmental management plans outlined in the EIS. A number of plans will be implemented to cover different aspects of the airport's construction and operation and will be developed either by the Department or the ALC, depending on the nature of the work. Part of the development of these plans will include a consultation process with appropriate stakeholders as detailed in this chapter. It is also noted that the information in Chapter 28 (Volume 2b) will dovetail with the additional requirements of the revised draft Airport Plan as well as any conditions of determination required by the Environment Minister.</p>

Theme	Stakeholders	Summary of issue	Response
Broader planning framework	Local councils Environmental groups Community groups Tourist organisations Business groups Residents	<p>Future environmental assessment for airspace management</p> <p>Submissions were received on the future environmental assessment and engagement process for confirming the flight paths. This was a significant issue raised in submissions by individual community members, with requests for more information and certainty on the next steps of the approval process, including finalising the EIS and flight paths.</p> <p>Note, more information on the indicative flight paths is described in Chapter 10 of this submissions report.</p>	<p>The assessment in the EIS is based on an indicative, proof-of-concept airspace design because the actual design is not known at this stage. For the purposes of an EIS, the use of indicative flight paths is a valid approach for identifying and assessing the nature and scale of impacts arising from operations of the proposed airport and is generally consistent with the environmental assessment approach for runway infrastructure developments at other airports. However, it has resulted in public uncertainty about the location of final flight paths and related impacts.</p> <p>A preliminary airspace management analysis prepared by Airservices Australia was conducted to establish whether safe and efficient operations could be introduced at the proposed Western Sydney Airport through the development of indicative air traffic management designs and flight paths. This analysis indicates that the proposed airport and Sydney (Kingsford Smith) Airport can safely operate independently as high capacity airports, within existing airspace arrangements in the Sydney basin. Flight paths for the proposed airport will be refined and finalised as part of a comprehensive airspace planning and design process and will be subject to a separate environmental assessment and approvals process. Chapter 7 (Volume 1) provides additional information about the future airspace planning and design process to be completed before the commencement of airport operations. The Department of Infrastructure and Regional Development will be responsible for delivering the flight path design for the proposed airport, working in close collaboration with Airservices Australia and the Civil Aviation Safety Authority (CASA). The airspace design process will be conducted in an open and transparent manner that provides ongoing opportunities for further comprehensive community and stakeholder consultation to provide a greater level of certainty.</p>
Broader planning framework	Residents	<p>NSW planning framework</p> <p>A small number of submissions stated dissatisfaction that NSW state environmental and planning legislation did not apply to the airport proposal.</p>	<p>Chapter 3 (Volume 1) discusses the application of NSW planning and environmental legislation. As the proposed airport is located on land owned by the Commonwealth, and is authorised under Section 96C (3) of the Airports Act, NSW planning laws do not apply. However, consideration has been given to relevant NSW legislation, including environmental planning instruments, policies and guidelines where considered appropriate.</p> <p>The Department will continue to consult with the NSW Government in relation to the development of the proposed airport.</p>

Theme	Stakeholders	Summary of issue	Response
Broader planning framework	Aviation industry	<p>A transitional or ongoing airport authority</p> <p>Some submissions that suggested that the Australian Government set up a provisional airport authority for the initial development of the airport and the subsequent transition to the ALC.</p>	<p>The views expressed have been noted. The establishment of a provisional airport authority, prior to the transition to the ALC is not relevant to the action being assessed by the EIS and has not been considered by the EIS.</p>
Commercial framework	Aviation industry	<p>Commercial framework and economic planning</p> <p>Submissions discussed how careful consideration of funding will be critical to growth. The commercial framework needs to consider factors such as:</p> <ul style="list-style-type: none"> the return on investment across both the aeronautical and non-aeronautical aspects of the investment; the long term nature of the investment and expected profile of returns over the longer term; and the need for, and consumer benefits associated with, strong price competition between different airport facilities. 	<p>Commercial arrangements surrounding the development and operation of the proposed airport will be set out in contracts between the Australian Government, the ALC and other relevant parties.</p> <p>The proposed airport will be required to provide audited accounts to the ACCC under the Airports Act and will be subject to quality of service monitoring.</p>
Commercial framework	Tourism industry stakeholders	<p>Costs to passengers</p> <p>It was noted in submissions received from tourism industry stakeholders that the Australian Government has previously considered imposing a travel surcharge to assist in funding the proposed airport and associated infrastructure.</p> <p>These submissions state that any additional taxes or charges on domestic or international travel would diminish the competitiveness of Australia's visitor economy. Prefunding the asset in this way unfairly defrays the cost over many years and across a cohort of users and operators who may never derive benefit from the airport.</p>	<p>Commercial arrangements surrounding the development and operation of the proposed airport will be set out in contracts between the Australian Government, the ALC and other relevant parties.</p> <p>Charges for airport users are the responsibility of the ALC and are not considered in this environment impact assessment. The proposed airport will be required to provide audited accounts to the ACCC under the Airports Act and will be subject to quality of service monitoring.</p>



7 Land Use Plan

Volume 1 (Project Background), Chapter 4 (Land Use plan) of the draft EIS provided an outline of proposed land use zones on the airport site. It described the land use zones and permissible uses as described in the draft Airport Plan.

7.1 About the submissions on this chapter



Table 7-1 Submissions related to the Land Use Plan

Issue	Number of times the issue was raised	Percentage of total submissions
Land Use Plan	67	1.3%

7.1.1 Origin of submissions

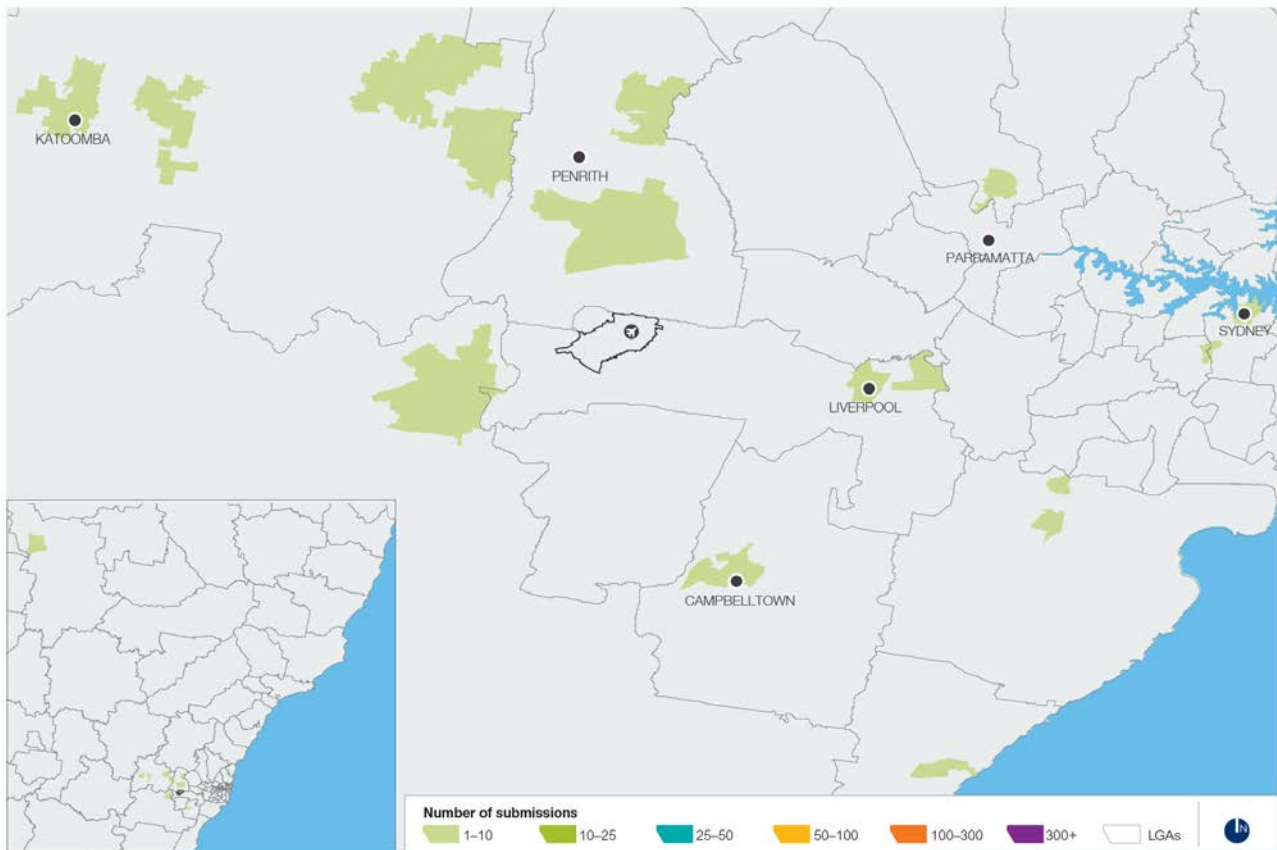


Figure 7–1 Map depicting origin of submissions in relation to Chapter 4 of the draft EIS

7.2 Summary and response

7.2.1 Overarching summary of submissions

Submissions received on this chapter requested more information on how the land uses within the proposed airport perimeter related to, and influenced land use outside the perimeter. Some of the key themes identified and addressed in this section of the submissions report will also be addressed in Chapter 24 (Planning and land use), which looks at relevant land use issues outside the airport perimeter.

The key themes from the submissions are summarised under the following themes:

- land use zones;
- linkages between airport land use zones and regional planning; and
- the need for coordinated regional planning.

These submission comments are summarised and addressed in Section 7.2.3.

7.2.2 Overarching response to issues raised

Following publication, Chapter 4 of the draft EIS was updated to reflect minor changes to the Land Use Plan at the airport site. Changes to the Land Use Plan included:

- reduction of Environmental Conservation Zone to account for The Northern Road;
- correction of business development areas at south-west and north-east of airport site; and
- removal of proposed acquisition of parts of Lot 101 on Deposited Plan 848215.

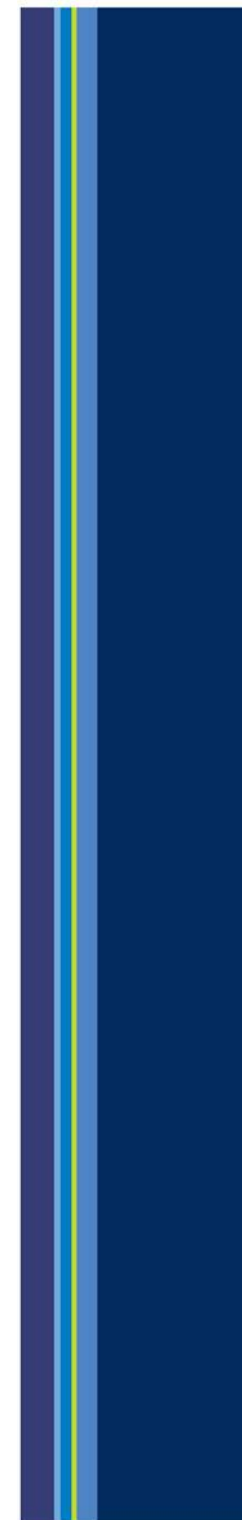
These changes are presented in Chapter 4 (Volume 1).

7.2.3 Issues and responses

Theme	Stakeholders	Summary of issue	Response
Land use zones	Major adjacent landowners	<p>Non-aviation uses on the airport site</p> <p>Submissions requested more information on the non-aviation land uses within the airport site as well as more certainty and clarity on any additional land requirements for the proposed airport.</p> <p>Submissions suggested that land use controls should be used to limit incompatible land uses adjacent to the proposed airport. Some suggested that land uses such as child care centres, medical centres, offices, recreation facility (indoor), public administration building and service stations should be restricted within the airport site and located in adjoining areas.</p>	<p>Stage 1 is concerned with the building of a single runway airport and only aviation related developments described in Part 3 of the revised draft Airport Plan will be authorised. Any future non-aviation developments will need to be approved through the applicable planning processes. As set out in Section 4.1 (Volume 1) and Section 2.4 of the revised draft Airport Plan, all developments (including for non-aviation land uses) are only permissible where they meet the planning objectives and permissible uses outlined for each zone.</p>
Land use zones	Residents	<p>AD3 Aviation logistics and support</p> <p>Submissions questioned the exclusion of quarantine and customs facilities in this zone, which would be required for perishable freight.</p>	<p>Quarantine and customs facilities are not excluded in this zone and will be incorporated into freight and terminal buildings as appropriate as part of the future detailed building design process.</p>
Land use zones	Residents	<p>Acquisition of land outside the airport site</p> <p>Submissions questioned the need to acquire additional properties for operational and land use reasons and suggested that the final EIS should provide justification for this.</p>	<p>Chapter 1 (Volume 1) notes that the following areas are expected to be acquired to support the development and operation of the proposed airport, and incorporated into the airport site:</p> <ul style="list-style-type: none"> • Lot 102 on Deposited Plan 812563 in the south of the airport site; and • the portion of The Northern Road that currently transects the airport site. <p>A review of the Glide Path Critical Area by Airservices Australia has identified that it can be fully contained within the airport site. Accordingly, there is no requirement to acquire additional land to the north of the airport site as previously foreshadowed. The indicative layouts and Land Use Plans for the proposed airport have been amended accordingly in the revised draft Airport Plan.</p> <p>Note, however, it is anticipated that parts of the airport site and some surrounding properties will be acquired for The Northern Road realignment which is being managed by NSW Roads and Maritime Services.</p>

Theme	Stakeholders	Summary of issue	Response
Linkages between airport land use zones and regional planning	Local councils Major adjacent landowners NSW Government	<p>Relationship between land uses on the airport site and surrounding areas</p> <p>Submissions addressed land use planning within and outside the perimeter of the airport site. The submissions outlined the need for more detail on how the land uses within the airport site would integrate with surrounding land uses.</p> <p>Submissions stated that the draft Airport Plan and draft EIS should provide more detail on how the proposed airport would integrate with the surrounding area and its current and future land uses.</p> <p>Submissions suggested that commercial development along infrastructure corridors should be considered and protected.</p>	<p>The Australian Government will work with the State and local governments along with the ALC, once appointed, to integrate the proposed airport and any future non-aviation operations. The EIS is focused on assessing the Stage 1 development.</p>

Theme	Stakeholders	Summary of issue	Response
Coordinated regional planning	Major adjacent landowners Local councils Peak business groups	<p>Land use planning</p> <p>Submissions raised the need for coordinated planning between Federal, State and Local Governments to prevent inappropriate or incompatible developments from taking place around the Western Sydney Airport site.</p> <p>A number of submissions also stated that:</p> <ul style="list-style-type: none"> a governing body comprising all levels of government should be established to oversee implementation of the airport master plan. This should be included in the final EIS to provide further clarity on the proposed use of the National Airports Safeguarding Framework (NASF) and the implications of the Western Sydney Airport on planning controls at various stages of development of the airport; future land use development around the proposed airport needs to be controlled including the applicability of the Australian Noise Exposure Concept (ANEC), Australian Noise Exposure Forecast (ANEF), Procedures for Air Navigation Services – Aircraft Operations (PANS-OPS), and Precision Approach Path Indicator (PAPI); and the OLS framework that currently applies in the Sydney basin should be extended to include the operations of the proposed airport to provide strategic guidance to councils in considering proposals for rezoning and development in relation to building heights. Submitters commented that particular focus should be applied to future development in the Penrith city centre, St Marys town centre and the Western Sydney Priority Growth Area. 	<p>The Australian Government will work with the State and local governments along with the ALC, once appointed, to integrate the proposed airport and any future non-aviation operations.</p> <p>Chapter 21 (Volume 2) considers the planning of the proposed airport in the context of the broader Western Sydney region.</p> <p>The revised draft Airport Plan identifies an airspace protection framework for the proposed Western Sydney Airport. The OLS has been identified and consultation has been undertaken with Councils and NSW Government. The Commonwealth intends to declare protected airspace associated with the OLS towards the end of 2016. Ongoing consultation with Councils and NSW Government regarding airspace protection and OLS implementation will continue, including the preparation of guidance materials.</p>



8 Stage 1 development

Volume 1 (Project Background), Chapter 5 (Stage 1 development) of the draft EIS provided an overview of the major functional elements of the Stage 1 development as described in the draft Airport Plan.

8.1 About submissions on this chapter



Table 8–1 Submissions related to the Stage 1 development

Issue	Number of times the issue was raised	Percentage of total submissions
Stage 1 development	75	1.5%

8.1.1 Origin of submissions

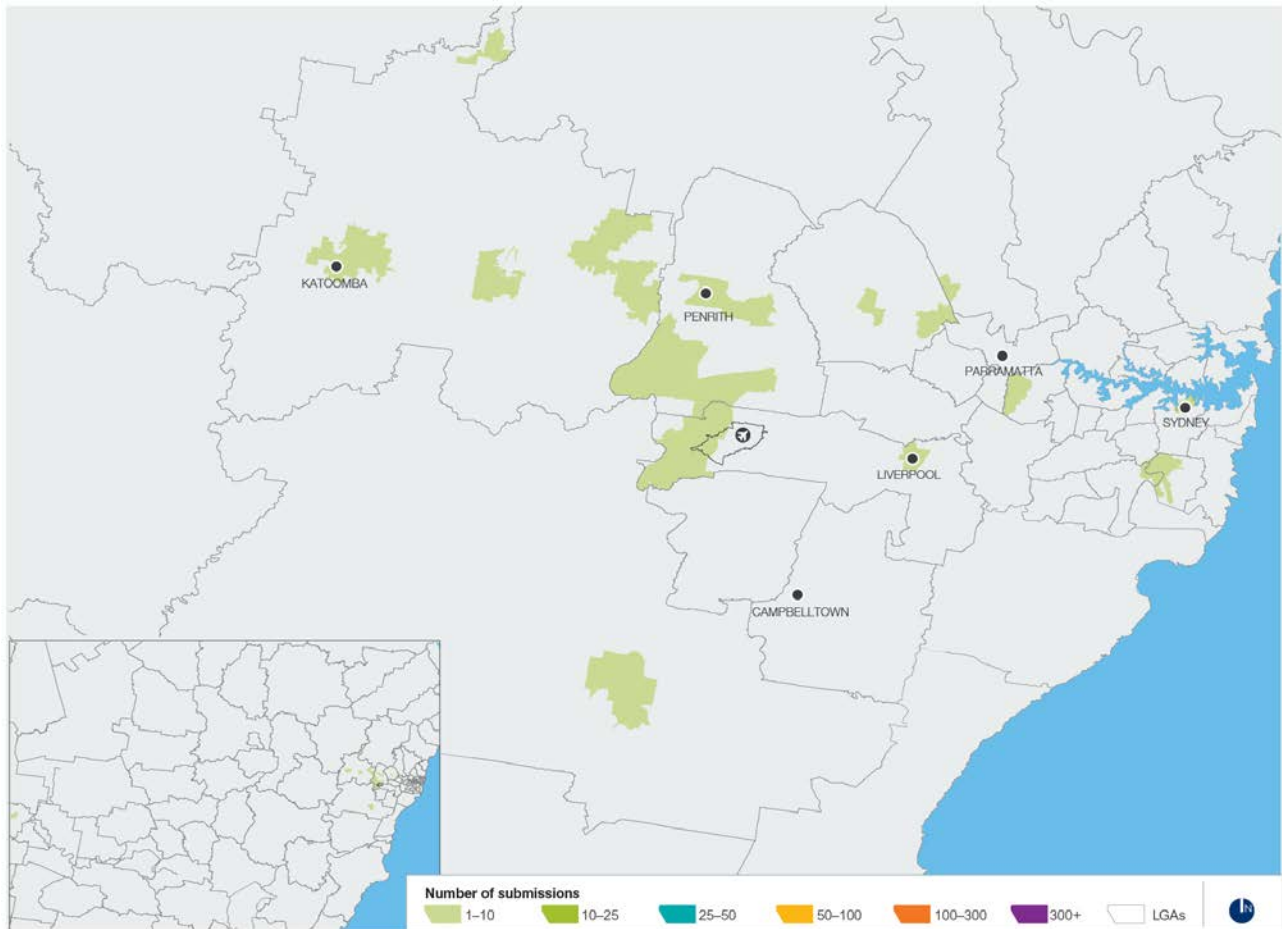



Figure 8–1 Map depicting origin of submissions in relation to Chapter 5 of the draft EIS

8.2 Summary and response

8.2.1 Overarching summary of submissions

Submissions on this chapter questioned why the detailed impact assessment covered Stage 1 and not the long term development. Submissions also commented that the indicative nature of the airport site layout presented in the draft Airport Plan and draft EIS leaves the community with uncertainty about potential impacts.

Submissions received from aviation industry stakeholders stated that the proposed airport needs to be fit for purpose and expressed support for the staged development to ensure that future expansion can be implemented in a way that does not interrupt operations during construction. Other submissions included comments on the projected passenger and flight numbers.



The key themes from the submissions are summarised under the following headings:

- commercial and funding;
- commercial framework;
- design development and scale;
- airfield capacity and activity forecasts;
- runways and runway orientation;
- airside precinct facilities;
- landside precinct facilities; and
- aviation fuel supply.

The submission comments are summarised and addressed in Section 8.2.3.

8.2.2 Overarching response to issues raised

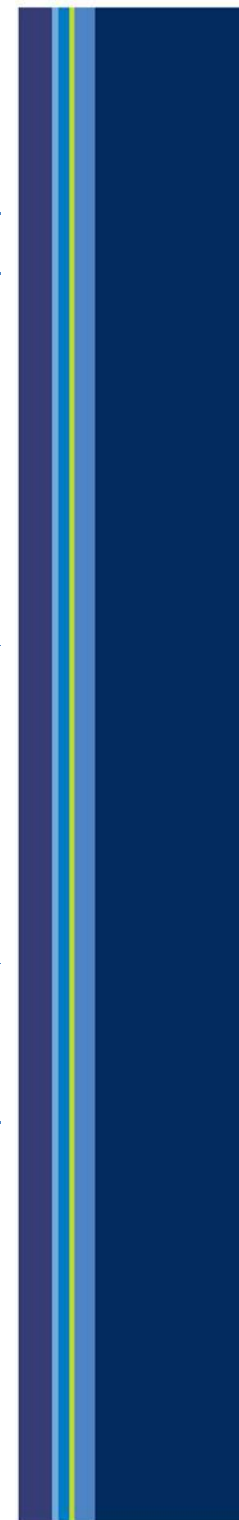
Following publication of the draft EIS, Chapter 5 was updated to align with ongoing development and refinement of the revised draft Airport Plan and the indicative airport site layout. Changes to the plan and layout include:

- adjustment of the indicative Stage 1 construction impact zone to better reflect construction activities;
- improved representation of realignment of The Northern Road through the airport site;
- reconfiguration of the water management system including bio-retention ponds, detention ponds and channels; and
- removal of proposed acquisition of parts of Lot 101 on Deposited Plan 848215.

These changes are presented in Chapter 5 of the finalised EIS.

8.2.3 Issues and responses

Theme	Stakeholders	Summary of issue	Response
Commercial and funding	Aviation industry	<p>Right of first refusal process</p> <p>Submissions questioned the process for demonstrating value for money and competition in the development of the airport, given the right of first refusal arrangements with the owners of Sydney Airport.</p> <p>Submissions expressed support for the proposed airport and also sought clarity on how value for money is considered in the right of first refusal process.</p> <p>Submissions also argued that any Australian Government funding should be provided from its consolidated revenue rather than additional taxes to passengers.</p>	<p>Commercial arrangements surrounding the development and operation of the proposed airport will be set out in contracts between the Australian Government, the ALC and other relevant parties.</p> <p>Charges for airport users are the responsibility of the ALC and are not considered in this environmental impact assessment.</p>
Commercial and funding	Aviation industry	<p>Financial assistance and funding</p> <p>Submissions suggested that any financial assistance to the ALC should be funded directly from the Australian Government's consolidated revenue and opportunities for low cost of funding, in line with the broader public benefits associated with the proposed airport. Additionally, these submissions did not support use of an additional tax on existing passengers, or other pre-funding arrangement, to provide financial assistance to the Western Sydney Airport, given existing taxes on international aviation.</p>	<p>The views expressed have been noted. However, as funding sources are not relevant to the action being assessed by the EIS, they have not been considered further in this submissions report.</p> <p>Charges for airport users are the responsibility of the ALC and are not considered in this environmental impact assessment.</p>
Commercial framework	Aviation industry	<p>Costs to airline operators</p> <p>A number of submissions were received from airline operators focussing on the need to consider minimising likely costs to airline operators.</p>	<p>Charges for airport users are the responsibility of the ALC and are not considered in this environmental impact assessment.</p>



Theme	Stakeholders	Summary of issue	Response
Commercial framework	Aviation industry	<p>Jet fuel supply</p> <p>Submissions discussed the need to establish a competitive and reliable supply of jet fuel as it is critical to maintaining and growing commercially viable airline markets. It was contended that a lack of competitive supply will increase airline operating costs and reduce supply reliability, ultimately constraining the potential level of aviation activity at the proposed airport.</p>	<p>Fuel delivery for the Stage 1 development is expected to be undertaken by fuel tanker.</p> <p>A fuel supply pipeline is expected to be established in response to increasing demand beyond Stage 1 and will be a commercial decision between the ALC and the fuel industry.</p> <p>The NSW Government has commenced initial investigations to identify a potential fuel pipeline corridor, with a view to reserving the required land. Given that the reservation of a corridor and subsequent construction is outside the airport site, construction would be subject to a separate assessment and approval process under NSW legislation. This also includes obtaining permits providing the right to operate the pipeline.</p>
Design development and scale	Local councils	<p>Supporting infrastructure needs to be provided for the development</p> <p>Submissions requested that special arrangements or mechanisms be established, involving Federal, State and local governments to develop and deliver a funded program of infrastructure for the proposed Western Sydney Airport, including the upgrades in the Western Sydney Infrastructure Plan.</p>	<p>The Western Sydney Infrastructure Plan is a joint plan of the Australian and NSW governments, investing \$3.6 billion over 10 years in major road infrastructure in Western Sydney.</p> <p>The Australian and NSW governments will maintain an ongoing dialogue on potential infrastructure developments for Western Sydney, particularly as they relate to the proposed Western Sydney Airport.</p>
Design development and scale	Aviation industry	<p>Support for staging</p> <p>Submissions stated that the scale of the proposed airport needs to be fit for purpose and expressed support for the staged development to ensure that any expansion can be implemented in a way that does not interrupt operations during construction.</p>	<p>Section 2.1.2 of the revised draft Airport Plan identifies that the development of the proposed airport is to be informed by practices in use at high-capacity airports and staged in response to demand. This includes planning for services and amenities that are easily expandable over time and providing scalable capacity for aircraft, passengers, cargo and vehicle movements.</p>

Theme	Stakeholders	Summary of issue	Response
Design development and scale	Local councils	<p>Business park in Stage 1</p> <p>Submissions recommended that the Stage 1 development should include the business park that is identified as a non-aviation development in the Airport Plan.</p>	<p>The EIS assesses the proposed Stage 1 development of Western Sydney Airport. The development of a business park does not fall within the authorisation in Section 3.4.6 of the revised draft Airport Plan and will require a separate approval.</p> <p>As detailed in Chapter 3 (Volume 1), Part 5 of the Airports Act requires an ALC to prepare an airport master plan to provide the strategic direction for the airport site for a period of 20 years. For the Western Sydney Airport, the ALC will be required to submit a full master plan within five years of an airport lease being granted, or in such a longer period as approved by the Infrastructure Minister. Part 2 of the Airport Plan will provide the planning framework for the proposed airport until the first master plan is in place.</p> <p>The ALC will also be required to prepare major development plans (MDPs) for future major airport developments that are not covered by the Airport Plan, which may include a business park. Consultation with State and local government authorities is required during preparation of a draft MDP. The draft MDP must also be publicly exhibited to allow comment prior to finalisation and approval by the Infrastructure Minister.</p>
Design development and scale	Aviation industry	<p>Freight operations</p> <p>Submissions noted that the draft Airport Plan excludes the potential for freight and general aviation operation and stated this should be included in order to achieve the greatest economic benefit in conjunction with domestic and international passenger travel.</p>	<p>The revised draft Airport Plan notes that the inclusion of facilities for general aviation will depend on demand.</p> <p>The revised draft Airport Plan supports and provides information on the development of a secure freight precinct in Section 3.4.2 (Volume 1).</p>
Design development and scale	Aviation industry	<p>Ongoing engagement with the aviation industry</p> <p>Submissions sought greater involvement of airlines in the ongoing refinement of the proposed airport and the airspace it will operate within.</p>	<p>The EIS provides for ongoing engagement with the aviation industry in Chapter 28 (Volume 2b) through the development of a Community and Stakeholder Engagement Plan.</p> <p>Further, there will be ongoing engagement with the aviation industry as flight paths are refined and finalised as part of a comprehensive airspace planning and flight path design process which will be subject to a separate environmental assessment and approvals process (see Chapters 3 and 7 (Volume 1)).</p>

Theme	Stakeholders	Summary of issue	Response
Airfield capacity and activity forecasts	Aviation industry Local councils Residents	<p>Passenger forecasts</p> <p>Submissions discussed the annual passenger forecast at the proposed airport and requested more information on the traffic forecast inputs and assumptions. Specific comments included:</p> <ul style="list-style-type: none"> the projected 82 million passengers in 2063 differed from references to 54 million passengers in the <i>Joint Study on Aviation Capacity in the Sydney Region</i>; the passenger forecasts are too low and present a conservative assessment of impacts; the throughput of passengers for the number of stands proposed seems high; and passenger forecasts are projected to be 78% in 2030, which is different from the 53% referenced in Chapter 15 (Traffic, Transport and Access). 	<p>It is noted that the issues raised in submissions fundamentally reflect that the development of an airport is a major, complex and long term infrastructure project. In particular, many of the variables used in the draft EIS are based on assumptions about future aircraft types, technology use and air traffic demand forecasts. While these assumptions are based on accurate sources available to the EIS project team and best-practice methodology, the realisation of these assumptions depends on global events and trends, business decisions of airlines and other industry participants, decisions by international organisations such as the International Civil Aviation Organization (ICAO), and other factors which are outside the control of any airport developer or operator.</p> <p>Since the completion of the Joint Study in 2012, the EIS utilised updated aircraft traffic modelling which recognises the growth in the aviation industry since that period of time. This accounts for the differences in capacity projections between the two documents.</p> <p>The estimated throughput of passengers at airport stands forms part of the revised draft Airport Plan and more detailed analysis of throughput will occur in the detailed design process.</p>
Runways and runway orientation	Aviation industry	<p>Runway alignment and implications for Sydney (Kingsford Smith) Airport</p> <p>Submissions suggested that a north/south orientation would be preferred to the proposed runway orientation, to account for predominant weather conditions and align with operations at Sydney Airport. Assurance is also sought that runway orientation will minimise noise impacts, while not impeding operations at Sydney Airport or other airports in the Sydney region.</p>	<p>As noted in Chapter 2 (Volume 1), one of the key factors that makes Badgerys Creek the preferred site for a greenfield airport is that the airport site and its surrounding area have been protected from urban and noise-sensitive development. This protection has been based on the runway alignment shown for the Stage 1 development. Minimising aircraft noise impacts on surrounding communities was a primary determinant in 1985 when selecting the runway alignment and site boundary – the 05/23 alignment was assessed as having a lesser noise impact than a north-south alignment. The 1999 Environmental Impact Statement: Second Sydney Airport Proposal drew the same conclusion. Planning controls have been implemented by local councils on this basis through local environmental plans and have largely ensured that noise-sensitive and residential developments have not occurred in the vicinity of the airport site.</p>

Theme	Stakeholders	Summary of issue	Response
Runways and runway orientation	Local councils	<p>Alternative runway layouts</p> <p>Submissions expressed concern that there is no consideration in the draft EIS of alternative runway layouts.</p>	<p>As noted in Chapter 2 (Volume 1), one of the key factors that makes Badgerys Creek the preferred site for a greenfield airport is that the site and its surrounding area has been protected from urban and noise-sensitive development. This protection has been based on the runway alignment shown for the Stage 1 development.</p> <p>As described in Chapter 5 (Volume 1), the current site layout provides for a runway of 3,700 metres which would serve all domestic and international aircraft in the anticipated fleet mix at maximum take-off weight. This maximises the ability of the proposed airport to cater for the design critical Code F aircraft.</p>
Runways and runway orientation	Aviation industry	<p>Implications of meteorological conditions</p> <p>Submissions noted that meteorological factors (such as crosswinds, tailwinds and temperature factors) need to be further considered in the design, including runway orientation.</p>	<p>The Western Sydney Airport Usability Report prepared by the Bureau of Meteorology (Appendix D, Volume 4) provides detailed information about the incidence of crosswinds and headwinds at the Badgerys Creek airport site based on wind speed and direction data recorded over the last 18 years. This analysis shows that the proposed runway orientation would enable aircraft operations for approximately 99.5 per cent of the time based solely on a prevailing crosswind of less than 20 knots. It also found that headwinds in excess of 25 knots are not expected to occur on average more than 0.4 days per month for any month of the year. The occurrence of crosswinds and headwinds of sufficient strength to affect aircraft operations at the proposed airport site is considerably below that experienced at Sydney (Kingsford Smith) Airport.</p> <p>The establishment of an automatic weather station on the site, as noted in Section 3.2.7 of the revised draft Airport Plan will improve understanding and management of meteorological factors.</p>
Runways and runway orientation	Residents	<p>Alternative staging</p> <p>Submissions suggested that the southern runway should be built first to minimise impacts on residents, businesses and groups in Luddenham.</p>	<p>The Stage 1 development layout consists of a single runway in the northern portion of the site, close to the boundary, referred to as the 'northern runway'. The northern runway was selected as the first for construction due to: the reduced earthworks requirements; fewer constraints on how and when a future rail line impacts on the airport site; impacts on airport site biodiversity values would be avoided until required for future development; and, it providing the shortest distance to connect utility trunk lines around the proposed airport.</p>

Theme	Stakeholders	Summary of issue	Response
Airside precinct facilities	Aviation industry	<p>Freight stands</p> <p>Submissions noted that the draft EIS and draft Airport Plan presented only four freight stands and this should be explored further in consultation with the aviation industry stakeholders. The location of freight stands also needs further consideration to ensure they are close enough to the terminal to maximise underbelly freight opportunities.</p>	<p>The Stage 1 development described in the revised draft Airport Plan will be capable of meeting the operational service performance standards of a busy international and domestic airport. This includes the option of initially locating freight facilities adjacent to the terminal in Stage 1, as provided for in Section 3.4.2 of the revised draft Airport Plan. This assessment is based on the indicative airport site layout presented in the revised draft Airport Plan and it may be refined through the process of detailed design.</p>
Airside precinct facilities	Aviation industry	<p>Location of airside emergency facilities</p> <p>Submissions suggested that more consideration was required of the locations of the Aircraft Rescue and Fire Fighting Services (ARFFS) and Emergency Plan. Future design of buildings near runways will also need to consider turbulence.</p>	<p>As detailed in Chapter 5 (Volume 1) and Section 3.2.5 of the revised draft Airport Plan, the Stage 1 development will locate the ARFFS station on the outboard side of the northern runway to optimise response time to each end of the runway.</p> <p>The detailed design process will consider the turbulence impacts of buildings constructed adjacent to the runway.</p>
Landside precinct facilities	Aviation industry	<p>Design of landside facilities</p> <p>Submissions suggested that the design and connectivity of airport amenities and buildings needs to be equivalent to or better than Sydney Airport in order to attract premium carriers to relocate from Sydney Airport. The future design also needs to carefully consider convenient and efficient connectivity for passengers between flights and ground transport, baggage transfers and other terminal facilities.</p> <p>More detail was requested on the terminal layout selection process and justification for the design presented in the draft EIS and draft Airport Plan. More information was also requested with regard to ground transport and operations.</p>	<p>The Stage 1 development described in the revised draft Airport Plan will be capable of meeting the operational and passenger service performance standards of a busy international and domestic airport. This assessment is based on the indicative airport site layout presented in the revised draft Airport Plan and it may be refined through the process of detailed design.</p>

Theme	Stakeholders	Summary of issue	Response
Aviation fuel supply	Aviation industry	<p>Provision of a fuel pipeline</p> <p>Submissions recommended the provision of a fuel supply pipeline from the commencement of operations. Suggestions were made for a fuel supply pipeline from Kurnell to Clyde terminal, then through Plumpton to Badgerys Creek.</p> <p>Submissions also suggested that fuel could be supplied via a pipeline from RAAF Base Richmond. The route of any pipeline would have an impact on the Hawkesbury Local Government Area and community should be consulted during options assessment.</p>	<p>Fuel delivery for the Stage 1 development is expected to be undertaken by fuel tankers.</p> <p>A fuel supply pipeline is expected to be established in response to increasing demand beyond Stage 1 and will be a commercial decision between the ALC and the fuel industry. The NSW Government has commenced initial investigations to identify a potential fuel pipeline corridor, with a view to reserving the required land.</p> <p>Given that the reservation of a corridor and subsequent construction is outside the airport site, the construction of a fuel pipelines will be subject to a separate assessment and approval process under NSW legislation. This also includes obtaining permits providing the right to operate the pipeline.</p>
Aviation fuel supply	Aviation industry	<p>Jet fuel supply</p> <p>Submissions discussed the need to establish a competitive and reliable supply of jet fuel as it is critical to maintaining and growing commercially viable airline markets. It was contended that a lack of competitive supply will increase airline operating costs and reduce supply reliability, ultimately constraining the potential level of aviation activity at the proposed airport.</p>	<p>Fuel delivery for the Stage 1 development is expected to be undertaken by fuel tanker.</p> <p>A fuel supply pipeline is likely to be established in response to increasing demand beyond Stage 1 and will be a commercial decision between the ALC and the fuel industry. The NSW Government has commenced initial investigations to identify a potential fuel pipeline corridor, with a view to reserving the required land.</p> <p>Given that the reservation of a corridor and subsequent construction is outside the airport site, the construction of a fuel pipelines will be subject to a separate assessment and approval process under NSW legislation. This also includes obtaining permits providing the right to operate the pipeline.</p>

9 Construction

Volume 1 (Project Background), Chapter 6 (Construction) of the draft EIS provided an overview of the construction framework for the proposed airport. The framework includes an indicative construction schedule, methods and activities that may be adopted for construction of the Stage 1 development.

9.1 About the submissions on this chapter



Table 9–1 Submissions related to construction

Issue	Number of times the issue was raised	Percentage of total submissions
Construction	39	0.8%

9.1.1 Origin of submissions

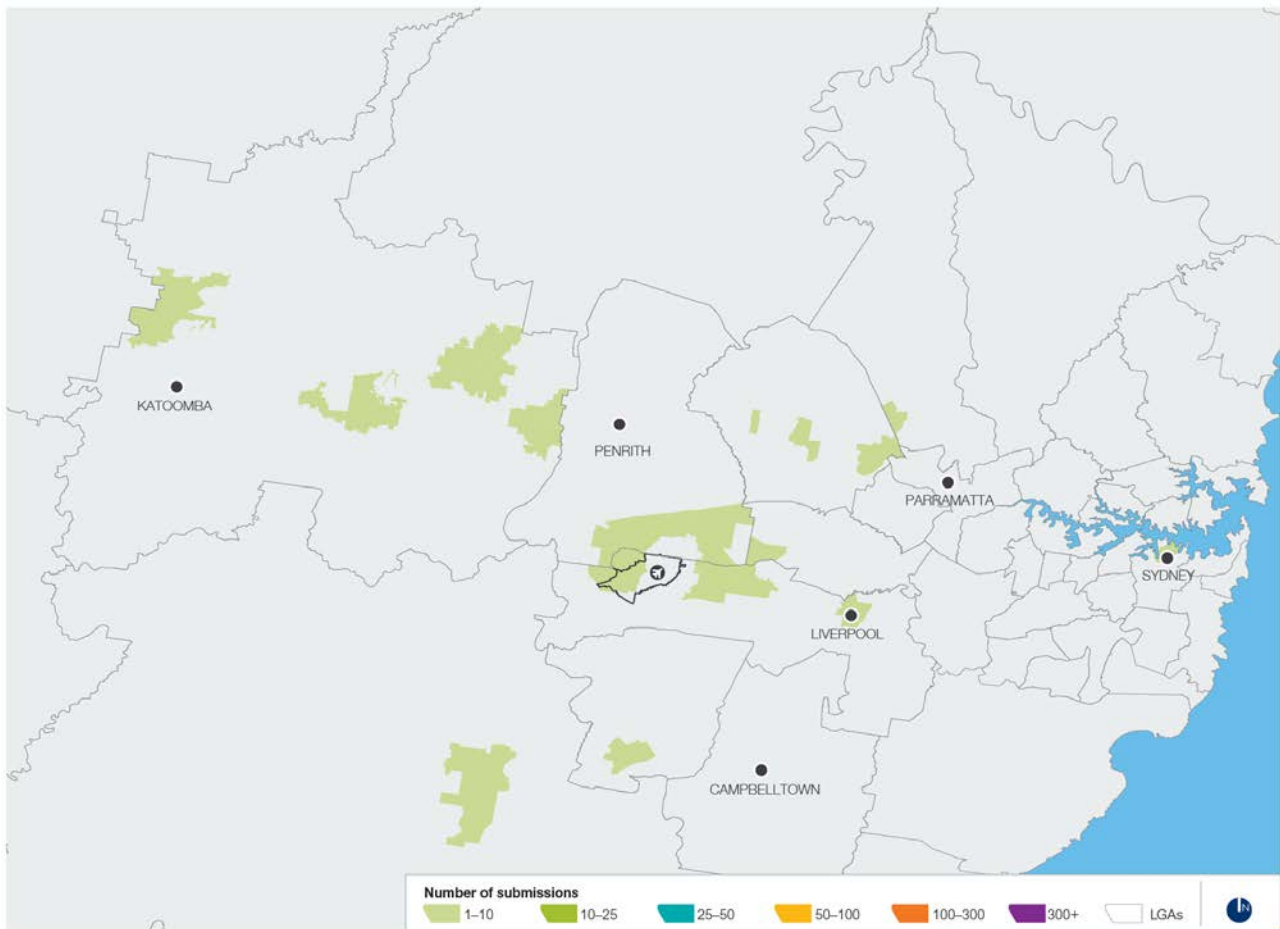


Figure 9–1 Map depicting origin of submissions in relation to Chapter 6 of the draft EIS

9.2 Summary and response

9.2.1 Overarching summary of submissions

Submissions related to the construction of the Western Sydney Airport were limited. Some concerns were raised in relation to additional traffic and heavy vehicles impacting the local road network, along with dust generation during the construction period. Some submissions asked questions about job opportunities during construction and when construction would be likely to start.

The key themes from the submissions are summarised under the following headings:

- settlement; and
- roads.

The submission comments are summarised and addressed in Section 9.2.3.



9.2.2 Overarching response to issues raised

Following publication, Chapter 6 of the draft EIS was updated to align ongoing development and refinement of the revised draft Airport Plan and indicative airport site layout. The updates included adjustment of the Stage 1 construction impact zone and the estimated volume of earthworks. The construction schedule was also updated from a calendar year model to a sequential year model.

The changes are presented in Chapter 6 of the finalised EIS.

9.2.3 Issues and responses

Theme	Stakeholders	Summary of issue	Response
Settlement	Aviation industry	<p>Settlement</p> <p>Submissions addressed the potential for settlement of airport infrastructure as a major issue to be factored into construction planning.</p> <p>Submissions identified that settlement of runways and airport infrastructure has proven to be a major issue at some airports around the world and it is critical that settlement is factored into the construction schedule for the proposed airport.</p>	<p>Preliminary geotechnical investigations were undertaken for the purposes of informing the draft Airport Plan and the draft EIS and included consideration of soft soils and settlement. Further detailed geotechnical investigations would also be undertaken as the detailed design develops and will include detailed investigations to determine the likely presence of soft soils to ensure that the detailed design addresses the potential for settlement in critical earthworks and aviation infrastructure areas.</p> <p>If required, settlement management measures such as pre-loading will be included in the construction scheduling and planning.</p>



Theme	Stakeholders	Summary of issue	Response
Roads	NSW Government	<p>Construction access roads</p> <p>The NSW Government Submission suggested that consideration should be given to airport construction access being via The Northern Road and/or Bringelly Road as these roads are being upgraded to four lane divided carriageways (by late 2019). It was suggested that these roads will be a safer and more efficient option for construction traffic.</p> <p>The NSW Government submissions stated that if construction access via Elizabeth Drive were to continue to be recommended then a comprehensive independent road safety audit by a qualified auditor should be undertaken. It was suggested that the audit should identify any necessary remedial measures with associated costs apportioned to the airport project, and that at a minimum this would include a comprehensive pre-condition survey and a need to maintain the asset to equivalent quality post construction.</p>	<p>The potential construction access routes to and from the airport site identified in the EIS, including the use of The Northern Road and Bringelly Road have been assessed to determine potential efficiency and safety impacts. As discussed in Chapter 6 (Volume 1) and Chapter 15 (Volume 2a), the use of these roads is not expected to significantly impact the surrounding transport system, with the exception of oversize vehicle movements. These oversize movements would be managed in consultation with Roads and Maritime Services and the NSW Police as required.</p> <p>As outlined in Chapter 28 (Volume 2b), a Traffic and Access CEMP will be developed prior to commencement of Main Construction Works and will collate measures to mitigate and manage potential traffic impacts generated by the use of the road network for construction access.</p> <p>The CEMP will provide the overall plan and staging for managing traffic through and around each work site and would be prepared in accordance with the Roads and Maritime's <i>Road Design Guide</i>, the Roads and Maritime Services <i>Traffic Control at Work Sites</i> manual and AS 1742.3 <i>Manual of Uniform Traffic Control Devices – Traffic control for works on roads</i>, and any other relevant standard, guide or manual. The CEMP will be developed in consultation with relevant stakeholders including Transport for NSW, Road and Maritime Services and affected local councils. This process will ensure that construction traffic is managed in the most efficient way and minimises safety risks and disruption to other road users.</p> <p>In addition, a community awareness programme will be implemented prior to commencement of Main Construction Works and will continue throughout the entire construction period to make road users (including local residents) aware of construction traffic and safety issues and to assist in managing those issues effectively.</p>

10 Airspace architecture and operation

Volume 1 (Project Background), Chapter 7 (Airspace architecture and operation) of the draft EIS describes existing constraints that may affect the operation of the proposed airport including existing airspace use, meteorological conditions and regulatory controls. It also presents indicative flight paths (airspace architecture) that would be developed further prior to the commencement of operations at the proposed airport, potential operational modes and proposed hours of operation.

10.1 About the submissions on this chapter



Table 10–1 Submissions related to the airspace architecture and operation

Issue	Number of times the issue was raised	Percentage of total submissions
Indicative flight paths	3,301	66.4%
Use of point merge	602	12.1%
Proposed operating modes	245	4.9%
Operational parameter – altitude	593	11.9%
Operational parameter – emergency fuel jettison	2,666	53.6%
Operational parameter – hours of operation	1,700	34.2%
Meteorological impacts	145	2.9%

10.1.1 Origin of submissions

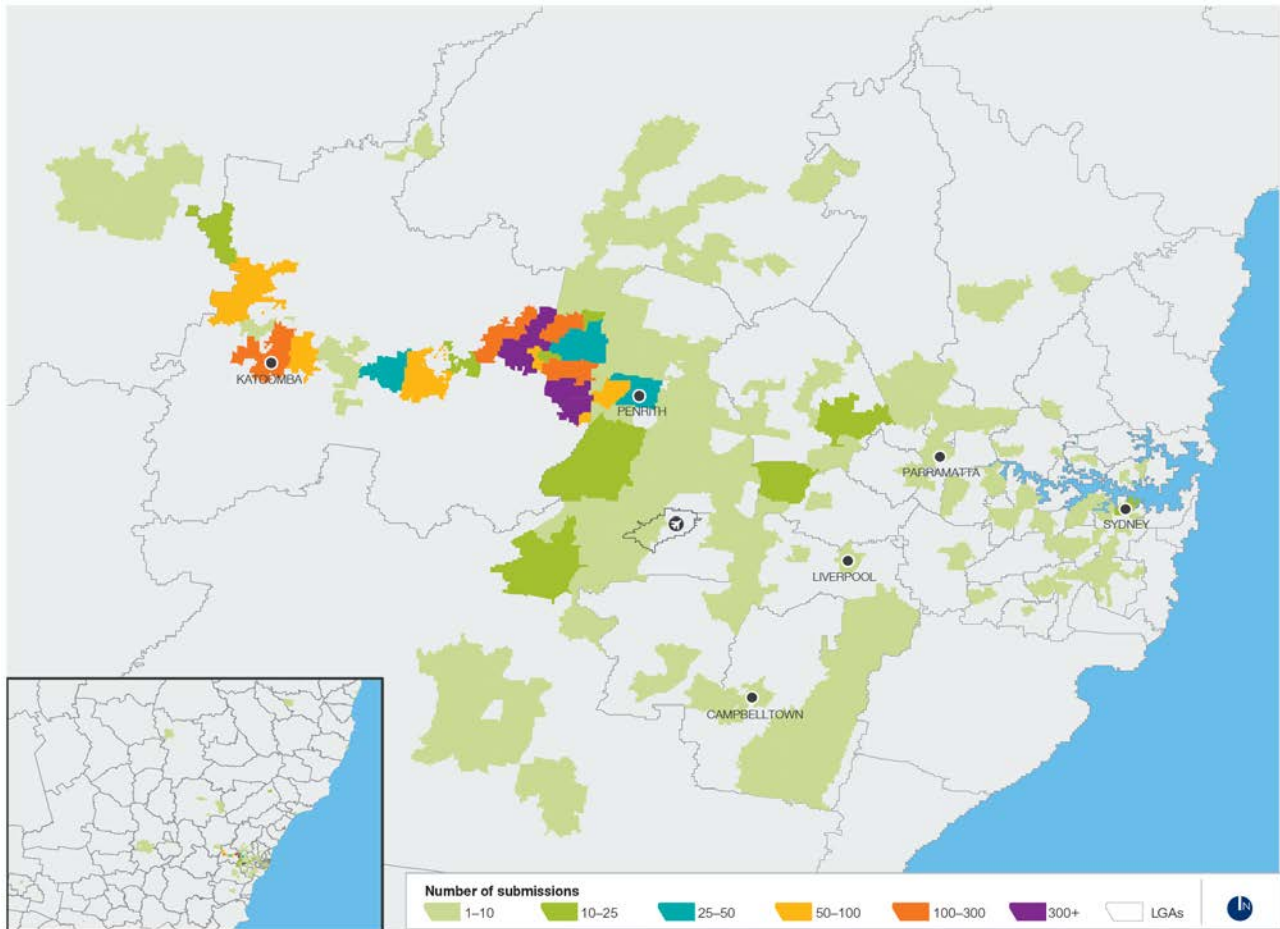


Figure 10–1 Map depicting origin of submissions in relation to Chapter 7 of the draft EIS


10.2 Summary of responses

10.2.1 Overarching summary of responses

The majority of submissions received on the draft EIS commented on airspace architecture and operations, with over 85 per cent of all submissions raising these issues. Over 66 per cent of submissions referred to the indicative flight paths, with a significant number of submissions also addressing the Point Merge system presented in the EIS for managing aircraft arrivals and airport operating modes.

Submissions raised concerns about the indicative nature of the flight paths presented in the draft EIS. Submissions requested that more modelling be undertaken on the 'actual flight paths' to better inform the assessment of potential environmental impacts and provide clarity to stakeholders and communities. Concern was expressed about the possible use of a Point Merge system and its location in relation to the GBMWA.

A range of views was expressed about the hours of operation, with conflicting opinions on whether the proposed airport should have 24-hour operations or a curfew. Some submissions expressed concern at the absence of a cap on the number of flights per day.



Numerous requests were made for additional planning and modelling of the broader Sydney region airspace, with comments focussing on the complexities of operating the proposed Western Sydney Airport alongside Sydney, Bankstown and Camden airports, and RAAF Base Richmond.

The key themes from the submissions are summarised under the following headings:

- Point Merge system;
- runways and runway orientation;
- preliminary airspace design;
- indicative flight paths;
- operating modes;
- future airspace planning;
- interactions with Sydney Airport and the broader Sydney region's airspace;
- operational parameters;
- airspace protection;
- potential meteorological impacts on operation; and
- long term airspace considerations.

The submission comments are summarised and addressed in section 10.2.3.

10.2.2 Overarching response to issues raised

Following publication of the draft EIS, the Australian Government announced that the airspace design to be implemented for the proposed Western Sydney Airport will not include a single merge point that would converge arriving aircraft over Blaxland.

Chapter 7 has been updated to include a detailed explanation of the future detailed airspace and flight path design process that will identify and authorise final air traffic management arrangements for implementation. This process will commence after determination of the Airport Plan. Information has been provided about the various planning and design phases, their likely timing, and key activities and outputs. Further explanation is provided about the key considerations for optimising flight paths prior to operation of the proposed airport, including:

- system options for managing aircraft arrivals and departures;
- new satellite-based navigation technologies available for managing air traffic;
- noise abatement operating procedures;
- principles for the future airspace and flight path design process
- timing for announcement of a noise insulation and property acquisition policy; and
- ongoing consultation with communities.

10.2.3 Issues and responses

Theme	Stakeholders	Summary of issue	Response
Point Merge system	Residents Community groups Environmental groups Senators and Members of Parliament Local councils NSW Government	<p>Location of a possible Point Merge system</p> <p>Submissions raised concern about the nominal Point Merge which was depicted in the draft EIS as being located in the vicinity of Blaxland in the Blue Mountains. Submissions stated that the use of a Point Merge unfairly burdens one part of the population, particularly the communities of Blaxland, Glenbrook, Springwood, Warrimoo, Lapstone, Penrith and Blacktown. Noise sharing to limit noise exposure for any single community was advocated. A range of views was expressed including:</p> <ul style="list-style-type: none"> • moving the Point Merge over less populated areas located to the south-west or north-west of the proposed point or further east over locations such as Penrith; • not moving the Point Merge over wilderness areas to avoid potential negative impacts on wildlife and the amenity and tranquillity of the Greater Blue Mountains World Heritage Area; • alternative Point Merge locations should have been considered; • support for the potential use of the long term alternative merge point (shown in Volume 3) for Stage 1 operations; and • as to whether the Point Merge system should be used at all suggesting that alternative approaches for managing arriving aircraft over densely populated areas should be investigated. <p>The NSW Government suggested further consideration of the proposed location of the Point Merge in order to reduce impacts on communities in the Blue Mountains.</p>	<p>The Australian Government has announced that the airspace design for Western Sydney Airport will not include a single merge point over Blaxland.</p> <p>The EIS assessment of the impacts of aircraft operations is based on a conceptual flight path model developed by Airservices Australia that utilises a Point Merge system to synchronise arriving aircraft and direct them to the runway in a structured manner through a single final approach track.</p> <p>Based on initial design assumptions, the draft EIS identified a nominal location of the merge point to the north-west of the airport site, roughly over Blaxland in the Blue Mountains. Section 7.3 of Appendix E1 (Volume 4) indicates that this nominal merge point could move approximately three nautical miles north-east or south-west without disrupting the preliminary airspace design developed by Airservices Australia. Track density plots show that the number of aircraft movements over Blaxland would be reduced if these alternative merge point options were used (Volume 4, Appendix E1); however, impacts on other areas within the Blue Mountains would correspondingly change. Other, as yet untested, merge point locations may be feasible.</p> <p>No decisions have been made regarding the location of final flight paths or whether a Point Merge system would be adopted for managing aircraft arrivals at the proposed Western Sydney Airport. The future detailed airspace design process will consider alternative aircraft management system options, noise respite arrangements and other noise abatement opportunities. A number of options for sequencing aircraft arrivals will be rigorously tested with comprehensive community consultation before final arrival routes are determined.</p> <p>Additional information about the future airspace design process is provided below and in Section 7.8 (Volume 1). The principles that will apply to the airspace design process seek to maximise safety and ensure that overflights of residential areas are avoided to the maximum extent feasible.</p>

Theme	Stakeholders	Summary of issue	Response
Point Merge system	Aviation industry Local councils	<p>Use and availability of a Point Merge</p> <p>A submission stated that due to the complexity of crossing arrival and departure paths in the Sydney basin, a Point Merge system could only be used in periods of low traffic density, such as during the night. Another submission queried why Point Merge is not used elsewhere in Australia and why alternative air traffic control systems were not analysed in the EIS.</p>	<p>The Point Merge system is a new and innovative approach for managing high traffic loads in a safe, predictable and efficient way. It has been introduced successfully at several busy airports across the world and may provide the easiest and most flexible method for ensuring fully independent operations can occur at the proposed airport and Sydney (Kingsford Smith) Airport. The manner in which aircraft are managed through this system is dependent on the number of presenting aircraft. When aircraft numbers are low and the sequencing of arrivals is less complex, such as in the early years of operation, aircraft would be expected to use the most direct and efficient arrival paths in preference to other paths nominally available. The full capabilities of the Point Merge would be used when there is a high density of arriving aircraft.</p> <p>The preliminary airspace analysis by Airservices Australia was conducted to ensure a proof-of-concept, not to evaluate all viable options for achieving the study's objectives. As discussed in Section 7.7 (Volume 1), alternative air traffic control systems will be assessed in the formal airspace and flight path design process.</p>

Theme	Stakeholders	Summary of issue	Response
Preliminary airspace design	Local councils Residents Environmental groups Community groups	<p>Process for developing the indicative flight paths</p> <p>Submissions raised concerns about the indicative nature of the airspace assessment undertaken by Airservices Australia and requested further visibility regarding airspace planning and how the indicative flight paths were developed by Airservices Australia.</p>	<p>The methodology used by Airservices Australia to develop the indicative flight paths shown in the EIS is described in the report titled <i>Western Sydney Airport Preliminary Airspace Management Analysis – Final Report, 10 April 2015</i>. This report was published on the project website when the draft EIS was placed on public exhibition. The findings presented in the report are based on a conceptual air traffic management design that provides a preliminary proof-of-concept model for safe and efficient aircraft operations in the Sydney basin taking into account the introduction of flights to and from a Western Sydney Airport.</p> <p>As operations at the proposed airport will not commence for several years, the use of indicative flight paths in the EIS is considered appropriate. It is usual practice for indicative flight paths to be used in airport environmental assessments — they are particularly relevant for a greenfield airport that does not have established operational procedures. The previous EISs conducted for an airport at Badgerys Creek also used indicative flight paths.</p> <p>Section 7.8 (Volume 1) provides updated and comprehensive information about the future airspace and flight path design process to be completed before the commencement of airport operations. This process will evaluate a range of conceptual air traffic management and flight path options, including assessment of each option against the key performance criteria of safety, efficiency, capacity and environmental impact. The airspace design process will be conducted in an open and transparent manner that provides ongoing opportunities for community engagement and input.</p>
Preliminary airspace design	Local councils Residents Community groups	<p>Flight paths developed without consideration of social and economic impacts</p> <p>Submissions expressed concern that the flight paths presented in the EIS were not developed to minimise environmental and social impacts including noise.</p>	<p>The main consideration when designing the preliminary flight paths was air traffic management. Particular regard was given to how flight paths would interact with aircraft operating to or from Sydney (Kingsford Smith) Airport and to confirming that a Western Sydney Airport can operate independently and safely alongside Sydney Airport. The conceptual flight path designs were not developed to consider all potential noise abatement opportunities. The future detailed airspace and flight path design process will assess the environmental impacts of conceptual air traffic management options including opportunities to minimise potential noise and amenity impacts on all potentially affected communities while maximising safety.</p>

Theme	Stakeholders	Summary of issue	Response
Preliminary airspace design	Local councils Aviation industry	<p>Detailed flight path modelling</p> <p>Submissions requested more detailed modelling be presented in the EIS, to take into account interactions with other airports in the Sydney region and better define the ‘actual’ airspace. It was suggested that this detailed modelling should consider current and imminent flight practices such as continuous descent and satellite based navigation, as well as potential changes in fleet mix.</p>	<p>The principal objective of the preliminary flight path assessment described in the EIS was to establish whether safe and efficient operations could be introduced at the proposed airport. Chapter 7 (Volume 1) shows the Stage 1 indicative flight paths for this proof-of-concept model, including a single indicative merge point location for aircraft arrivals, for the 05 and 23 operating modes respectively.</p> <p>Detailed flight path modelling is a complex and extensive process that will be undertaken as part of the future airspace and flight path design process. This modelling will take full account of existing Sydney basin airspace and air route arrangements, future user requirements and contemporary and emerging air navigation and flight operational procedures such as continuous descent approaches and satellite-based navigation. The performance and navigational capabilities of modern aircraft will also be recognised. Consideration of these matters will involve extensive consultation with regulatory authorities, Sydney basin aerodrome operators, airspace users and the community.</p>
Preliminary airspace design	Aviation industry	<p>Validity of the preliminary airspace design</p> <p>A submission questioned the validity of the preliminary airspace management analysis undertaken by Airservices Australia because it did not include simulation testing by air traffic controllers and did not consider fuel efficiency or track miles flown by aircraft.</p>	<p>Airservices Australia has adopted tools such as the Total Airspace and Airport Modeller (TAAM) to inform its preliminary airspace and flight path design. TAAM enables fast time modelling of aircraft operations to simulate real world conditions with less reliance on testing by air traffic controllers. As acknowledged in the Airservices Australia report, the preliminary airspace and air route design does not consider all of the essential components that would be necessary to implement an air traffic management plan. Factors such as fuel efficiency and track miles will be taken into account in the next phase of detailed design.</p>
Preliminary airspace design	Senators and Members of Parliament Community groups	<p>Consistency with Airservices Australia’s policy guidelines</p> <p>Submissions contended that the draft EIS and flight path proposals were not consistent with Airservices Australia’s <i>Communication and consultation protocol</i> and its stated objective of aligning actions and processes to the ICAO <i>Balanced Approach to Noise Management</i>.</p>	<p>The indicative flight paths used in the draft EIS were developed by Airservices Australia for a specific purpose – to demonstrate that a Western Sydney Airport and Sydney Airport could operate independently as high capacity aerodromes. This task did not constitute a formal airspace and flight path design process and, as acknowledged in Airservices Australia’s report (published on www.westernsydneyairport.gov.au), did not consider all of the essential components that would be necessary to implement an air traffic management plan. As explained in Chapter 7 (Volume 1), the formal airspace design process will be conducted in line with international and domestic standards and guidelines, including those developed by Airservices Australia and ICAO.</p>

Theme	Stakeholders	Summary of issue	Response
Indicative flight paths	Residents Local councils Environmental groups	<p>Validity of assessment of indicative flight paths</p> <p>Submissions queried the validity of the findings of the draft EIS because the assessment was based on indicative flight paths and not the final or actual flight paths. The use of indicative flight paths was not considered an effective basis for assessing the scale of community annoyance resulting from aircraft noise and was believed to have created uncertainty about the final airspace design and the noise assessment.</p>	<p>The indicative flight paths presented in the draft EIS provide an appropriate and contemporary basis for assessing the potential extent and intensity of impacts associated with aircraft operations at a Western Sydney Airport. The EIS enables the community and stakeholders to consider the design of indicative flight paths and express views about their assessed impacts. The assessment has also provides a basis for comparing the predicted impacts of alternative operating modes and strategies. This assessment enables the Government to make decisions about the suitability of establishing a new airport at Badgerys Creek, taking into account all relevant environmental factors.</p> <p>The Department of Infrastructure and Regional Development, in close collaboration with Airservices Australia and CASA, will commence a comprehensive formal airspace and flight path design process once the Airport Plan is determined. Extensive community consultation and a further environmental referral under the EPBC Act will occur before final flights paths are authorised for implementation.</p>

Theme	Stakeholders	Summary of issue	Response
Indicative flight paths	Local councils Residents Senators and Members of Parliament Environmental groups Community groups	<p>Alternative flight paths</p> <p>Submissions suggested that the draft EIS should be updated and reissued to present and assess additional/alternative flight paths and point merge locations so that all possible flight paths and potential noise impacts are understood. It was suggested the EIS should provide information on the justification for the selection of the indicative flight paths over alternative options.</p>	<p>As noted in Section 7.3 (Volume 1), the preliminary airspace design assessed by Airservices Australia is conceptual and requires further detailed consideration before final flight paths are implemented. It provides a preliminary proof-of-concept airspace design for safe and efficient operations in the Sydney basin taking into account the introduction of flights to and from a Western Sydney Airport. The Government has announced that a single arrivals merge point over Blaxland, as depicted in the draft EIS, will not be part of the airspace plans for the proposed airport.</p> <p>Alternative models for managing aircraft arrivals were considered by Airservices Australia as part of its airspace management analysis. These included standard terminal arrival routes (STARs) based on Open STARs with radar vectoring to final, runway connected (or closed) STARs and Point Merge.</p> <p>Alternative or additional flight paths presented in the EIS include:</p> <ul style="list-style-type: none"> the use of several paths for aircraft turning onto final runway approach under visual flight conditions; the illustration of two alternative merge point locations approximately 3 nautical miles north-east and south-west of the nominal merge point over Blaxland (Appendix E1 (Volume 4)); and the consideration and assessment of a 'head-to-head' operating mode for night operations when traffic volumes and weather conditions permit. <p>The EIS assessment does not seek to identify and comprehensively assess all possible flight path options and operating procedures. For example, the assessment does not attempt to identify flight paths and noise abatement operations that would achieve the absolute minimum noise impact. This would be unrealistic and potentially misleading, implying a degree of precision and certainty that is not available at this stage. The formal airspace and flight path design process will identify and rigorously assess different airspace concepts and flight path options with the aim of developing an optimised design that minimises the impact of overflights on the communities of Western Sydney and the Blue Mountains while meeting stringent safety standards. This will include further evaluation of the efficacy of flight paths based on Open STARs, Closed STARs and Point Merge models.</p> <p>The proposed airspace design arrangements would be formally referred under the EPBC Act in accordance with the process described in Section 7.8 (Volume 1).</p>

Theme	Stakeholders	Summary of issue	Response
Indicative flight paths	Local councils Residents Community groups Aviation industry Environmental groups	<p>Overflight impacts from indicative flight paths</p> <p>Submissions expressed concern about the location of the indicative flight paths in proximity to residential areas, land of environmental conservation value, water catchment areas like Warragamba Dam and high voltage transmission lines.</p>	<p>Section 7.6 (Volume 1) notes that Airservices Australia's primary consideration when designing the preliminary flight paths was air traffic management, particularly how aircraft operating at the proposed airport could function safely, independently and efficiently alongside those operating to or from Sydney (Kingsford Smith) Airport. The conceptual airspace design did not specifically consider all opportunities to minimise potential noise and amenity impacts on residential areas, the location of critical infrastructure or other potential environmental impacts. These issues will be addressed comprehensively in the detailed airspace design work that will be undertaken prior to the determination and implementation of optimised flight paths for the proposed airport.</p> <p>Chapter 26 (Volume 2a) assesses the predicted impacts of aircraft operations on the Greater Blue Mountains World Heritage Area based on the indicative flight paths used for this environmental assessment. Chapter 10, Chapter 13, Chapter 21 and Chapter 23 (Volume 2a) describe the predicted noise, air quality and amenity impacts from aircraft operations on these flight paths. The EIS has found that aircraft operations would not affect water quality in Warragamba Dam and that the indicative flight paths would avoid key infrastructure locations such as the Warragamba Dam wall and Prospect Reservoir.</p> <p>The revised draft Airport Plan indicates that some mobile telephone towers and power transmission lines, including the TransGrid 330 kilovolt transmission line that currently crosses the airport site, potentially intrude into the Obstacle Limitation Surface (OLS) for the proposed airport. The TransGrid transmission line will be relocated before the airport opens and other potential intrusions of the airport's OLS will be identified and, if necessary, removed, marked and/or lit and noted in aeronautical publications to ensure the safety of aircraft operations.</p>

Theme	Stakeholders	Summary of issue	Response
Indicative flight paths	Community groups Education facilities Local councils Residents Environmental groups Tourism industry	<p>Potential for flight free zones</p> <p>Submissions expressed concern about the location of flight paths over the Greater Blue Mountains World Heritage Area (GBMWH) and the potential threat they might pose to the property's World Heritage listing. The identification of flight free zones, similar to those established in the Grand Canyon, USA, was advocated in some submissions to protect the natural quiet of wilderness areas.</p>	<p>The potential impacts of aircraft overflights on the GBMWH are addressed in Chapter 26 (Volume 2a). Based on the preliminary airspace design by Airservices Australia, almost all flights are expected to be at an altitude greater than 5,600 feet above sea level and most would be more than 10,000 feet above sea level when passing over the GBMWH. The EIS assessment found that at these altitudes, aircraft are unlikely to be visually obtrusive and that noise levels would only infrequently exceed 55 dBA. Operation of the proposed airport is not expected to have a direct impact on the GBMWH or its recognised World Heritage values.</p> <p>Where flight free zones have been established over national parks such as the Grand Canyon, restrictions have generally sought to control general aviation and air-tour activities which usually operate at lower altitudes above ground level than regular public transport flights. While flight free zones cover large areas of the Grand Canyon National Park, aircraft are still able to use defined flight corridors where they are able to fly at relatively low altitudes. Potential noise and amenity impacts from aircraft flying over wilderness and other areas of the GBMWH will be considered in the development of final flight paths for the proposed airport, subject to requirements for safe and efficient aircraft operations.</p>
Indicative flight paths	Local councils Senators and Members of Parliament	<p>Assessment of flight paths</p> <p>Submissions, including the review of the draft EIS undertaken on behalf of some local councils, stated that the use of flight paths based on the known performance and operating characteristics of current aircraft fleets is conservative with respect to emissions and noise effects. The operation of aircraft, and specifically the flight paths, was considered to be in accordance with current 'best practice'.</p>	These comments are noted.

Theme	Stakeholders	Summary of issue	Response
Indicative flight paths	Community groups	<p>Need for greater certainty in flight paths for noise assessment</p> <p>Submissions suggested that the necessary information is available for the design of detailed flight paths for Stage 1 and beyond, as evidenced by Airservices Australia's current design of flight paths for other major Australian airports with operational planning horizons that exceed the period of operation of the Stage 1 development. It was asserted that the availability of more detailed flight paths would provide greater certainty about associated noise impacts.</p>	<p>Airservices Australia's current and future work programme includes the design of detailed flight paths for Brisbane, Melbourne and Perth airports to support the implementation of new runway infrastructure. In each case, this work has been or will be preceded by an environmental assessment process that includes consideration of aircraft noise impacts based on preliminary or indicative flight paths and operational procedures. As outlined in Section 7.8 of Chapter 7 (Volume 1), the same general approach for developing detailed flight paths at these airports will be used in the formal airspace and flight path design process for single runway operations at the proposed Western Sydney Airport. That process will include comprehensive assessment of the aircraft noise impacts for different flight path options based on the approved runway alignment and will investigate opportunities to implement noise abatement operating procedures.</p>
Indicative flight paths	Local councils Senators and Members of Parliament	<p>Potential for concentration of noise impacts</p> <p>Submissions stated that the air traffic management methods and proposed flight paths work to minimise the distribution of adverse effects by concentrating aircraft on specific, repeatable flight paths. While the advantages of this approach were noted where flight paths are separated from sensitive areas, concern was expressed about the concentration of noise events and emissions should flight paths coincide with populated areas.</p>	<p>The preliminary airspace model and flight paths were designed using Performance Based Navigation principles, including the use of Required Navigation Performance (RNP) 1 operating standards to ensure aircraft fly accurately defined flight paths. This approach does result in a greater concentration of aircraft along flight paths compared to traditional navigation methods. A key principle of the future airspace design process is that overflights of residential areas and noise sensitive facilities will be avoided to the maximum extent possible. Where flight paths are unable to avoid residential areas, noise abatement procedures will be investigated for possible implementation. This would include consideration of procedures that seek to avoid residential areas overflown by aircraft arrivals being also subject to overflights by departing aircraft.</p>

Theme	Stakeholders	Summary of issue	Response
Indicative flight paths	Local councils Residents Community groups Aviation industry Environmental groups Aircraft Noise Ombudsman	<p>Continuous descent approaches</p> <p>Submissions expressed concern that noise impacts are assessed on the assumption that all arriving aircraft will use a continuous descent profile, which was considered unrealistic and therefore likely to underestimate potential noise impacts. It was noted that, even in jurisdictions with high levels of continuous descent approaches, compliance is often at best in the 80 – 85% range.</p>	<p>A continuous descent approach is an aircraft operating technique in which an arriving aircraft descends in a continuous manner with level flight segments flown only as needed to decelerate and configure the aircraft or to establish on a landing guidance system (e.g. an instrument landing system, or ILS). The air routes developed by Airservices Australia for the preliminary airspace design and EIS noise modelling were specifically designed where possible to facilitate continuous climb and descent profiles even during periods of heavy traffic demand. The assumption that all arriving aircraft would utilise a continuous descent approach is considered reasonable for the purposes of noise modelling.</p> <p>The aircraft operating procedures to be implemented at the proposed Western Sydney Airport will be finalised through the future airspace and flight path design process. It is expected that they will improve on those currently used at Sydney (Kingsford Smith) Airport and result in a higher proportion of continuous descent approaches. The actual number of aircraft complying with a continuous descent approach will be monitored by Airservices Australia.</p>
Indicative flight paths	Residents Community groups	<p>Altitude over the Greater Blue Mountains World Heritage Area</p> <p>Submissions stated that all flights over the Blue Mountains should be set at the highest practicable altitude.</p>	<p>This comment is noted. The future airspace design process will consider opportunities to minimise the impacts of aircraft noise on all potentially affected communities and areas of special environmental value, taking into account safety and other operational factors. Alternative flight path options and noise abatement procedures will be evaluated, including consideration of the altitude of aircraft operations.</p>

Theme	Stakeholders	Summary of issue	Response
Indicative flight paths	Residents Local councils	<p>Depiction of indicative flight paths in the draft EIS and draft Airport Plan</p> <p>Submissions expressed concern that the depiction of flight paths as narrow lines in the draft EIS is misleading and requested that detailed flight paths and actual tracks be included in the final EIS.</p>	<p>The indicative flight paths depicted in the EIS provide an illustrative representation of the preliminary airspace and air route design developed by Airservices Australia. The flight paths represent possible Standard Terminal Arrival Routes, or STARs, and Standard Instrument Departure Routes, known as SIDs, for the proposed Western Sydney Airport. The preliminary design developed by Airservices Australia assumes that all aircraft using the indicative STARs and SIDs are making instrument approaches and departures.</p> <p>As stated in Section 7.6 (Volume 1), in practice it is not always possible for aircraft to follow precisely along pre-defined flight paths such as those depicted in the EIS. Weather conditions, aircraft separation requirements and differences in aircraft performance are examples of factors that affect an aircraft's ability to follow a particular path accurately. Accordingly, flight paths can vary up to several kilometres. However, new navigation technologies proposed for the airport such as Required Navigation Performance-Authorisation Required (RNP-AR) and a satellite assisted precision landing system, known as a ground based augmentation system (GBAS), are capable of better constraining the tracks of arriving and departing aircraft compared to conventional navigation methods.</p> <p>The variability of actual flight paths around a nominated flight path was taken into account in the aircraft noise modelling. For example, dispersion for departure paths was modelled using one centreline path and four sub-paths — two on either side of the main or median path. The extent of dispersion and proportional allocation of operations to the assumed sub-paths, uses the defaults provided in the Integrated Noise Model (being 38.6 per cent on the main path, 24.4 per cent on each of the inner sub-paths and 6.3 per cent on each of the outer sub-paths), with the exception that some adjustments are made close to the runway end points to be more representative of typical flight paths. The use of several paths for aircraft turning onto final runway approach under visual flight conditions also provides a form of dispersion that was taken into account in the noise modelling (see Appendix E1, Volume 4).</p>

Theme	Stakeholders	Summary of issue	Response
Indicative flight paths	Aviation industry Local councils	<p>Runway alignment</p> <p>Submissions sought more information about the selection of the proposed north-east to south-west runway alignment having regard to the consideration of alignment options in the 1997-1999 EIS and the perceived airspace complexities resulting from an alignment different to that used at Sydney (Kingsford Smith) Airport. The complexity of the flight path network and existing noise sharing arrangements at Sydney Airport were viewed as potential constraints to the adoption of desirable noise abatement procedures at a Western Sydney Airport.</p>	<p>As noted in Section 2.6.7 (Volume 1), one of the key factors that led to Badgerys Creek being selected as the preferred site for a greenfield airport is that the site and its surrounds, including areas along the proposed 05/23 runway alignment, areas of predicted high noise at the end of the runway, have been protected for decades from urban and noise-sensitive development. Airservices Australia's initial analysis of indicative flight paths confirms that a Western Sydney Airport with a single runway orientation of 05/23 would have minimal effect on operations at Sydney (Kingsford Smith) Airport. The formal airspace design process will seek to identify all practicable noise abatement opportunities having regard to future airspace user requirements, including the Long Term Operating Plan at Sydney Airport, and aircraft safety.</p> <p>While long term parallel runway operations will require more complex air traffic management arrangements, the imminent introduction of ICAO approved air navigation technologies for parallel runway procedures will provide improved aircraft management capability. A comprehensive airspace design process for parallel runway operations would be undertaken much closer to a second runway being built.</p>
Indicative flight paths	Local councils Senators and Members of Parliament	<p>Aircraft queuing</p> <p>Submissions stated that the draft EIS did not look at any scenarios beyond the normal operation of the airport, such as queuing in the event of unscheduled interruption.</p>	<p>Under the Point Merge concept modelled by Airservices Australia, en route holding patterns would be used in the event that the number of presenting aircraft exceeded the capacity of the system. In these circumstances, aircraft would be above 10,000 feet to 12,000 feet at a distance of at least 75 kilometres from the airport. Similar measures would apply to any arrivals management system adopted for the proposed airport. The ground level environmental impacts of these operations would not be significant and would be considered as part of the future airspace and flight path design process .</p>

Theme	Stakeholders	Summary of issue	Response
Indicative flight paths	Local councils Residents	Impacts on aerial firefighting and hazard reduction activities Concern was expressed about the impact of the proposed flight paths on aerial firefighting in areas of the Blue Mountains.	<p>An airport at Badgerys Creek can operate safely and in the vicinity of aerial firefighting and hazard reduction activities over the Blue Mountains and in the Sydney basin.</p> <p>Emergency services aircraft and commercial air traffic routinely operate safely and efficiently all over Australia, allowing aerial firefighting to occur alongside the operation of major civil airports. Fixed-wing aircraft and helicopters conduct firefighting operations at altitudes well below those of regular commercial airline operations. Any passenger aircraft using a Western Sydney Airport would operate at significantly higher altitudes in the vicinity of the Blue Mountains, well away from those performing water drops. The proposed Western Sydney Airport would not impede hazard reduction burns or firefighting activity.</p> <p>Airservices Australia is responsible for the safe and efficient operation of air space in Australia, and closely manages aircraft operating around airports and during flights. Airspace is managed to ensure the safe movement of all aircraft, including emergency services. During times of emergency and during hazard reduction operations, emergency services aircraft will be managed by Airservices Australia.</p> <p>Airservices Australia also works with the Bureau of Meteorology to advise pilots of hazards as appropriate, such as haze or smoke caused by bushfires or controlled burning. Where smoke does reduce visibility at an airport, usual procedures for flying in low-visibility conditions would apply.</p>
Operating modes	Residents	Flights per day Some submissions suggested that there should be a cap on the number of flights per day.	<p>It is not proposed to cap the daily number of aircraft movements at a Western Sydney airport. The EIS assesses the environmental, social and economic impacts of constructing and operating the Stage 1 airport development described in the revised draft Airport Plan. This initial development is designed to cater for approximately 10 million passengers per year as well as freight traffic — a level of demand that is predicted to occur around five years following opening, when about 21 aircraft movements (landings and departures) would occur during the peak hour of operations on an average day. This level of activity is substantially below the 80 aircraft movements per hour cap that currently applies to Sydney (Kingsford Smith) Airport.</p>

Theme	Stakeholders	Summary of issue	Response
Operating modes	Residents Local councils Aviation industry	<p>'Head-to-head' operating mode</p> <p>Submissions requested more information on how and when the operating modes will be used, especially the 'head-to-head' operating mode and how this will affect potential environmental impacts such as noise.</p> <p>Submissions received from the aviation industry expressed concern that the use of 'head-to-head' operations may reduce efficiency and capacity and create a platform for ongoing noise debates. It was contended that 'head-to-head' operations would restrict the number of aircraft movements to about six movements per hour unless aircraft were sequenced in groups of arrivals and departures. Further justification for the operation of a 'head-to-head' mode was sought as it would direct flights over rural residential areas rather than the Western Sydney Employment Area.</p>	<p>The aircraft noise modelling conducted for the EIS investigated the impacts of utilising a 'head-to-head' operating mode at night when air traffic levels would be low. This mode of operation is used at many airports around the world to reduce the impact of night time aircraft operations on surrounding communities. Experience from other airports (e.g. Brisbane Airport) is that up to 20 aircraft movements per hour (10 departures and 10 arrivals) can be managed under this mode of operation when weather conditions and traffic levels permit. This level of night time aircraft activity is not predicted to occur for many years after the commencement of operations at the proposed airport.</p> <p>The 'head-to-head' mode considered in the EIS would result in all aircraft departures and arrivals occurring to the south-west of the airport site when weather conditions allow. Table 3-3 of Appendix E1 (Volume 4) shows that the estimated population exposed to noise levels above 60 dBA at night time would be reduced with the use of this 'head-to-head' operating mode. For example, a Prefer 05 operating strategy at night would result in an estimated 48,000 people experiencing more than five events above 60 dBA on average at night for Stage 1 operations. This is reduced to approximately 4,000 if a 'head-to-head' mode is included. The reduction in the number of people affected results from fewer aircraft movements over densely populated areas such as St Marys. However, compared to the Prefer 05 operating strategy, a night time 'head-to-head' operating mode would result in more people experiencing higher noise impacts (i.e. a larger number of significant noise events) in rural residential areas to the south-west of the airport site, including Greendale and parts of Silverdale.</p> <p>A preferred operating strategy for the proposed airport and potential noise abatement procedures, have not been determined at this stage. The use of 'head-to-head' operations to and from the south-west, when it is safe to do so, is an important preferred option for managing aircraft noise at night. Identification and testing of all feasible alternative modes of operation will be undertaken as part of the detailed airspace and flight path design process having regard to the safety of all aircraft, other airspace users, aircraft fuel consumption and opportunities to minimise potential noise and amenity impacts on potentially affected communities.</p>

Theme	Stakeholders	Summary of issue	Response
Operating modes	Aviation industry	<p>Implementation of noise sharing arrangements</p> <p>It was contended that, although not taken into account in Airservices Australia's preliminary airspace design, the draft EIS suggests noise sharing will be implemented at the proposed airport.</p>	<p>The preliminary airspace management analysis conducted by Airservices Australia confirmed that the proposed Western Sydney Airport could operate independently and safely from the existing Sydney (Kingsford Smith) Airport. It was not designed to address possible noise sharing modes of operation. The consideration of noise abatement modes of operation in the EIS, including the assessment of implementing night time procedures to provide respite to certain residential areas, is appropriate and consistent with the guidelines for the content of the EIS. Specific noise abatement procedures would be further investigated as part of the detailed airspace and flight path design process. These activities will be undertaken in consultation with the community and other stakeholders.</p>
Future airspace planning	Residents Local councils Aviation industry	<p>Further environmental assessment and community engagement</p> <p>Submissions requested more information on the process to further refine the flight paths, including the environmental assessment and approvals processes that would apply and the community and stakeholder consultation that would take place.</p>	<p>The Department of Infrastructure and Regional Development, in collaboration with Airservices Australia and CASA, will commence a comprehensive airspace planning and design process for single runway airport operations once the Airport Plan is determined by the Infrastructure Minister. Extensive community consultation will be undertaken to facilitate community and stakeholder engagement throughout the future airspace planning and design process. A community and stakeholder reference group will be established to ensure appropriate community and industry engagement during the airspace design process. Mechanisms for keeping the broader community informed of the airspace design process will also be implemented. The aviation sector will be consulted extensively as the airspace concept is refined.</p> <p>Any proposal to introduce a new airspace regime for the proposed airport will be formally referred for consideration under the EPBC Act. Community consultation would occur as part of the referral process and any subsequent environmental assessment process directed by the Environment Minister. Further information about the proposed airspace design process is provided in Section 7.8 (Volume 1).</p>

Theme	Stakeholders	Summary of issue	Response
Future airspace planning	Senators and Members of Parliament	<p>Need for certainty about the location of flight paths</p> <p>Submissions stated that the community of the Blue Mountains requires certainty and should not face anxiety until final decisions about the location of flight paths are made which is expected to be years away.</p>	<p>The Australian Government has announced that the single merge point over Blaxland will not be part of the airspace plans for a Western Sydney Airport. The formal airspace design process, which will identify feasible flight path options, will commence after the Airport Plan has been determined by the Infrastructure Minister. The flight path planning, design and evaluation process is a complex technical task that will include further environmental assessment. It will necessarily take several years to complete. Extensive public consultation will occur throughout the airspace design process to ensure community views about flight path options are taken into account before final decisions are made.</p>
Future airspace planning	Aviation industry Local councils	<p>Review of airspace arrangements across the Sydney basin</p> <p>Submissions suggested that the introduction of operations at a Western Sydney Airport provided the opportunity to review and simplify airspace management in the greater Sydney basin. Submissions also stated that operations at both Western Sydney Airport and Sydney Airport need to be modelled having regard to both current and imminent flight practices and technologies that will impact aviation in coming years.</p>	<p>A review and simplification of airspace management in the greater Sydney basin is beyond the scope of this proposal and environmental assessment. The preliminary airspace concept and flight paths developed by Airservices Australia for single runway operations at the proposed Western Sydney Airport were designed to limit the need for changes to existing airspace arrangements in the Sydney basin, including current flight paths at Sydney (Kingsford Smith) Airport.</p> <p>The formal airspace design process will be integrated with any contemporaneous review of Sydney basin airspace undertaken in accordance with the <i>Airspace Act 2007</i> and other relevant legislation to ensure harmonisation across these tasks. The design process will include extensive consultations with Sydney basin aerodromes and airspace users to confirm and take account of future user requirements. As detailed in Chapter 7 (Volume 1), the airspace design process will utilise contemporary performance-based navigation standards and associated technologies to design flight paths and achieve optimal aircraft separation. Safety will be a key determinant of future airspace design – only practical flight path options and operational procedures that uphold Australia's long-standing aviation safety record will be considered for implementation.</p>
Future airspace planning	Residents	<p>Amenity of rural residents</p> <p>Submissions stated that the amenity of rural residents should be recognised in the flight path selection process and that the selection process should not favour flight paths that minimise potential noise impacts on urban populations.</p>	<p>The formal airspace design process will consider the potential impact of aircraft overflights on all communities in Western Sydney and the Blue Mountains. Flight path options and noise abatement operating procedures will be examined to reduce as far as practicable the impact of aircraft operations on affected residents, taking into account safety and operational factors.</p>

Theme	Stakeholders	Summary of issue	Response
Interactions with Sydney Airport and the broader Sydney regional airspace	Aviation industry Tourist organisations Residents Local councils	<p>Relationship with Sydney (Kingsford Smith) Airport</p> <p>Submissions requested more detail on how the proposed airport would interact with Sydney Airport. In particular, more information/discussion was sought on the potential impacts on the Long Term Operating Plan (LTOP) noise sharing arrangements for Sydney Airport.</p> <p>Some submissions stated that the interaction between the proposed airport and Sydney Airport should not adversely affect the operation of the LTOP for Sydney Airport. Others considered that flight path options for the proposed airport should allow for flight paths at Sydney Airport to be modified.</p> <p>Some submissions did not support any further regulatory constraints on Sydney Airport in order to encourage growth at Western Sydney Airport. It was contended that future airspace arrangements for the proposed airport should ensure Sydney Airport is able to grow in line with the Master Plan 2033 to reach its practical maximum operational capacity. Submissions from the aviation industry did not support suggestions to relocate international and freight services that operate outside the 11.00 pm to 6.00 am curfew at Sydney Airport (i.e. for take-offs between 11.00 pm and midnight and landings between 5.00 am and 6.00 am).</p>	<p>No changes to the existing noise sharing arrangements at Sydney (Kingsford Smith) Airport are expected from the introduction of single runway operations at the proposed Western Sydney Airport. The preliminary airspace concept and flight paths developed by Airservices Australia for the proposed airport took full account of potential interactions with aircraft operating to or from Sydney Airport. Where necessary, indicative flight paths were routed around those for Sydney Airport using Required Navigation Performance (RNP) 1 design standards and vertical navigation requirements to separate aircraft. The preliminary modelling confirmed that two high capacity airports could operate fully independently within the Sydney basin without changes to existing flight paths and noise sharing arrangements at Sydney Airport.</p> <p>One of the principles that will apply to the future airspace design process (see Table 7-1, Volume 1) is that changes to current noise sharing arrangements at Sydney Airport are to be avoided.</p> <p>The introduction of parallel runway operations at a Western Sydney Airport in the long term would require a comprehensive review of all aviation operations in the Sydney basin, including any noise sharing arrangements operating at that time. Current demand forecasting indicates that a second parallel runway would not be required until about 2050.</p> <p>Sections 13, 14 and 15 of the <i>Sydney Airport Curfew Act 1995</i> currently permit noise-compliant propeller and jet aircraft under 34,000 kilograms in weight and certain specified aircraft types used solely for the purpose of carrying freight to land or take-off during Sydney Airport's curfew period. Section 17 of the Act provides that these sections of the Act do not apply for aircraft operations at Sydney Airport once an airport at Badgerys Creek is available to be used for night aircraft movements. It is expected that these services would transfer to the proposed Western Sydney Airport. Section 17 of the <i>Sydney Airport Curfew Act 1995</i> does not affect the permission arrangements that apply to international passenger aircraft movements during Sydney Airport's curfew shoulder periods.</p>

Theme	Stakeholders	Summary of issue	Response
Interactions with Sydney Airport and the broader Sydney regional airspace	Aviation industry Local councils Non-government organisations Tourism industry	<p>Sydney regional airspace</p> <p>Submissions requested planning and additional modelling of the whole of the broader Sydney region airspace to be undertaken, with a focus on the complexities of operating Sydney, Camden, RAAF Base Richmond and Bankstown Airports as this was not presented or assessed in detail in the draft EIS. Submissions contended this is needed to protect operations at the smaller airports such as Bankstown and Camden and to provide greater certainty for the businesses and pilot training those airports support. A Western Sydney Airport was seen by submitters as a catalyst for significantly modernising the Sydney basin airspace architecture and ensuring that each airport can operate safely and efficiently. Submissions sought a commitment to establishing an acceptable alternative flight training area for flight schools based at Bankstown and Camden and argued that the consequent environmental impacts of any new flight training areas should have been assessed. Support was expressed for the preparation of a strategy for the timely relocation of general aviation activities at Camden and Bankstown aerodromes, if they are exerting pressure on Sydney's airspace capacity.</p>	<p>The preliminary airspace concept and flight paths developed by Airservices Australia for single runway operations were designed to limit the need for changes to existing airspace arrangements in the Sydney basin, including current flight paths at Sydney (Kingsford Smith) Airport (see above response). Impacts on RAAF Base Richmond are addressed below.</p> <p>Section 7.4.1 (Volume 1), describes the key findings of a preliminary high-level assessment of the impacts upon visual flight rule (VFR) general aviation activities in the Sydney basin from introducing operations at a Western Sydney Airport.</p> <p>Impacts have been identified to existing flight training areas. Further detailed technical analysis and testing of viable options for managing general aviation, including the identification of suitable flying training areas, will need to be undertaken by regulatory authorities before final solutions are identified for implementation. The formal airspace design process for the proposed Western Sydney Airport will assess in detail the impacts on general aviation activities from establishing a Western Sydney Airport control zone and flight paths. This work will seek to minimise impacts on existing airspace arrangements while implementing a new world class management system. Extensive consultations with Sydney basin aerodromes and airspace users will be undertaken to confirm and take account of future user requirements before final decisions are made.</p>
Interactions with Sydney Airport and the broader Sydney regional airspace	Aviation industry	<p>Airspace design</p> <p>Submissions asserted that the introduction of a Point Merge system and continuous descent profile operations will necessitate a major re-design of airspace, route structures and flight paths in the Sydney basin. It was also contended that a reconfiguration of flight paths at Sydney Airport would be needed within five years of a Western Sydney Airport opening.</p>	<p>The preliminary airspace management analysis undertaken by Airservices Australia confirmed that single runway operations can occur at a Western Sydney Airport, including the potential use of a Point Merge system and continuous descent profile operations, without significant changes to existing civil aviation route structures and flight paths. The configuration of flight paths is dependent on factors such as the runway alignment and the location of air routes for Sydney Airport, rather than on the traffic demand at the proposed airport. Changes to flight paths are not expected simply because traffic levels on a single runway exceed those anticipated for the Stage 1 development. Introducing parallel runway operations in the long term would require more substantial changes to current airspace arrangements. Any proposal to construct and operate a second runway (expected around 2050) would be subject to further environmental assessment before implementation.</p>

Theme	Stakeholders	Summary of issue	Response
Interactions with Sydney Airport and the broader Sydney regional airspace	Aviation industry	<p>Airspace for general aviation aerodromes</p> <p>A submission stated that the Prescribed Airspace for Western Sydney Airport would need to be declared by mid-2023, which will require changes to the Prescribed Airspace for Bankstown and Camden airports. Concern was expressed about this timing and the uncertainty it created for future operations at these general aviation aerodromes. The submission also expressed concern about the ability of the draft master plans for Bankstown and Camden airports (due in 2019 and 2020 respectively) to meet regulatory requirements if the operational impacts on airport operations are not known over the 20-year master planning period. It was argued that the cost for the declaration of Prescribed Airspace for the airports should be borne by the ALC of Western Sydney Airport.</p>	<p>Prescribed Airspace is defined in the Airports Act as airspace specified in, or ascertained in accordance with, the regulations, where it is in the interests of the safety, efficiency or regularity of existing or future air transport operations into or out of an airport for the airspace to be protected (i.e. OLS and PANS-OPS). The definition and protection of airspace for the proposed airport is not expected to require changes to protected airspace for Bankstown or Camden airports. The Department of Infrastructure and Regional Development and Airservices Australia will continue to engage aerodrome operators and users throughout the airspace design process to ensure all legitimate concerns and issues are addressed in a collaborative manner.</p>
Interactions with Sydney Airport and the broader Sydney regional airspace	Federal Government Local councils Aviation industry	<p>RAAF Base Richmond and Holsworthy Barracks</p> <p>Submissions requested that there be no change to the nature of operations at RAAF Base Richmond and it should operate permanently for Defence purposes with no reduction in the volume of Restricted Areas without further information. Other submissions contended that the allocation of significant airspace to a relatively small number of military aircraft operations was a waste of a national asset and was unduly constraining general aviation activities.</p> <p>One submission noted that the proposed runway orientation appears to afford the least possible impact on operations at Holsworthy Barracks, however it is noted that the airspace for the proposed airport would be located between those for Holsworthy and RAAF Base Richmond, and careful planning would be needed to manage the increased air traffic in these areas.</p>	<p>The Future Airspace System described in Section 7.7 (Volume 1), is a product of collaboration between Airservices Australia and the Department of Defence. By 2021, the OneSKY Australia programme will provide an integrated civil and military air traffic control system based on world's best design and practice. Access to shared air traffic technology and information will improve safety and provide greater opportunities to introduce new air routes, airspace volumes and structures to manage forecast growth in civil aviation while meeting Australia's future defence needs.</p> <p>The Department of Defence has advised that RAAF Base Richmond will remain a defence airbase providing airborne access to the Sydney basin into the foreseeable future. The Department of Defence will be consulted throughout the detailed airspace and flight path design process for the proposed Western Sydney Airport to ensure military airspace requirements are appropriately addressed.</p>
Interactions with Sydney Airport and the broader Sydney regional airspace	NSW Government	<p>Regional ring fence</p> <p>The NSW Government expressed support for maintaining the availability of a minimum quota of slots for regional flights in and out of Sydney (Kingsford Smith) Airport), known as the 'regional ring fence'.</p>	<p>The revised draft Airport Plan does not propose any change to the existing system for allocating aircraft slots to airlines operating to regional destinations at Sydney (Kingsford Smith) Airport. The timing of the commencement of regional services at the proposed Western Sydney Airport and the extent of such operations would be commercial considerations for the Airport Lessee Company and regional airlines.</p>

Theme	Stakeholders	Summary of issue	Response
Operational parameters	Residents Local councils Aviation industry Tourist organisations Peak business groups NSW Government	<p>Hours of operation</p> <p>Submissions were received that did not support the airport operating without a curfew in place. Submitters were concerned that noise generated from planes operating on a 24-hour basis would adversely impact human health and social amenity, primarily through sleep disturbance.</p> <p>Local councils requested further detailed discussion and justification in the final EIS for the need for 24-hour operations.</p> <p>Some submissions wanted more information on the likelihood of additional flights being redirected from Sydney Airport to the proposed Western Sydney Airport and potential impacts if a curfew is not in place. It was suggested that, on equity grounds, the curfew restrictions placed on Sydney Airport should also be applied to the Western Sydney Airport.</p> <p>The NSW Government expressed support for the proposed 24-hour operations, but noted that due consideration must be given to mitigating impacts on surrounding communities.</p> <p>Other submissions supported the proposal for 24-hour operations, due to the projected economic benefits that would be generated.</p>	<p>The Stage 1 development described in the revised draft Airport Plan delivers an airport capable of operating curfew-free. An airport at Badgerys Creek has always been planned to operate without a curfew. NSW Government planning controls, have been in place for a number of decades and have prevented incompatible noise sensitive developments around the airport site.</p> <p>Curfew-free airports provide significant benefits to communities and businesses by supporting growth in local, regional and national economies. Melbourne Airport's curfew-free status is understood to allow for the movement of an extra two million passengers a year and adds \$590 million to the Victorian economy through visitor spending.</p> <p>While the proposed Western Sydney Airport is planned to operate without a curfew, demand for flights at night would not be as high as demand during the day. The majority of flights would be in the 7.00 am to 10.00 am and 4.00 pm to 7.00 pm peak periods.</p> <p>Chapter 10 (Volume 2a) assesses the night time impact of Stage 1 aircraft operations and identifies the number of residents who would experience five or more events per night above 60 dBA. Chapter 13 (Volume 2a) of the EIS considers the effect of night time operations on sleep disturbance, showing that the number of predicted additional EEG awakenings due to aircraft overflights is very low when compared to normal levels of awakening (i.e. a 0-0.4 per cent increase).</p> <p>Opportunities to minimise the noise and amenity impacts of night time aircraft operations on communities will be examined during the detailed airspace and flight path design process. This will include the identification of preferred operating modes, flight paths and noise abatement procedures for night time periods.</p>

Theme	Stakeholders	Summary of issue	Response
Operational parameters	Residents	<p>Altitude</p> <p>Submissions suggested that the presentation of altitude in the draft EIS was difficult to understand, particularly in relation to sea level and locations within the Blue Mountains.</p> <p>The altitude of flights was a particular issue in submissions that originated from the Blue Mountains due to the higher elevation of townships in the area. Issues were raised in relation to the altitudes of planes and associated noise impacts during take-off and landing.</p> <p>Some submissions expressed concern that aircraft would be flying at lower altitudes than presented in the draft EIS and therefore will generate more noise impacts, particularly over urban areas.</p>	<p>The approximate aircraft altitudes shown in the indicative flight path figures and discussed in the EIS are based on the preliminary airspace design parameters developed by Airservices Australia. Unless otherwise described, these altitudes represent the height of aircraft above sea level.</p> <p>The Integrated Noise Model (INM) aircraft noise prediction programme used for the EIS incorporated 10 metre topographical contour data covering an area of at least 25 nautical miles around the airport site. Consequently, estimated noise exposure levels shown in the EIS take account of the altitude of aircraft relative to ground level. The noise assessment study area incorporated the Blue Mountains.</p> <p>The preliminary airspace concept developed by Airservices Australia assumed aircraft would fly standard arrival routes and depart on standard instrument departures. A continuous descent approach using a Required Navigation Performance (RNP 1) ILS flight path was assumed for aircraft arrivals meaning that all aircraft types would be expected to be at the approximate altitudes shown in the EIS. In addition to these basic parameters, the aircraft noise assessment also considered additional arrival flight paths that could be used under visual meteorological conditions. The modelling assumed that under these conditions aircraft would be assigned in equal proportions to the ILS track and each of five or six additional “visual” arrival tracks (depending on the runway in use). Aircraft utilising visual arrival tracks would travel a shorter distance between the nominal merge point and the runway threshold and may be at a lower altitude compared to an aircraft on the standard ILS approach. This variability in the altitude of arriving aircraft has been taken into account in the noise modelling.</p> <p>As shown in Figure 10-2 (Volume 2a), the altitude of departing aircraft is variable depending on their performance characteristics and departure weight. Consequently, there may be greater variation particularly for departing aircraft around the approximate altitudes shown in the EIS figures. This variability in performance and weight (which also relates to the destination of the aircraft and hence the total fuel load) has been factored into the noise assessment.</p>

Theme	Stakeholders	Summary of issue	Response
Operational parameters	Residents Community groups Local councils	<p>Emergency fuel jettisoning</p> <p>Submissions questioned the findings about the potential impacts of emergency fuel jettisoning on the natural environment. Local councils requested further detailed assessment of the potential impacts of fuel jettisoning.</p> <p>The most commonly raised discussion points were the potential impacts of fuel jettisoning on Warragamba Dam and the risk to Sydney's drinking water supply. Submitters wanted more certainty that flight related activities would not pose a risk to Sydney's drinking water and asked questions about emergency fuel jettison including how often it occurs, whether all planes have the capacity to jettison fuel, and what is the procedure for managing fuel jettisoning on a daily basis.</p> <p>Some submissions asserted that emergency fuel jettisoning might result in an increased risk of bushfire events in the Blue Mountains area, along with impacting the health of people and wildlife.</p>	<p>Aircraft do not jettison fuel as a standard procedure when landing. Section 7.11.4 (Volume 1) describes the emergency situations under which fuel may need to be jettisoned by an aircraft and the procedures that must be followed. The most common domestic aircraft used in Australia, such as the Boeing 737 and Airbus A320, are not capable of jettisoning fuel. All international long-haul aircraft and some medium to long haul aircraft are able to jettison fuel.</p> <p>Fuel jettisoning occurs very rarely and only after authorisation from air traffic control. In 2014 there were 10 instances of civilian aircraft jettisoning fuel in Australia, representing approximately 0.001 per cent of all domestic and international aircraft movements across the nation.</p> <p>A controlled fuel jettison is usually conducted in clear air at an altitude of at least 6,000 feet (approximately 1,800 metres) in an area nominated by air traffic control. Most emitted fuel evaporates within the first few hundred metres and the risk of fuel reaching the ground or entering Sydney's drinking water supply is extremely low. It is also important to note that all drinking water is tested and treated at one of Sydney's water filtration plants before entering the water supply network to ensure it is of excellent quality and meets the Australian Drinking Water Guidelines.</p> <p>Given the low occurrence of fuel jettisoning, the standards that apply to these emergency events and the high evaporation and dispersion rates known to occur at high altitude, aircraft operations at the proposed Western Sydney Airport are not considered likely to increase the risk of bushfires or adversely impact the health of people and wildlife.</p>

Theme	Stakeholders	Summary of issue	Response
Airspace protection	Aviation industry Tourism industry Peak business groups Local councils Major adjacent landowners	<p>Future land use and building controls for airspace protection</p> <p>Submissions discussed the use of Obstacle Limitation Surface (OLS) and Procedures for Air Navigation Services – Aircraft Operations (PANS–OPS) as the potential controls for airspace protection. These submissions generally supported controls surrounding the airport site, including the protection of OLS and PANS-OPS. Specific suggestions included:</p> <ul style="list-style-type: none"> the OLS framework that currently applies in the Sydney basin be extended to include the operations of the Western Sydney Airport, particularly for future development in the Penrith City Centre, St Marys Town Centre and Western Sydney Priority Growth Area; the prescribed airspace surfaces need to be determined assuming both runways are operational; the final Airport Plan to provide an indicative OLS for the long term (ultimate) layout of the airport; the OLS for the long term (ultimate) layout should be overlaid onto a map of the Western Sydney area, to show the area that would be affected by the OLS; the EIS should include more information on the potential restrictions that may apply on surrounding major land parcels and what options may be available to landowners regarding the consequences of these development restrictions and impacts; and the need for a full wind disturbance study for planned buildings on or off the airport site. 	<p>Chapter 7 (Volume 1) discusses airspace protection for the proposed Western Sydney Airport. Support expressed in submissions for the protection of Obstacle Limitation Surface (OLS) and Procedures for Air Navigation Services – Aircraft Operations (PANS–OPS) has been noted. An OLS for the proposed Western Sydney Airport—based on a long term parallel runway airport layout—is expected to be defined and protected under the Airports (Protection of Airspace) Regulations in the second half of 2016. Section 2.2.6 of the revised draft Airport Plan outlines future airspace protection requirements (including PANS-OPS) and an indicative OLS for the long term layout of the proposed airport. This detailed planning process will establish the height limits for buildings in the vicinity of the airport. The Australian Government will work closely with councils once the OLS is declared to assist implementation.</p> <p>Buildings in close proximity to the airport may affect aircraft movements. The proposed airport development will be assessed for potential windshear and turbulence effects as part of the detailed design process.</p>

Theme	Stakeholders	Summary of issue	Response
Airspace protection	Local councils	<p>Outcomes of airspace protection assessment</p> <p>The EIS review undertaken on behalf of some local councils stated that the evaluation of protection volumes for flight paths and airspace containment is in accordance with normal methods described in the Airports (Protection of Airspace) Regulations and the Airports Act. It also noted that the analysis of OLS and PANS-OPS indicates that the proposed airport could operate unrestricted from terrain and artificial obstacles.</p>	<p>These comments are acknowledged. Further information about airspace protection measures is presented in Section 7.9 (Volume 1).</p>
Potential meteorological impacts on operation	Aviation industry	<p>Crosswinds and tailwinds</p> <p>Submissions noted that the orientation of the runways needs to consider affects such as crosswinds and tailwinds.</p>	<p>The <i>Western Sydney Airport Usability Report</i> prepared by the Bureau of Meteorology (Appendix D (Volume 4)) provides detailed information about the incidence of crosswinds and headwinds at the Badgerys Creek airport site based on wind speed and direction data recorded over the last 18 years. This analysis shows that the proposed runway orientation would enable aircraft operations for approximately 99.5 per cent of the time based solely on a prevailing crosswind of less than 20 knots. It also found that headwinds in excess of 25 knots are not expected to occur on average more than 0.4 days per month for any month of the year. The occurrence of crosswinds and headwinds of sufficient strength to affect aircraft operations at the proposed airport site is considerably below that experienced at Sydney (Kingsford Smith) Airport.</p> <p>Standard airport operating procedures indicate that a runway may not be selected for either approach or departure if the wind has a downwind component greater than 5 knots (including gusts) or if the runway is wet, it would not normally be selected if there is any downwind component at all. Generally, before the downwind component exceeds the above criteria, airport operations would switch to the opposite runway direction so that aircraft could operate into a headwind. The prevalence of tailwinds from a particular direction may limit the use of certain preferred noise abatement procedures. However, winds at inland locations such as Badgerys Creek are typically more predictable and lighter than those experienced at airports on the coast, and consequently they are less likely to restrict the use of preferred operating modes compared to winds at coastal airports.</p>

Theme	Stakeholders	Summary of issue	Response
Potential meteorological impacts on operation	Aviation industry Local councils Residents	<p>Fog and other adverse weather</p> <p>Some submissions raised concerns about meteorological and weather conditions at the Badgerys Creek site, noting that conditions will be significantly different to those at Sydney Airport. Comments suggested that the draft EIS did not consider the impacts of fog or wind on the operation of the airport, specifically flight delays and diversions that may result from adverse weather.</p> <p>It was also noted that the proposed airport would need to be supported by the provision of all-weather operations (CAT III) capable to address the findings of the Western Sydney Airport Usability Report.</p>	<p>Weather phenomena such as fog, low cloud and low visibility conditions may lower the usability of the proposed airport. Fog can occur in Western Sydney during all months of the year, and often for extended periods of time. Many high functioning airports in Australia and around the world manage these situations through the use of modern navigational systems and processes that enable aircraft to land safely in dense fog and when visibility is low.</p> <p>The fact that an airport in Western Sydney will experience different, and generally more benign, weather conditions to those at Sydney Airport is acknowledged. Development of the proposed airport will increase runway capacity in the Sydney basin and may provide an alternative for managing aircraft that are unable to use Sydney Airport because of adverse weather.</p> <p>Section 3.2.6 of the revised draft Airport Plan specifies that the proposed Stage 1 runway will be designed to accommodate CAT IIIB instrument approach procedures on both runway ends. The provision of a CAT IIIB instrument landing system will mitigate the effects of reduced visibility caused by these weather phenomena.</p> <p>All major airports occasionally experience weather phenomena that stop aircraft operations. This can result in delays in aircraft departures and landings or the potential diversion of some aircraft to an alternative airport. If the Stage 1 runway at the proposed airport was not available, air traffic control and pilots would manage airborne aircraft in accordance with standard safety and operational procedures by placing aircraft in holding patterns or diverting them to a suitable alternative airport.</p>
Long term airspace considerations	Local councils	<p>Airspace arrangements for long term parallel runway operations</p> <p>Comments made in submissions about long term airspace and flight path requirements for the proposed airport included:</p> <ul style="list-style-type: none"> interaction of aircraft traffic in the Sydney basin requires an airspace and flight path review not considered as part of Stage 1; Simultaneous Opposite Direction Parallel Runway Operations (SODPROPS) is an additional operating mode available for widely spaced runways, which would allow aircraft to land in one direction and depart in the other from different runways; 	<p>The EIS acknowledges that the introduction of parallel runway operations at the proposed airport would require a substantial review of airspace arrangements in the Sydney basin. Based on current demand forecasts the commencement of parallel runway operations would not commence until about 35 years from now. It is not feasible, and would be potentially misleading, to purport to show and assess with a reasonable level of accuracy the likely airspace arrangements that might be implemented over this timeframe. For example, currently unforeseen developments in navigation technologies and aircraft performance will strongly influence the options that are available for designing and operating flight paths several decades into the future. Accordingly, the long term flight paths presented in the EIS have been designed for current aircraft operations and are included to provide a strategic level assessment of possible future impacts from parallel</p>

Theme	Stakeholders	Summary of issue	Response
		<ul style="list-style-type: none"> the draft EIS did not consider more than one flight path scenario for long term operations; concern that parallel runway operations would virtually eliminate instrument flight rule (IFR) approaches to Bankstown Airport; and there is potential risk to the long term development and operation of the airport if changes to 'established' single runway flight paths resulting from the introduction of parallel runway operations are resisted by the community. 	<p>runway airport operations.</p> <p>The advantages of implementing operating modes such as 'Simultaneous opposite direction operations' or SODPROPS, would be expected to be thoroughly evaluated closer to the time that parallel runway operations are proposed for introduction.</p> <p>The potential impacts of Western Sydney Airport single runway operations on Bankstown Airport are addressed in Section 7.4.1 (Volume 1). Aviation businesses based at Bankstown Airport will be consulted during the airspace design process before final flight paths are implemented.</p> <p>Current modelling indicates that IFR arrivals into Bankstown would significantly curtail capacity at Western Sydney Airport following the introduction of parallel runway operations. Further consultation with aviation businesses would occur well before these operations were implemented.</p> <p>Section 7.8.1 (Volume 1) indicates that a long term Australian Noise Exposure Forecast (ANEF) chart for parallel runway operations will be developed as part of the formal airspace design process to be conducted once the Airport Plan is determined. This will ensure that land use planning in the highest noise exposure areas around the airport site will continue to be protected from inappropriate noise sensitive development. This ANEF chart will likely represent a conservative forecast of future noise exposure as it will be based on noise emission characteristics of aircraft currently in operation — it being unfeasible to predict future advancements in noise reduction accurately or the proportion of a future fleet mix that would be compliant with a particular noise standard — and a level of demand at or close to the expected capacity of the airport.</p> <p>Parallel runway operations will require the introduction of new flight paths close to and further away from the airport. Those segments of flight paths associated with the final approach and initial departure stages of flight are unlikely to change significantly from the assumptions used in calculating an ANEF as proposed. Changes to flight paths further away from the airport are not expected to affect ANEF land use planning contours and would be designed to minimise impacts on residential and other noise sensitive areas. Any proposal to introduce parallel runway operations and associated flight paths would be subject to further formal environmental assessment and community consultation at that time.</p>

11 Community and stakeholder engagement

Volume 1 (Project Background), Chapter 8 (Community and stakeholder engagement) of the draft EIS details the stakeholder and community consultation activities undertaken during the preparation of the draft EIS and draft Airport Plan.

11.1 About the submissions on this chapter



Table 11–1 Submissions related to community and stakeholder engagement

Issue	Number of times the issue was raised	Percentage of total submissions
Draft EIS exhibition period	506	10.2%
Draft EIS consultation	339	6.8%
Draft EIS notifications and information sessions	57	1.1%

11.1.1 Origin of submissions

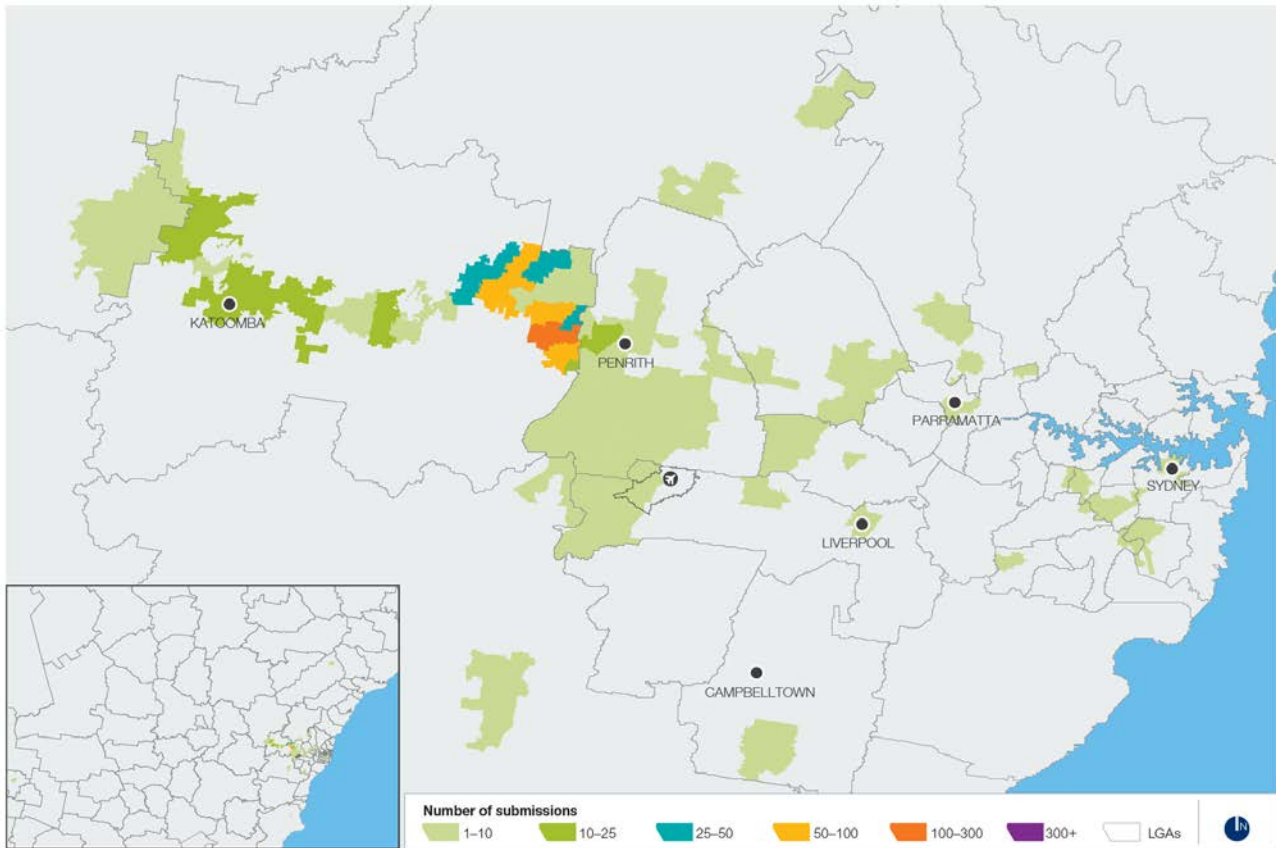


Figure 11–1 Map depicting origin of submissions in relation to Chapter 8 of the draft EIS


11.2 Summary of response

11.2.1 Overarching summary of submissions

Submissions raised concern with the length of the exhibition period and subsequent opportunity to make a submission. Many noted that the draft EIS was a large and complex document and the 60 days allowed for exhibition and submissions was inadequate given the technical nature of the draft EIS.

A number of submissions raised concerns that there was not enough consultation undertaken with the community to inform the preparation of the draft EIS and the draft Airport Plan. There was broad support for further consultation to be undertaken prior to the draft EIS being finalised to allow the community to provide more significant inputs to the assessment. Submissions also raised concerns about the notification period and the notification provided for some community consultation events during the exhibition period.

As flight paths presented in the draft EIS and draft Airport Plan were indicative, stakeholder and community members expressed their desire to be included in future discussions about the finalisation of the flight paths.



The key themes from the submissions are summarised under the following headings:

- draft EIS consultation;
- draft EIS exhibition period;
- draft EIS notifications and information sessions;
- reporting on community concerns; and
- future consultation activities.

The submission comments are summarised and addressed in Section 11.2.3.

11.2.2 Overarching response to issues raised

Following publication, Chapter 8 (Volume 1) of the draft EIS was updated to reflect ongoing consultation during and after public exhibition. The updates are presented in Chapter 8 of the finalised EIS.

11.2.3 Issues and responses

Theme	Stakeholders	Summary of issue	Response
Draft EIS exhibition period	Environmental groups Community groups Local councils Residents	<p>Public exhibition timeframe</p> <p>Submissions raised concern with the length of the exhibition period and subsequent opportunity to make a submission. Many noted that the draft EIS was a large and complex document and the 60 day exhibition period was inadequate given the technical nature of the draft EIS.</p> <p>Some submissions suggested that the display period be increased to a period ranging from three to twelve months.</p> <p>Submissions raised concern about the timing of the draft EIS consultation and subsequent time required to provide a submission, especially at the end of the year.</p>	<p>The public exhibition period for the draft EIS and draft Airport Plan was from 19 October 2015 until 18 December 2015, a period of 60 calendar days. This timeframe is consistent with public exhibitions for similarly sized projects, and is more than double the minimum period of 20 business days specified under the EPBC Act. The exhibition period took place after the October 2015 school break and before the summer holiday period.</p>
Draft EIS consultation	Environmental groups Community groups Local councils Residents	<p>Consultation programme</p> <p>Submissions raised concerns that there was not enough consultation undertaken with the community to inform the preparation of the draft EIS. Some comments were received that a new draft EIS should be developed that includes more extensive consultation with community members and other key stakeholders.</p> <p>There was broad support for further consultation to be undertaken prior to the draft EIS being finalised to allow the community to provide more significant inputs to the assessment.</p>	<p>Chapter 8 (Volume 1) describes the programme of community and stakeholder engagement activities, including information sessions, that took place prior to the release of the draft EIS. Chapter 8 (Volume 1) also includes a description of how feedback received at this stage of public consultation was incorporated into the draft EIS.</p> <p>Sixteen information sessions were held in Western Sydney and the Blue Mountains during the public exhibition period for the draft EIS (see Chapter 8 (Volume 1))</p> <p>Chapter 8 (Volume 1) discusses future opportunities for the community to provide feedback on aspects of the Western Sydney Airport project. As the submissions on the draft EIS have provided sufficient detail to finalise the EIS, another draft EIS is not required for consultation. For more information about the flight path design process and opportunities for community involvement in that process, see Chapter 7 (Volume 1).</p>

Theme	Stakeholders	Summary of issue	Response
Draft EIS consultation	Local councils	<p>Consultation on waste management issues</p> <p>Submissions queried why resource and waste management issues did not have a bigger focus in the consultation activities for the draft EIS and draft Airport Plan.</p>	<p>As outlined in Chapter 8 (Volume 1), the public exhibition of the draft EIS and draft Airport Plan provided an opportunity for the community to be informed and share their views. In addition to this, extensive consultation has occurred with local councils and other stakeholders in Western Sydney. Throughout these consultation activities a broad range of topics were raised and discussed. This included waste and resource management issues.</p> <p>Waste and resource management issues have been discussed in briefings and consultations to an extent commensurate with the level of significance which stakeholders placed on those issues and reflects the current stage of project planning. Further information on waste management is included in Chapter 25 (Volume 2a) and associated mitigation measures in Chapter 28 (Volume 2b).</p>
Draft EIS notifications and information sessions	Community groups Residents	<p>Adequacy of notifications and information sessions</p> <p>Submissions raised concern with the length of notification period provided for some community consultation events during the public exhibition period. Some expressed concern that they did not receive sufficient notice as to when the information sessions would be held.</p> <p>Other submissions suggested that there were not enough information sessions held and that the information available at the sessions did not provide answers to all of their questions.</p>	<p>The 16 information sessions held during the exhibition period as well as the promotion activities undertaken are outlined in Chapter 8 (Volume 1). Notification of upcoming community consultation events was made as early as practicable to in relevant media. The information sessions were held throughout the exhibition period in 12 Local Government Areas (LGAs) across Western Sydney and the Blue Mountains. Chapter 8 (Volume 1) also discusses the information provided at the sessions, including the availability of various resources and project team members to answer questions.</p>

Theme	Stakeholders	Summary of issue	Response
Reporting on community concerns	Local councils	<p>Response to stakeholder engagement</p> <p>Submissions suggested that the draft EIS be revised to include a summary consultation paper that details how the specific technical studies have addressed the issues raised during consultation with stakeholders. In addition, the body of the EIS should identify the most appropriate mitigation measures to minimise community concerns.</p>	<p>The draft and final EIS document the consultation undertaken through the social impact assessment, the preparation of the EIS generally, public display of the draft EIS, and related changes to the content of the EIS.</p> <p>Consultation undertaken through the social impact assessment was outlined in Section 2.2.5 of Appendix P1 (Volume 4). Consultation involved stakeholders at multiple levels to gain a broad understanding of social issues relevant to the proposed airport. The stakeholders consulted included (among others) regional organisations, local governments, NSW Government agencies and the property manager at the airport site. Issues raised by stakeholders informed the social baseline described in Section 4 and Section 5 of the assessment and subsequently the identification and assessment of social impacts.</p> <p>Community and stakeholder consultation undertaken during the preparation of the draft EIS and in finalising the EIS is described in Chapter 8 (Volume 1). The chapter outlines the consultation activities that were undertaken, the issues that were raised, and how they are addressed in the EIS.</p> <p>Issues raised by stakeholders during public display of the draft EIS and how they have been addressed in the various technical assessments are summarised throughout this volume.</p>

Theme	Stakeholders	Summary of issue	Response
Future consultation activities	Environmental groups Community groups Local councils Residents	<p>Consultation and display of the final EIS</p> <p>Submissions requested additional consultation during the preparation of the final EIS, particularly on the flight paths and any changes to the indicative flight paths. Submissions requested that the final EIS be placed on public exhibition for comment.</p>	<p>As the EIS is now finalised, further public comment specifically on this document will not take place. Copies of the finalised EIS and revised draft Airport Plan will be placed in libraries around Western Sydney and the Blue Mountains as required under the EPBC Act Regulations.</p> <p>The Department of Infrastructure and Regional Development, in close collaboration with Airservices Australia, will commence a comprehensive airspace planning and design process for single runway airport operations after the Airport Plan is determined by the Infrastructure Minister. A community engagement strategy will be developed and implemented to guide community and stakeholder consultation throughout the future airspace planning and design process. A community and stakeholder reference group will be established for the proposed Western Sydney Airport to ensure appropriate community and industry engagement during the airspace design process and beyond. The community engagement strategy will identify mechanisms for keeping the broader community informed of the airspace design process. The aviation sector will be consulted extensively as the airspace concept is refined.</p> <p>The airspace and flight path design for the proposed airport will be formally referred for consideration under the EPBC Act. Community consultation would occur as part of the referral process and any subsequent environmental assessment process directed by the Environment Minister. Further information about the proposed airspace and flight path design process is provided in Section 7.8 (Volume 1).</p>
Future consultation activities	Aviation industry	<p>Aviation consultation during detailed design</p> <p>Submissions from aviation stakeholders requested:</p> <ul style="list-style-type: none"> the opportunity to be more involved in the final approvals and subsequent assessments once the Airport Lessee Company (ALC) is appointed; the opportunity to provide constructive engagement to inform cost effective infrastructure; and ongoing consultation with airlines during the detailed design phase. 	<p>The ALC will be expected to consult with the aviation industry and other stakeholders in developing the detailed design of the proposed airport.</p>

12 Approach to impact assessment

Volume 2 (Stage 1 Development), Chapter 9 (Approach to impact assessment) of the draft EIS outlined the approach taken in assessing the potential environmental impacts of the Stage 1 development in accordance with the Guidelines for the content of a draft Environmental Impact Statement – Western Sydney Airport (EIS Guidelines) and the EPBC Act.

12.1 About the submissions on this chapter



Table 12–1 Submissions related to the approach to impact assessment

Issue	Number of times the issue was raised	Percentage of total submissions
Submissions related to the approach to impact assessment	1,265	25.4%

12.1.1 Origin of submissions

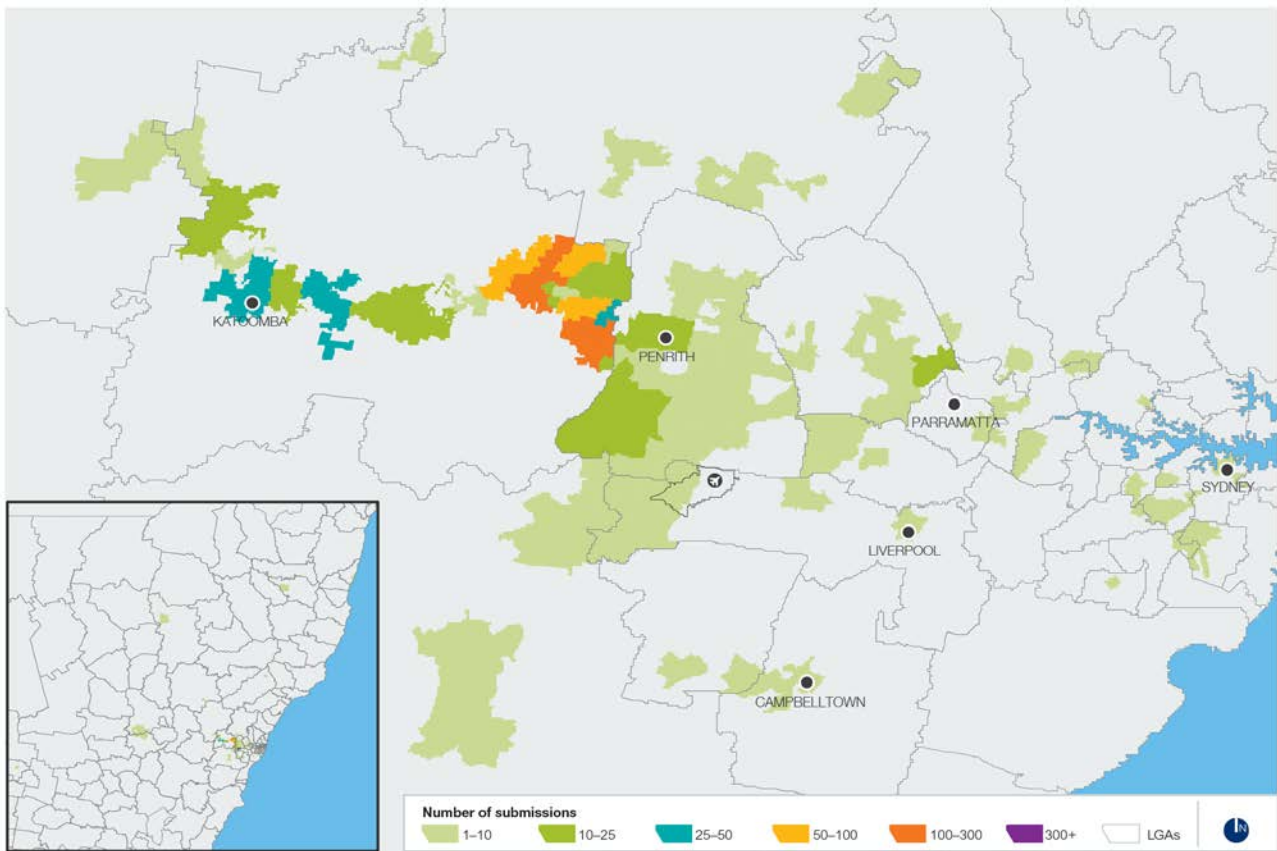


Figure 12–1 Map depicting origin of submissions in relation to Chapter 9 of the draft EIS

12.2 Summary and response

12.2.1 Overarching summary of submissions

Submissions received from a range of stakeholders stated that the level of analysis and detail in the draft EIS did not reflect the level of significance of the expected impacts on the environment. Other comments were received that the draft EIS did not adequately address cumulative impacts, nor did it include information on how mitigation measures would be coordinated or resourced, and the entity responsible for ensuring outcomes.

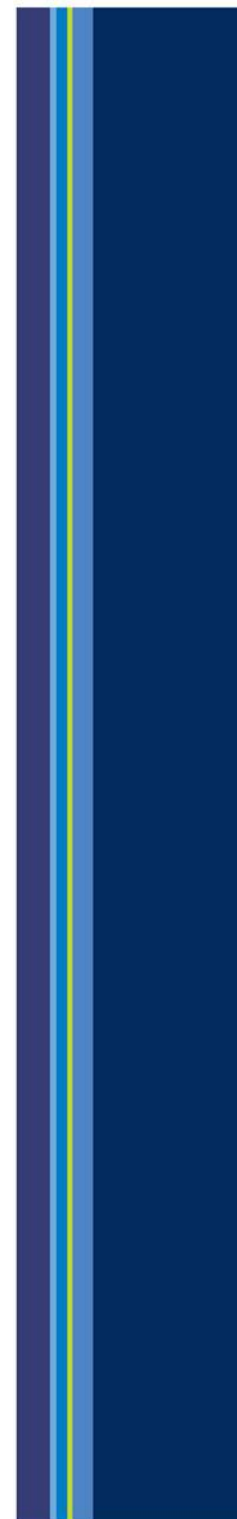
The submission comments are summarised and addressed in section 12.2.3.

12.2.2 Overarching response to issues raised

Following publication, Chapter 9 of the EIS was updated to reflect the finalisation of the EIS. These revisions are presented in Chapter 9 of the finalised EIS.

12.2.3 Issues and responses

Theme	Stakeholders	Summary of issue	Response
Approach to impact assessment (methodology)	Local councils NSW Government Community groups Environmental groups Residents	<p>Assessment scenarios</p> <p>Submissions stated that the draft EIS does not consider later stages of the proposed airport's development or that assessment of future development is considered separate to Stage 1.</p> <p>Submissions suggested that, given the 2030 development scenario underpins the draft EIS assessment, the likely impacts of the proposed airport will be understated.</p> <p>The NSW Government noted that the assessment scenario for the draft EIS is limited to five years after operations commence and proposes that a 10-year assessment timeframe would provide for a more robust assessment of key issues such as noise, air quality and hazard and risk.</p> <p>Submissions suggested that the assessment undertaken for the draft EIS should consider all stages of development, not just Stage 1, in order to adequately inform the reader regarding the proposed airport's long term impacts. Some stakeholders suggested that the assessment should be based on the extent of development and operational activity at the time that the first runway nears capacity which is expected to be around 2050. Submissions suggested this would allow the community and stakeholders to have a greater understanding of the impacts of a fully operational single runway airport.</p> <p>In addition, there were a number of submissions that expressed concern over the scenarios and timeframes used for the assessment of specific technical areas, such as noise or human health.</p>	<p>The assessment of potential environmental impacts in the EIS is based on a particular scale of infrastructure development and a corresponding level of aviation activity. The scale of development adopted for the EIS is the Stage 1 airport development as outlined in the revised draft Airport Plan. The Stage 1 development incorporates a single runway and support facilities to cater for an operational capacity of approximately 10 million annual passengers and approximately 63,000 air traffic movements per year. The EIS assumes the airport could be operating at this level approximately five years after operations commence which for assessment purposes has been assumed to be 2030.</p> <p>As detailed in Chapter 3 (Volume 1), major infrastructure developments beyond the scope of the Stage 1 development do not form part of the development outlined in the revised draft Airport Plan and would be subject to additional approvals in accordance with the Airports Act.</p> <p>The EIS recognises that approval of the Stage 1 development would directly facilitate growth of the proposed airport over time and this has the potential to increase the level of impacts associated with the proposed airport, particularly the impact of aircraft noise exposure on surrounding communities. A strategic level assessment was undertaken of the impacts arising from the long term development (which could occur around 2063). The EIS acknowledges the uncertainty in predicting impacts that may occur nearly 50 years into the future and therefore notes the additional approval requirements for all future development.</p> <p>In addition, the EIS recognises that aircraft noise is one of the most sensitive issues associated with the development of the proposed airport and an increase in air traffic movements has the potential to increase the level of noise disturbance experienced by the surrounding community. Taking this into account, the EIS assesses aircraft noise impacts for a scenario where the single runway is operating at or near full capacity of around 37 million annual passengers or approximately 185,000 aircraft movements per year. This scenario allows an assessment of the extent of noise exposure and associated potential impacts from the maximum forecast capacity of the single runway, even though additional major airport development after the Stage 1 development would be needed to cater for this level of activity and that would require further approvals.</p>



Theme	Stakeholders	Summary of issue	Response
Approach to impact assessment (methodology)	Local councils Residents Businesses Community groups Environmental groups	<p>EIS Guidelines issued</p> <p>Submissions raised concerns about the scope and adequacy of the draft EIS in relation to the EIS Guidelines, EPBC Act, and best practice assessment.</p> <p>Submissions stated that the draft EIS does not provide the information needed for the Infrastructure Minister or the Environment Minister, or their respective delegates, to determine the acceptability of impacts on matters protected by the EPBC Act.</p> <p>Submissions stated that the EIS should be substantially revised to take account of omissions and limitations of the draft EIS, in particular, relating to:</p> <ul style="list-style-type: none"> • the description of the proposal and consideration of alternatives; • airspace architecture and aviation planning; • aircraft noise; • ground noise; • air quality; • human health; • impacts on the Greater Blue Mountains World Heritage Area; • biodiversity; • traffic and transport; • economic and social impacts; • planning and land use; and • cumulative impacts and mitigation measures. <p>Submissions stated that the draft EIS was not sufficient based on the amount of time it took to prepare. Submissions also suggested that the period provided for the Department of the Environment to review the adequacy of the draft EIS prior to approving it for public exhibition was compressed.</p>	<p>The draft EIS was prepared in accordance with the requirements of the EPBC Act and the <i>Guidelines for the Content of a draft Environmental Impact Statement – Western Sydney Airport</i> (EIS Guidelines) that were issued by the Department of the Environment on 29 January 2015.</p> <p>The impact assessment methodology for each environmental, social and economic value was developed to meet the requirements of the EIS Guidelines and considered the intent and objectives of relevant New South Wales regulations and guidelines, where appropriate.</p> <p>Due to the complex nature of greenfield airport developments, it is recognised that there are limitations associated with addressing some potential environmental issues. For example, the assessment is based on the indicative airport site layout presented in the revised draft Airport Plan and this may be refined through the process of detailed design. Similarly, the assessment of impacts from aircraft overflight operations is based on proof-of-concept indicative air traffic management designs and flight paths, and these will be refined and finalised as part of a future comprehensive airspace planning and design process. A preferred airspace design concept developed through this process will be subject to a separate environmental assessment and approvals process (see Chapters 3 and 7 (Volume 1)).</p> <p>The draft EIS was provided to the Department of the Environment for adequacy review against the requirements of the EIS Guidelines prior to exhibition. Comments from the Department of the Environment were addressed to the satisfaction of the Department of the Environment.</p>

Theme	Stakeholders	Summary of issue	Response
Approach to impact assessment (methodology)	Local councils Residents Community groups	<p>Indicative nature of the draft EIS</p> <p>Submissions stated that the level of analysis and detail in the draft EIS does not reflect the level of significance of the expected impacts on the environment. Submissions commented that the environmental impacts need to be better quantified and raised concerns about the lack of certainty associated with the extent and nature of a range of likely environmental impacts across Western Sydney generally.</p> <p>Submissions noted that unknown variables and assumptions made in the assessment, such as future aircraft types, proposed staged runway development, technology implementation, and assumed traffic projections require further, more detailed analysis.</p>	<p>Notwithstanding the indicative nature of some of the anticipated impacts, the EIS adopts well-recognised methods for assessing impacts. Further, having regard to the information currently available, the indicative elements of the EIS are a reasonable and appropriate benchmark to adequately assess the likely impacts of the proposed airport.</p> <p>The issues raised in submissions fundamentally reflect that the development of an airport is a major, complex and long term infrastructure project. In particular, many assessments used in the EIS are based on assumptions about future aircraft types, technology use and air traffic demand forecasts. While these assumptions are based on accurate sources available to the EIS project team and best-practice methodology, the realisation of these assumptions depends on global events and trends, business decisions of airlines and other industry participants, decisions by international organisations such as the International Civil Aviation Organization (ICAO), and other factors which are outside the control of any airport developer or operator.</p> <p>In addition, the consultative and contractual obligations under the Right of First Refusal, a condition of the 2002 Sydney (Kingsford Smith) Airport Share Sale Agreement, mean that identification of who will operate the proposed airport and be responsible for its development, the ALC, cannot be known until those obligations have been satisfied (see Chapter 3 (Volume 1)).</p> <p>The assessment of construction and ground-based operation impacts in the EIS is based on the indicative airport site layout presented in the revised draft Airport Plan and this may be refined through the process of detailed design. To address this, the EIS and revised draft Airport Plan focus on providing more information on key activities and impacts of the Stage 1 development, including: the scale of construction and operation of the proposed development; the location of bulk earthworks and land clearing of areas within the Construction Impact Zone; and development of the Land Use Plan in the revised draft Airport Plan (see Chapter 4 (Volume 1)) to manage future development and environmental conservation on the airport site.</p> <p>In addition, the development of the Environmental Management Framework (as outlined in Chapter 28 (Volume 2b)), the identification of the specific developments to be authorised for the proposed airport in Part 3 of the revised draft Airport Plan (see also Chapter 5 (Volume 1)), as well as the existing Airports Act regulatory framework, provide considerable guidance about how a future airport would be developed and how environmental impacts would be managed.</p>

Theme	Stakeholders	Summary of issue	Response
			<p>The assessment of impacts from aircraft overflight operations are based on proof-of-concept indicative air traffic management designs and flight paths prepared by Airservices Australia. This preliminary airspace design shows that the proposed airport can operate safely within existing airspace arrangements in the Sydney basin. Flight paths will be refined and finalised as part of a comprehensive airspace planning and design process (see Chapters 3 and 7 (Volume 1)). The EIS has been updated to provide more information for the community about the detailed airspace and flight path design process and associated comprehensive community and stakeholder consultation.</p>
Approach to impact assessment (methodology)	Educational institutions	<p>Tailored technical assessment on sensitive receivers</p> <p>Submissions noted that the final EIS should provide a greater assessment of the impact of noise pollution on educational facilities and provide more detailed noise mitigation strategies.</p>	<p>The assessment in the EIS is based on an indicative, proof-of-concept airspace design because the final design has not been determined at this stage. For the purposes of this EIS, the use of indicative flight paths is a valid approach for identifying and assessing the nature and scale of impacts arising from operations of the proposed airport. However, it is acknowledged that there is some public uncertainty about the detail of final flight paths.</p> <p>Further analysis, including detailed consideration of potential noise abatement procedures, would be undertaken as part of the formal airspace and flight path design and assessment process. Chapter 7 (Volume 1) provides a comprehensive description of the proposed process.</p>

Theme	Stakeholders	Summary of issue	Response
Approach to impact assessment (methodology)	NSW Government	<p>Identification of sustainability targets</p> <p>Submissions sought the strengthening and identification of, and commitment to specific sustainability targets in the draft EIS, including principles and/or outcomes for the future development of the airport site.</p>	<p>Chapter 28 (Volume 2b) has been updated to reflect the Australian Government's commitment to early integration of appropriate sustainability considerations into the design, construction and operation of the Stage 1 development. This will ensure that the proposed airport is developed using sustainable processes, standards and materials throughout the life of the project. This will increase efficiency in resource and energy consumption, reduce waste, improve liveability at and around the airport site, and enhance engagement with the local community.</p> <p>A Sustainability Plan would be prepared by the ALC and would include details about how sustainability considerations will be integrated into the design, construction, and operation of the Stage 1 development. In particular, the Sustainability Plan will outline the specific targets that the ALC intends to achieve, how those targets would be achieved, as well as describing how the ALC intends to achieve the required sustainability ratings for the Stage 1 development. These requirements would be based on three key nationally recognised rating systems: the Infrastructure Sustainability (IS) Rating developed by the Infrastructure Sustainability Council of Australia (ISCA); the Green Star Rating developed by the Green Building Council of Australia; and the National Australian Built Environment Rating System (NABERS), which is a national initiative managed by the NSW Office of Environment and Heritage on behalf of the Commonwealth, State and Territory Governments.</p>

13 Noise (aircraft)

Volume 2 (Stage 1 Development), Chapter 10 (Noise (aircraft)) of the draft EIS outlined the assessment of potential aircraft noise impacts associated with Stage 1 operations.

The chapter drew on an aircraft noise assessment undertaken for the proposed airport, which was included as Appendix E1 (Aircraft overflight noise).

13.1 About the submissions on this chapter



Table 13–1 Submissions related to noise (aircraft)

Issue	Number of times the issue was raised	Percentage of total submissions
Aircraft noise – assessment	413	8.3%
Aircraft noise – overflight	2,202	44.3%
Aircraft noise – take-off/landing	85	1.7%

13.1.1 Origin of submissions

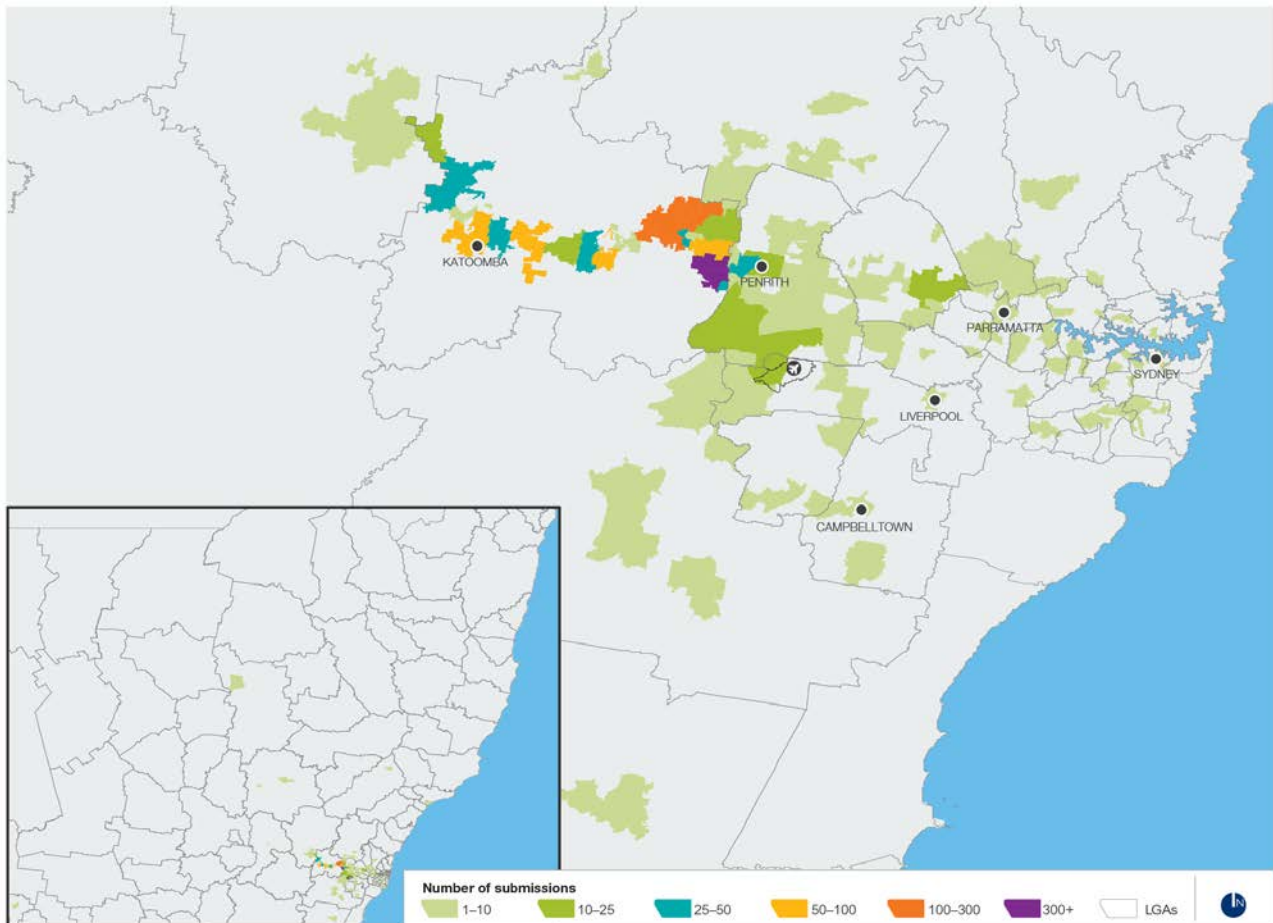


Figure 13–1 Map depicting origin of submissions in relation to Chapter 10 of the draft EIS


13.2 Summary and response

13.2.1 Overarching summary of responses

Aircraft overflight noise and its management are key issues for the proposed airport. Many comments were made regarding aircraft noise issues including the timing of future noise modelling processes and mitigation measures.

Submissions expressed concern about the uncertainties associated with the noise exposure contours presented in the draft EIS. Factors that were said to contribute to these uncertainties included the accuracy of the synthetic flight schedules, the indicative flight paths used, the operational limitations of a continuous descent approach and the absence of specific noise abatement measures.

Submissions stated that the EIS should provide more details about a future noise abatement plan, its timing and the eligibility criteria that would apply. Some submissions commented that the assessment of noise based on noise exposure levels or a noise ‘dose’ did not fully encompass the population potentially affected as it did not consider more sensitive people or noise annoyance.



Some submissions suggested that the Australian Government draft a specific noise mitigation policy for the project including a commitment to an adaptive noise abatement programme.

The key themes from the submissions are summarised under the following headings:

- assessment methodology;
- overflight;
- take-off/landing; and
- noise management.

The submission comments are summarised and addressed in section 13.2.3.

13.2.2 Overarching response to issues raised

In response to submissions comments, Chapter 10 (Volume 2a) of the EIS has been updated to more clearly present information on aircraft overflight noise and its assessment.

Additional information has also been provided on best practice operational measures to mitigate and manage noise, and about relevant factors for framing a possible aircraft overflight noise voluntary acquisition and insulation programme at the proposed airport. The results of the aircraft noise exposure modelling were considered appropriate and were not revised. The updates are presented in Chapter 10 (Volume 2a).

13.2.3 Issues and responses

Theme	Stakeholders	Summary of issue	Response
Assessment methodology	Blue Mountains environmental groups Local councils Senators and Members of Parliament Residents	<p>Increase in baseline monitoring</p> <p>Submissions suggested the noise modelling did not take into consideration that ambient noise levels in the Greater Blue Mountains Area are lower than residential areas or the unique topographical characteristics of the Blue Mountains. Submissions also stated that the specific acoustic characteristics of some areas of the Blue Mountains were not considered or the height of aircraft relative to local ground level.</p> <p>Some submissions disputed statements in the assessment that overflight noise would not be a new source of impact on the GBMWA. Others requested the noise modelling be updated in finalising the EIS to reflect the baseline noise impacts of existing overflights from Sydney (Kingsford Smith) Airport.</p> <p>Submitters suggested that additional monitoring be undertaken on actual overflights in a range of weather conditions to more accurately predict noise impacts.</p>	<p>There is a substantial body of research which indicates reaction to intermittent noise such as aircraft (or trains) does not depend on the level of background noise, provided the maximum noise level (L_{Amax}) of the noise source is more than about 10 dBA above the background noise level. This is likely to be the case in all areas where aircraft overflight noise is assessed in the EIS. Therefore, it is not necessary or appropriate to consider background noise levels in the assessment of aircraft overflight noise impacts.</p> <p>The local ground level has been incorporated in all noise modelling conducted for the EIS using the most accurate available calculation procedures which are incorporated into the Integrated Noise Model (INM). Nevertheless, when aircraft are at a significant height, meteorology and to some extent, local topography will have an effect (in the order of several decibels) on noise levels heard on the ground. For this reason, the GBMWA analysis included analysis of both noise levels from aircraft overflights and the number of flights experienced per day.</p> <p>Monitoring of existing overflights in this area could provide some improvement in the accuracy of noise levels at the specific monitoring locations, but the size of the area makes comprehensive coverage impractical and in any case, monitoring could only be performed at locations where there are existing overflights, thus limiting a broader application to other areas in the GBMWA.</p> <p>Figure 26-8 (Volume 2a) illustrates the existing density of flights from Sydney Airport over the Blue Mountains based on 2014 data. It shows large areas of the Blue Mountains are currently overflown by about one flight per day, rising to about 10 per day on specific tracks and almost 50 flights per day on one track to the south-east. For the reasons outlined above, it is not considered appropriate to measure the noise baseline or to revise the modelling or assessment presented in the draft EIS.</p> <p>Airservices Australia currently provides a service (WebTrak) available to the public via its website that uses information from air traffic control radars to monitor aircraft at major Australian airports which are within 50 kilometres of the airport and up to 30,000 feet above mean sea level (AMSL). Aircraft noise data are collected and reported daily from noise monitors strategically located around communities close to major Australian airports and provided on the Airservices Australia website.</p>

Theme	Stakeholders	Summary of issue	Response
Assessment methodology	Local councils	<p>Designing flight paths to minimise community noise impacts</p> <p>Submissions stated that minimising noise impacts on the community should have been a key consideration in determining the indicative flight paths presented in the EIS.</p>	<p>The main consideration when designing the preliminary flight paths was air traffic management, particularly how flight paths would interact with aircraft operating to or from Sydney (Kingsford Smith) Airport and to enable a Western Sydney Airport to operate independently to Sydney Airport. The conceptual flight path designs were not developed to consider all potential noise abatement opportunities. The future detailed airspace and flight path design process will assess the environmental impacts of conceptual air traffic management options including opportunities to minimise potential noise and amenity impacts on potentially affected communities. Noise abatement procedures developed through this design process will be recorded in the airport's Noise Operational Environmental Management Plan prior to the commencement of operations. This record will serve as a baseline for any future proposed amendments to the aircraft overflight noise abatement procedures and noise management measures developed for the proposed airport. The formal airspace design process will be conducted in line with international and domestic standards and guidelines, including those developed by Airservices Australia and ICAO for managing aircraft noise.</p>
Assessment methodology	Blue Mountains environmental groups Local councils Residents	<p>Assessment of community annoyance</p> <p>Some submissions questioned the appropriateness of the assessment methodology in that it does not consider the subjective impact of overflight noise on an individual, instead of a broad scale assessment. Submitters stated that the introduction of a new 24-hour international airport at a greenfield development site introduces a risk of widespread and prolonged community annoyance. Some submissions suggested that the EIS include a quantitative assessment of community annoyance from overflight noise.</p>	<p>The assessment process undertaken for the EIS, including noise modelling and impact assessment criteria, is consistent with other comparable and contemporary environmental impact assessments and includes measures considered to be best practice to communicate the complex nature of aircraft noise.</p> <p>Most data on subjective reaction to aircraft noise is based on studies of communities exposed to existing noise. There is evidence that the reaction of people exposed to an increase in aircraft noise — or to new noise imposed on an existing community — is higher than would be expected from these studies. This concept has been recognised in Chapter 10 (Volume 2a). While some estimates can be made of the level of reaction to new noise (in terms of, for example, the proportion of people "highly annoyed"), these are subject to considerable uncertainty. Current practice is to provide a suite of measures of noise exposure, designed to be meaningful to both residents and decision-makers and to allow all stakeholders to come to an understanding of what the noise environment will be.</p>

Theme	Stakeholders	Summary of issue	Response
Assessment methodology	Aviation industry Blue Mountains environmental groups Local councils Residents	<p>Use of ANEC/ANEF maps in the EIS</p> <p>Submissions questioned the use of the ANEF/ANEC diagrams to demonstrate the potential area of overflight noise impacts. Submitters raised concern that these methods do not necessarily indicate the full scale of noise impacts but are more suited to land use planning. One submission expressed concern that the period between 7.00 pm to 7.00 am did not appear to be recognised in the calculation of the ANEC contours, as required by AS 2021 and convention.</p>	<p>The EIS uses a number of methods to communicate the potential scale of aircraft overflight noise that could result from the proposed Western Sydney Airport. The EIS includes ANEC, N60/70, 90th percentile N60/70, single-event diagrams as well as population exposure estimates. Additional descriptors were developed and incorporated into the health risk assessment. While no particular emphasis has been placed on ANEC versus the other descriptors, it is acknowledged in a number of places in the EIS that the ANEF is the basis for land use planning controls and mitigation actions in accordance with AS 2021 and therefore has particular relevance to the community conversation about the effects of overflight noise.</p> <p>The ANEC values presented in the EIS were determined using the standard method of calculation, which applies a weighting factor of 4 for the night period, defined as 7.00 pm to 7.00 am (i.e. each noise event during this period is counted as four noise events). The use of a different definition of the night period for other noise descriptors in the EIS has not affected the method of calculation for ANEC.</p>
Assessment methodology	Local councils	<p>Aircraft passenger load assumptions</p> <p>Submissions stated that the forecast passenger loads per aircraft should be justified because they have the potential to understate the number of aircraft movements and, in turn, likely noise impacts.</p>	<p>The passenger and aircraft movement forecasts and many other variables used in the EIS are based on assumptions about future aircraft types, aircraft occupancy rates, technology use and air traffic demand forecasts. While these assumptions are based on accurate sources available to the EIS project team and best-practice methodology, the realisation of these assumptions depends on global events and trends, business decisions of airlines and other industry participants, decisions by international organisations such as ICAO, and other factors which are outside the control of any airport developer or operator.</p> <p>In terms of noise exposure forecasts, it is important to note that the traffic schedules used in the assessment represent a typical busy day and therefore the number of movements is greater than an annual average for the relevant assessment scenario. For example, for Stage 1 operations the estimated 63,000 movements per year represents an annual average of approximately 173 movements per day, compared with 198 movements per day as modelled from the schedule. This provides some conservatism in estimates of noise exposure.</p>

Theme	Stakeholders	Summary of issue	Response
Assessment methodology	<p>Sydney Airport Community Forum</p> <p>Aircraft Noise Ombudsman</p> <p>Conservation groups</p> <p>Local councils</p> <p>Residents</p>	<p>Noise metrics and communicating information about aircraft noise impacts</p> <p>Submissions stated that the choice of noise metrics and assessment scenarios are generally appropriate for defining the extent of areas potentially to be affected by noise from Stage 1 airport operations. The use of 60 dBA as a threshold criteria for assessing noise in urban areas was considered suitable; however, submissions considered lower noise threshold criteria would have been useful for assessing amenity impacts in quiet locations such as the Blue Mountains.</p> <p>Submissions stated that the EIS should take into account the findings of the Senate report <i>Falling on Deaf Ears</i> and present a clear and comprehensive picture of likely aircraft noise impacts. Expressing concern that aspects of the EIS presentation could be incorrectly interpreted, it was contended that noise exposure contours are only a partial indicator of annoyance caused by aircraft noise and potential shortcomings in relying on them include the following factors:</p> <ul style="list-style-type: none"> • the effects of aircraft noise extend beyond depicted noise contours; • a concentration of low noise events can result in similar levels of annoyance as a small number of high noise events; and • aircraft noise annoyance is affected by factors such as expectations, notions of fairness and an understanding of whether the noise is avoidable. <p>Submissions stated that the dBA scale is an inadequate measure when applied to aircraft noise because it eliminates extreme high and low sound frequencies. It was suggested that the dBC scale should have been used instead to capture the low frequency sound associated with aircraft operations.</p>	<p>Consistent with the best practice communication of aircraft noise impacts, the EIS describes noise using a range of descriptors. The complexity of presenting information about how individuals will react to predicted aircraft noise levels is acknowledged. Chapter 10 (Volume 2a) has been updated to include additional information to assist interpretation of the noise exposure data presented.</p> <p>It is important to note that while Chapter 10 (Volume 2a) presents the outcomes of the aircraft noise exposure modelling, the impacts of this noise exposure on communities and individuals are discussed primarily in other chapters of the EIS addressing health and social impacts and their associated technical reports (Chapter 13 (Volume 2a) and Appendix G (Volume 4); and Chapter 23 (Volume 2a) and Appendix P1 (Volume 4) of the EIS, respectively). Noise exposure information for the Greater Blue Mountains, including 50 dBA and 55 dBA maximum noise level contours for single event flyovers, are presented in Chapter 26 (Volume 2a).</p> <p>The dBA scale represents a standard method of assessing the loudness of environmental noise, taking account of the response of the human ear to sound at different frequencies. It is an approximation, and is most accurate for sounds whose level is relatively low. The dBA scale is comparatively easy to understand, and has been used almost exclusively in studies relating aircraft noise levels as well as reporting noise from existing operations.</p> <p>More accurate units exist, including units known as “phons” that are derived from psychoacoustic testing. However, these are very complex, are not readily understood by non-acousticians, and have not been used in studies of reaction, or of health impacts. The dBC scale is another approximation to a loudness measure, but is not considered to have any significant advantage over the dBA scale for assessment of aircraft noise while having the same disadvantages as “phons”.</p>

Theme	Stakeholders	Summary of issue	Response
Assessment methodology	Aviation industry Aircraft Noise Ombudsman Blue Mountains environmental groups Senators and Members of Parliament Residents	<p>Communicating technical information</p> <p>Submissions requested more, easily understood explanations and diagrams of technical information used to convey aircraft noise impacts.</p> <p>Further clarification was sought about:</p> <ul style="list-style-type: none"> the terms ‘average day’, ‘average night’ and dBA; information demonstrating reductions in aircraft noise, including Figure 10-3 (now Figure 10-4 in the finalised EIS); and information on dBA scales and comparison to noise sources easily understood by all. 	<p>Figure 10-1 (Volume 2a) provides information on the dBA noise scale and the relative loudness of common noise sources for reference. Figure 10-4 provides information showing the historical trend in noise reduction that has been achieved over the past several decades in airframe design and emission reduction technology. Both of these images have been updated in the EIS to aid their interpretation by the reader. Chapter 10 (Volume 2a) also identifies the level of noise reduction mandated by ICAO for new civil aircraft built after 2017. The chapter has been amended to further explain the purpose and limitations of the noise descriptors used.</p> <p>The identified terms have been added to the EIS glossary. The 90th percentile N60/70 measure has been used in the EIS to show the variation in the number of noise events between an ‘average day’ and a day when there would be a particularly high number of aircraft movements.</p>
Assessment methodology	Senators and Members of Parliament Residents	<p>Uncertainty about flight altitudes and noise impact</p> <p>Submissions expressed concern that aircraft noise calculations had not appropriately taken into account ground level relative to aircraft altitudes.</p>	<p>The Integrated Noise Model noise exposure calculation methodology takes account of topography, meaning the data shown in the EIS appropriately represent ground level noise exposure values at all locations. Generally, unless otherwise stated, aircraft altitudes presented in the EIS represent height above sea level. A detailed response to comments on aircraft altitudes is provided in Section 10 of this submissions report.</p>

Theme	Stakeholders	Summary of issue	Response
Assessment methodology	Residents Local councils	<p>Residual uncertainties in the assessment</p> <p>Submissions suggested that, due to residual uncertainties in the assessment, further information and assessments are required before stakeholders can reach an informed view on the potential scale and significance of aircraft overflight noise impacts associated with the proposed airport. It was suggested that the use of indicative flight paths invalidates the noise modelling and any assessment of community impacts. Submitters stated that the final flight paths should be presented in the EIS for all stages of the proposed airport's development and only community consultation/voting should be able to change them.</p> <p>Councils expressed concern that the Airport Plan could be varied and future airport master plans could be prepared which propose new flight paths. Greater certainty was sought about potential noise impacts in respective local government areas.</p>	<p>As noted in Chapter 7 (Volume 1), environmental assessments of airport proposals that involve the introduction of new operating procedures are commonly based on indicative flight paths. The use of indicative airspace arrangements is particularly relevant to the current proposal given the length of time before airport operations would commence. Designing air traffic management arrangements for a new airport is a large, resource intensive and complex technical task that takes several years to complete. In these circumstances it would not be prudent to 'lock in' such arrangements prematurely.</p> <p>The indicative flight paths assessed in the EIS provide an appropriate and contemporary basis for assessing the potential extent and intensity of impacts associated with introducing aircraft operations at a Western Sydney Airport. It was never intended that the draft flight paths would be implemented without further analysis, including detailed consideration of potential noise abatement opportunities, and community and other stakeholder consultation.</p> <p>The future airspace design process described in Chapter 7 (Volume 1) will allow the final airspace arrangements to better reflect the operating environment closer to the time the airport opens, taking into account factors such as new aviation technology and further detailed assessments of environmental impacts. This process will involve extensive public engagement, including the establishment of a community and stakeholder reference group, which will provide a forum for community and stakeholder representatives to exchange information with technical experts and others about the proposed flight path options and their impacts. It is expected that membership of the group would include local government representation.</p> <p>Any proposal to change established flight paths through a future airport major development plan would be subject to the requirements of the Airports Act, the EPBC Act, other relevant legislation and public consultation.</p>

Theme	Stakeholders	Summary of issue	Response
Assessment methodology	Residents	<p>Noise tool on the website</p> <p>Some comments were made about the noise modelling tool available on the project website and that the information provided by the tool could be perceived as misleading as it did not provide details on noise levels below 60 dBA and showed quite different numbers of overflights for houses only a few streets apart. It was suggested that residents in these houses would experience similar levels of aircraft noise, even if some may not have flights directly above them. Other comments suggested that information presented in the noise tool was hard to understand.</p>	<p>Noise levels from aircraft at high altitudes, which will generally result in noise less than 60 dBA, are subject to greater modelling uncertainty than higher noise levels that would generally be experienced closer to the airport. For this reason, in areas subject to these relatively low noise levels (i.e. <60 dBA), it is considered more important to understand the number of events experienced, rather than their absolute noise levels. The EIS has been updated to clarify that the contour maps produced do not mean that aircraft noise will not be audible at locations outside the indicated contours and that individual noise annoyance is subjective.</p> <p>The use of “number above” noise metrics has proved to be useful for residents and others in understanding their potential future noise environment, and their use has become standard in Australia. However, like all metrics, some understanding is required for their interpretation. For example, in an area where exposure is dominated by one specific type of operation, there will be a point where the noise level from that operation drops just below 70 dBA. At that point there will be a large reduction in the number of events shown as exceeding 70 dBA, or N70, although the actual noise level of those events may only be marginally different. For this reason, it is necessary to consider a number of metrics including “number above” and maximum noise levels, to gain a complete understanding of the potential noise environment.</p>
Assessment methodology	Local councils Residents	<p>Use of the Integrated Noise Model and verification of noise data</p> <p>Submissions supported use of the INM for calculating aircraft noise forecasts; however, caution was expressed about the use of software to calculate short-term noise levels (presented as maximum noise levels and Number Above values). Clarification was sought as to whether user defined site-specific atmospheric absorption values had been used instead of the INM default conditions when calculating maximum noise levels. It was also suggested that not enough information was provided to verify the reliability of the noise level data used and that the INM has been shown to underestimate noise levels for some aircraft operations. Submissions questioned whether the INM had been validated for calculating maximum noise levels based on the Sydney Airport Flight Path and Noise Monitoring System.</p>	<p>Source noise levels used in the INM are based on levels measured at standard positions during certification trials for each aircraft type, together with corrections for factors such as shielding by the fuselage that are based on extensive measurements of representative types of aircraft. Measurements include a number of thrust settings and levels for other settings are interpolated within the program. The INM is developed and maintained by the U.S. Federal Aviation Authority and is the standard program used worldwide for calculation of aircraft noise levels.</p> <p>Where data are available for a specific location, it is sometimes possible to adjust INM’s calculated noise levels using site-specific correction factors related to local conditions or actual flight procedures. However, these corrections are limited to the location at which measurements have been made. It would not be valid, for example, to apply corrections derived from monitoring at Sydney Airport to predictions for a Western Sydney Airport.</p>

Theme	Stakeholders	Summary of issue	Response
Assessment methodology	Local councils Residents	<p>Aircraft types used in modelling</p> <p>The peer review conducted on behalf of Western Sydney councils stated that the selected aircraft types included in the modelling are considered appropriate. The modelling was considered to have adopted a conservative approach by assuming all future aircraft operations are characterised by the noise emissions from existing aircraft – aircraft are generally expected to produce lower noise emissions in the future.</p> <p>Submissions expressed concern about the use of noisy freight aircraft at the proposed airport and requested that the noise estimates should be recalculated to account for older aircraft models.</p>	<p>The comments made in the peer review are noted.</p> <p>Approximately 70 per cent of freight is carried on passenger aircraft and dedicated freight aircraft are often the same type as those used for passenger services. For modelling purposes and to provide a worst-case scenario, the EIS assumes dedicated freight aircraft are older aircraft types. In particular, the noise modelling includes 10 movements per day by Boeing 747-400 freight aircraft (or aircraft with equivalent noise emissions) for Stage 1 operations and 38 movements per day by these aircraft even in 2063. These assumptions are considered to be conservative.</p> <p>Given the conservative assumptions used in the EIS modelling, including the use of current aircraft types, there is no need to recalculate noise exposure levels for the EIS.</p>
Assessment methodology	Senators and Members of Parliament Community groups	<p>ICAO Balanced Approach to Aircraft Noise Management</p> <p>Submissions stated that the draft EIS was inconsistent with Airservices Australia's stated objective of alignment of actions and processes to the ICAO Balanced Approach.</p>	<p>The Department of Infrastructure and Regional Development (DIRD) is the proponent for this EIS. Indicative flight paths were developed for DIRD by Airservices Australia for a specific purpose – to inform a preliminary assessment of the airspace implications of introducing operations at the proposed airport. The modelling and assessment focussed on the safety and efficiency of operations and noise abatement was not a key consideration. The preliminary design and assessment did not constitute a formal airspace design process and consequently it was not necessary for the ICAO Balanced Approach to be explicitly referenced.</p> <p>As acknowledged in the EIS, the preliminary airspace design has not been developed to a level of detail necessary for implementation. Further analysis, including detailed consideration of potential noise abatement procedures, would be undertaken as part of the formal airspace and flight path design process. Chapter 7 (Volume 1) provides a comprehensive description of the process. To the extent relevant, the ICAO Balanced Approach and <i>Airservices commitment to aircraft noise management</i> will guide the design process and the development of noise mitigation measures. This will include extensive community and stakeholder consultation and engagement.</p>

Theme	Stakeholders	Summary of issue	Response
Overflights	Senators and Members of Parliament Local councils Residents	<p>Noise impacts of a Point Merge system</p> <p>The independent review of the draft EIS undertaken for Western Sydney councils noted that the procedures inherent to the Point Merge system facilitate aircraft operations that minimise noise generation and have been implemented with positive results at several locations worldwide. Submissions claimed that, while a Point Merge system appears to offer some noise benefits related to the use of a continuous descent approaches, the merge point conversely results in concentrated impacts directly beneath the merge point. Submissions stated that the indicative Point Merge unfairly burdens one part of the population, particularly the communities of Blaxland, Glenbrook, Springwood, Warrimoo, Lapstone, Penrith and Blacktown, and that alternative merge point locations should have been considered.</p> <p>An assessment of noise impacts based on alternative merge point locations and configurations (e.g. multiple merge points) and alternative arrival management procedures was suggested.</p>	<p>The Australian Government has announced that the airspace design to be implemented for Western Sydney Airport will not include a single merge point over Blaxland.</p> <p>Based on initial design assumptions, the indicative flight paths identify a nominal location of the merge point to the north-west of the airport site, roughly over Blaxland in the Blue Mountains. Section 7.6.3 (Volume 1) indicates that this nominal merge point could move approximately three nautical miles north-east or south-west without disrupting the preliminary airspace design developed by Airservices Australia. Track density plots for these alternative points (Appendix E1 (Volume 4)) show that the number of aircraft movements over Blaxland would be reduced compared to the nominal merge point used for modelling noise exposure; however, impacts on other areas within the Blue Mountains would correspondingly change. Other, as yet untested, merge point locations may be possible. If operationally feasible, the use of separate merge point locations for Runway 05 arrivals and Runway 23 arrivals may provide a means of spreading noise more equitably.</p> <p>The Point Merge system and Performance Based Navigation standards used in the preliminary airspace and flight path design aim to allow aircraft to fly more accurately defined flight paths. This approach results in a greater concentration of aircraft along flight paths closer to the airport site compared to traditional navigation methods, particularly for aircraft arrivals.</p> <p>No decisions have been made regarding the location of final flight paths or which system would be adopted for managing aircraft arrivals at the proposed Western Sydney Airport. The future detailed airspace and flight path design process will consider alternative aircraft management system options, noise respite arrangements and other noise abatement opportunities. A number of options for sequencing aircraft arrivals will be rigorously tested before final arrival routes are determined.</p> <p>Additional information about the future airspace design process is provided in Section 7.8 (Volume 1). The principles that will apply to the airspace and flight path design process seek to ensure that overflights of residential areas are avoided to the maximum extent possible and that aircraft will not converge through a single merge point over any single residential area.</p>

Theme	Stakeholders	Summary of issue	Response
Overflights	Blue Mountains environmental groups Residents Local councils	<p>Noise impacts on the GBMWHA</p> <p>Submissions raised concerns about the impacts from overflight noise on the GBMWHA, including its World Heritage status. Submissions disputed the finding in the draft EIS that aircraft overflight noise would not have a significant impact on the World Heritage values and other values of the property. Concerns were raised that overflight noise impacts could have a significant impact on the tourism, natural soundscape, amenity and economy of the Blue Mountains.</p> <p>Submissions commented that the noise produced by the current flyover of aircraft from Sydney Airport at heights of about 15,000 feet is intrusive and that the EIS should consider the cumulative effect of these current operations with those forecast at the proposed airport. Submissions stated that the draft EIS had omitted consideration of the effects of noise on the outstanding universal value of the GBMWHA.</p> <p>Submissions also expressed concern that aircraft movements and associated noise would be concentrated over the GBMWHA in response to community objections about the overflight of residential areas.</p> <p>Submissions raised concern about the impacts from overflight noise on biodiversity in the GBMWHA and other key environmental areas. It was contended that observations of one species' reaction to aircraft noise could not be extrapolated to another and that the American studies of bird species cited in the draft EIS could not be used as an indicator of impact on Australian native fauna. Additional assessments to determine the impact of overflight noise on plant growth and wildlife were suggested.</p>	<p>The EIS considers the World Heritage, National Heritage and other values of the GBMWHA and concludes that Stage 1 operations would not result in a significant adverse impact on tourism or the economy of the GBMWHA. Chapter 26 (Volume 2a) contains a detailed assessment of the impacts of indicative airport operations on the recognised World Heritage values and integrity of the GBMWHA as described in the property's Statement of Outstanding Universal Value. It also assesses the effects of aircraft overflights on other complementary values of the GBMWHA identified in the GBMWHA Strategic Plan, as well as impacts on tourist, recreation and Indigenous cultural uses.</p> <p>Aircraft approaching and departing the proposed airport would be at lower altitudes and would occur in larger numbers than those currently flying over the GBMWHA from Sydney Airport. The noise impact of these operations is likely to be more intrusive than current civil aircraft overflights, but modelling indicates noise levels from overflights would generally be below 55 dBA. The cumulative effects on the GBMWHA from current Sydney Airport aircraft operations and those forecast at the proposed airport are considered through the depiction of flight densities (Chapter 26 (Volume 2a)).</p> <p>A preferred operating strategy and potential noise abatement procedures for the proposed airport have not been determined at this stage. Identification and testing of alternative modes of operation will be undertaken as part of the detailed airspace design process having regard to the safety of all aircraft, other airspace users, aircraft fuel consumption and opportunities to minimise noise and amenity impacts on communities and other noise sensitive environments. The impacts of operations on natural areas including the GBMWHA will be considered as part of the future airspace design.</p> <p>There would be no direct impacts on biodiversity from operation of the proposed airport. The potential impacts of aircraft noise on fauna are addressed in Section 26.5.2.1 (Volume 2a). Very low flying aircraft can result in a variety of faunal response to noise exposure. This typically occurs at noise levels above 65 dB, which are unlikely to be experienced over the vast majority of areas of the GBMWHA. Additional noise exposure from flights operating from the proposed airport would not result in a loss of biodiversity or interfere with the ecological viability and capacity for ongoing evolution of species within the GBMWHA.</p>

Theme	Stakeholders	Summary of issue	Response
Overflights	Senators and Members of Parliament NSW Government Community groups Residents	<p>Acceptability of maximum noise levels</p> <p>Submissions stated that the possibility of exposing some local residents to noise levels over 85 dBA from the departure of long-range Boeing 747s was unreasonable. Submissions also expressed concern that frequent overflights at noise levels up to 70 dBA would change residential amenity by interrupting conversations, sleep and daily activities such as gardening and outdoor entertaining.</p> <p>It was suggested that restrictions should be placed on the age and types of aircraft that would be permitted to operate at the proposed airport, particularly at night, to reduce noise impacts on residents in St Marys, Erskine Park and other areas affected by overflights at night.</p> <p>One submission stated that the predicted 55 dBA level of aircraft noise in the Blue Mountains was well above the European annoyance level specified by the World Health Organization, taking into account a 10 dBA penalty for night time flights. Another submission stated that the U.S. Federal Aviation Authority sets a maximum aircraft noise limit of 65 dBA for residential communities, which should have been acknowledged in the draft EIS.</p>	<p>The Stage Length 5 (or long range) Boeing 747 departures included in the noise assessment of Stage 1 operations represent the worst-case aircraft operations at the proposed airport. As noted in the EIS, these aircraft are gradually being phased out of the passenger fleet by commercial airlines and their inclusion is a conservative modelling assumption. Section 10.5.3 (Volume 2a) indicates that there are less than 10 existing residences within the 85 dBA L_{Amax} contour for these events, located to the south-west of the airport site. Mitigating noise impacts in the highest noise exposure areas close to the airport site would be a key objective of any noise amelioration programme developed for the proposed airport. The specifications and eligibility criteria for a noise amelioration programme would be considered as part of the future airspace and flight path design process.</p> <p>Noise events above 70 dBA would likely be considered to be acoustically intrusive in passive recreation areas and may disturb people engaged in outdoor activities at home for the duration of the aircraft overflight. Noise levels above 70 dBA would require increased voice effort, but not shouting, for effective communication.</p> <p>The ICAO <i>Balanced Approach to Aircraft Noise Management</i> states that operating and other restrictions on aircraft should only be used after other noise management approaches have been exhausted. Based on the findings of this EIS and subject to flight path design, there are no plans to place restrictions on the types of aircraft that would be allowed to operate at the proposed airport.</p> <p>The 55 dBA maximum noise levels shown in the EIS are not directly comparable to the noise annoyance criteria used by the World Health Organization (WHO), which are based on a measure of continuous equivalent noise. Similarly, the maximum noise levels in the EIS cannot be directly compared to the U.S. Federal Aviation Authority's 65 dBA Day Night Level which is an average cumulative noise exposure measure, similar to the ANEC/ANEF. The WHO 55 dBA equivalent noise level (L_{Aeq}) approximates an ANEC/ANEF value of 20, while a 65 dBA L_{Aeq} level would approximate ANEC/ANEF 30. AS 2021 recognises ANEC/ANEF 25 (or 60 dBA $L_{Aeq,24-hour}$) as being the "unacceptable" limit for new residential housing.</p>

Theme	Stakeholders	Summary of issue	Response
Overflights	Community groups NSW Government Local councils	<p>Interpretation of noise impacts</p> <p>Submissions claimed that the draft EIS discounted the noise effects of 100 aircraft overflights per day at Blaxland (under the indicative merge point) and in areas of Western Sydney. Submissions observed that the EIS noise assessment only examined the first five years of airport operations and therefore did not represent the full impact of the airport beyond the proposed Stage 1 development.</p>	<p>The EIS does not downplay or discount the impacts of aircraft overflight noise. Information on the predicted extent, intensity and frequency of noise exposure is presented objectively having regard to the outcomes of the noise modelling.</p> <p>The assessment of potential environmental impacts in the EIS is based on a particular scale of infrastructure development and a corresponding level of aviation activity. The scale of development adopted for the EIS is the Stage 1 development as outlined in the revised draft Airport Plan. The Stage 1 development incorporates a single runway and support facilities to cater for an operational capacity of approximately 10 million annual passengers and approximately 63,000 air traffic movements per year. The Stage 1 development would provide for anticipated demand for the first five years of operations, although this level of activity could be reached earlier or later than this depending on many variable factors affecting demand.</p> <p>As detailed in Chapter 3 (Volume 1), major airport developments beyond the scope of the Stage 1 development do not form part of the development outlined in the revised draft Airport Plan and would be subject to additional approvals in accordance with the Airports Act.</p> <p>The EIS recognises that approval of the Stage 1 development would directly facilitate growth of the proposed airport over time and this has the potential to increase the level of impacts associated with the airport, particularly the impact of aircraft noise exposure on surrounding communities. A strategic level assessment was undertaken of the impacts arising from the long term development (which could occur around 2063). The EIS acknowledges the uncertainty in predicting impacts that may occur nearly 50 years into the future and the additional approval requirements for all future development.</p> <p>The EIS also assesses aircraft noise impacts for a 2050 scenario where the single runway, with additional airport infrastructure, is operating at or near full capacity of around 37 million annual passengers or approximately 185,000 aircraft movements per year. This scenario allows an assessment of the extent of noise exposure and associated potential impacts from the maximum capacity of the single runway.</p> <p>No decisions have been made regarding the location of final flight paths or which system would be adopted for managing aircraft arrivals at the proposed Western Sydney Airport. The future detailed airspace design process will consider alternative aircraft management system options, noise respite arrangements and other noise abatement opportunities. A number of options for sequencing aircraft arrivals will be rigorously tested with comprehensive community consultation before final arrival routes are determined.</p> <p>Additional information about the future airspace design process is provided below and in Section 7.8 (Volume 1).</p>

Theme	Stakeholders	Summary of issue	Response
Overflights	Residents Local councils Senators and Members of Parliament	<p>Providing a true representation of noise levels</p> <p>Submissions expressed concern about the impacts from overflight noise on residential areas, with a large number of submissions concerned about the concentration of aircraft overflights over the Blue Mountains, Blacktown and Horsley Park. It was stated that the noise levels outlined in the draft EIS did not provide a true representation of future noise levels and that actual noise levels would be significantly higher. Some submissions suggested that trials should be undertaken where aircraft travel along the proposed flight paths to better understand the extent of any overflight noise impacts prior to the project progressing.</p> <p>Submitters stated that more information should have been provided in the draft EIS about the level and duration of aircraft noise events and the distance noise would travel from overflights.</p>	<p>The assessment process undertaken for the EIS, including the choice of noise model and impact assessment criteria, is consistent with other contemporary environmental assessments and is considered to provide an accurate reflection of predicted noise levels for the modelled flight paths. As noted above, the INM is developed and maintained by the U.S. Federal Aviation Authority and is the standard program used worldwide for calculation of aircraft noise levels.</p> <p>The location of the airport site and the orientation of the runways are two key determinants (among others) of the flight paths taken by aircraft. The preliminary flight paths depicted in the EIS were developed for a specific purpose – to illustrate that the airspace at Western Sydney Airport could be operated safely and independently of other airports in the Sydney basin. As noted in Chapter 7 (Volume 1), the Australian Government has announced that the airspace design to be implemented for the proposed airport will not converge arriving aircraft at a single point over the community of Blaxland.</p> <p>The determination of final flight paths will be subject to a future detailed design process. Flight paths and operating procedures will be optimised to minimise noise and will be subject to further consultation and an EPBC Act referral prior to the airport becoming operational.</p> <p>It is not considered cost-effective or logistically feasible to programme overflights in sufficient numbers of areas to enable a “sampling” of noise in the manner indicated. Airservices Australia currently provides a service (WebTrak) available to the public via its website that collects and assimilates daily noise data from noise monitors strategically located around communities close to major Australian airports including Sydney (Kingsford Smith) Airport.</p> <p>Maximum noise level contours presented in Chapter 10 (Volume 2a) show the spread of aircraft noise exposure around the indicative arrival and departure flight paths modelled. An additional figure (Figure 10-2) has been included in Chapter 10 (Volume 2a) that depicts the duration and intensity of a typical single aircraft overflight.</p>

Theme	Stakeholders	Summary of issue	Response
Overflights	Residents Local councils	<p>Location of flight paths and noise impacts</p> <p>Submissions outlined issues related to general health impacts, sleep deprivation, learning and development in children, decreased tourism and loss of scenic lifestyle values, particularly for communities in the Blue Mountains region. Some submissions expressed opposition to increased overflight noise of any degree; however, many suggested that overflight noise impacts could be minimised by modifying the proposed flight paths and reviewing the proposed Point Merge system. Many submissions suggested that there had already been an increase in the number of flights across the Blue Mountains and that aircraft are flying at a lower altitude than in the past.</p> <p>Concern was expressed about the noise effects of aircraft arrivals in the 23 direction over suburbs in the Blacktown LGA. The number of flights and consequent noise levels in these areas were considered likely to change peoples' use of outdoor areas and disturb residents who choose to sleep with windows open.</p>	<p>The location of the airport site, the orientation of the runways and other airspace uses and requirements will be some of the key determinants of the flight paths for the proposed airport. Health impacts are considered in the Health Risk Assessment contained in Chapter 13 (Volume 2a) and Appendix G (Volume 4). Overflight noise is addressed in Chapter 10 (Volume 2a) and Appendix E1 (Volume 4). Impacts of aircraft overflights and noise on tourism and scenic values in the Blue Mountains are also considered in Chapter 26 (Volume 2a). Based on the preliminary airspace design, the altitude of flights over the Blue Mountains would range from 5,000 ft (in areas close to the airport site) to above 10,000 ft above sea level. While aircraft overflights would be audible in some areas, the majority of areas would be largely unaffected by aircraft noise impacts.</p> <p>More than a quarter of Sydney Airport's daily traffic flies over the Blue Mountains. Flight monitoring by Airservices Australia shows no evidence that aircraft departing Sydney (Kingsford Smith) Airport are operating at lower altitudes than in the past. Any increase in the number of flights across the Blue Mountains would reflect the general increase in aircraft movements at Sydney Airport and is not the result of a change in operational procedures.</p> <p>The determination of arrival and departure flight paths will be subject to a future detailed design process. This process will seek to avoid the overflight of residential areas to the maximum extent possible and, where this cannot be achieved, aim to ensure that residential areas overflown by aircraft arrivals are not also overflown by aircraft departing the proposed airport. Flight paths and operating procedures will be optimised to minimise impacts upon communities in the surrounding localities (including suburbs in the Blacktown LGA) and will be subject to further consultation and EPBC Act referral prior to being implemented.</p>
Overflights	Local councils	<p>Runway alignment</p> <p>Submissions stated that the wider community needs assurance that the proposed runway alignment will deliver the best noise reduction outcomes.</p>	<p>The 1997-1999 Second Sydney Airport EIS assessed three runway alignment options for the development of the airport site. Government planning has proceeded on the basis that an airport would be developed on the 05/23 degree runway alignment depicted in Option A from the previous EIS. As noted in Section 2.6.7 (Volume 1), one of the key factors that led to Badgerys Creek being selected as the preferred site for a greenfield airport is that the site and its surrounds, including areas along the proposed 05/23 runway alignment, have been protected from urban and noise-sensitive development.</p>

Theme	Stakeholders	Summary of issue	Response
Overflights	Educational institutions NSW Government NSW Teachers Federation Community groups Residents	<p>Impacts on learning capability</p> <p>Submissions raised concern about the impacts from overflight noise on children and educational facilities across Western Sydney and the Blue Mountains, particularly schools. Submitters stated that overflight noise could impact on the learning capability, motivation and concentration of students and that the draft EIS should have assessed this issue in more depth.</p> <p>Submissions requested more information on the criteria for assessing acceptable noise levels and what mitigation measures would be considered for educational facilities, particularly schools.</p>	<p>The EIS identifies that there could be a small increased risk of learning and cognitive developmental effects on children at a small number of schools resulting from aircraft overflight noise. These potential impacts are discussed in detail in the community health risk assessment presented in Appendix G (Volume 4). Hazard quotients are presented that represent levels above which learning and cognitive developmental effects could occur. In most cases hazard quotients indicated that the proposed airport would not pose an unacceptable risk to learning and cognitive development. The findings of the community health risk assessment would need to be confirmed based on the final flight paths for the airport development.</p> <p>Australian Standard 2021 is the primary guide for determining the level of mitigation that should be applied to classes of infrastructure addressed by the standard (including schools). The Government's policy on property acquisition and noise insulation for the proposed airport would be announced during the detailed airspace and flight path design process. This policy would consider opportunities to implement noise amelioration measures for the possible insulation of educational facilities exposed to high aircraft noise levels. Such measures would be considered in the context of the broad suite of potential noise mitigation approaches that could be adopted. Noise amelioration measures and noise abatement procedures developed during the airspace and flight path design process will be recorded in the ALC's Noise Operational Environmental Management Plan.</p>
Overflights	Residents Community groups Local councils Senators and Members of Parliament	<p>Sleep disturbance</p> <p>Submissions expressed concern about the impacts of night time aircraft overflights on sleep. The potential effects of sleep disturbance and deprivation on the physical and mental health of children was emphasised in submission comments. Submissions drew attention to the proposed curfew-free operation of the airport and suggested that the World Health Organization's (WHO) night time noise standard of 40 dBA should be applied to all flight paths and areas affected by the proposed airport.</p>	<p>Section 13.10.8 (Volume 2a) assesses the impact of aircraft noise on sleep disturbance following the enHealth <i>Health Effects of Environmental Noise other than Hearing Loss</i> and WHO guidelines. The assessment of Stage 1 operations found that all areas would be subject to noise levels below the WHO night time 40 dB L_{Aeq} criterion, with the exception of Luddenham. The increase in potential sleep disturbance as a result of aircraft operations, measured by the number of predicted additional EEG awakenings, is predicted to be very low.</p>

Theme	Stakeholders	Summary of issue	Response
Overflights	Community groups Residents	<p>Impacts on the health of residents</p> <p>Submissions raised concerns about the impacts of noise on the health of people in the lower Blue Mountains and Western Sydney. Submitters stated that the potential health impacts of aircraft noise exposure included sleep disturbance, stress, and psychological factors such as anxiety, nervousness, irritability, anger and a feeling of powerlessness that, in turn, may result in changes such as elevated blood pressure and coronary heart disease. These impacts were considered to be unacceptable.</p>	<p>Chapter 13 (Volume 2a) assesses the health impacts associated with operation of Stage 1 of the proposed airport. This assessment includes consideration of the impacts of aircraft noise with reference to relevant international health criteria. The assessment found that aircraft overflight noise presents a low risk to peoples' health for the indicators considered.</p>
Overflights	Residents Community groups	<p>Impacts on property values</p> <p>Submissions expressed concerns that aircraft overflight noise may negatively impact property values.</p>	<p>The impact of aircraft noise on residential and other property values is assessed in Section 23.5.11 (Volume 2a) and in the Property Values technical report at Appendix P2 (Volume 4). The assessment reviews previous studies in Australian capital cities, which have found no statistically significant relationship between noise exposure and housing prices in Melbourne or Sydney. However, noise exposure was found to be a more significant factor in Brisbane and Adelaide. These studies have generally compared residential prices in areas affected by noise levels above 20 ANEF/ANEI with prices in areas outside of the ANEF/ANEI contours.</p>
Overflights	Residents	<p>Impacts on tourism</p> <p>Submitters expressed concern about the impacts of aircraft noise on tourism in the Blue Mountains.</p>	<p>The impact of the proposed airport on the recreational assets and values of the Blue Mountains including its tourism value, is addressed in Section 23.5.8 and Section 26.5 (Volume 2a). Appendix P3 (Volume 4) and Chapter 24 (Volume 2a) provide an economic assessment of the proposed airport including consideration of its potential to increase tourism in the Blue Mountains.</p>

Theme	Stakeholders	Summary of issue	Response
Overflights	Local councils	<p>Airport operating strategies</p> <p>Submitters questioned how the findings of the N60 night time noise assessment would inform the selection of noise mitigation measures or a preferred operating strategy, given that, for example, compared to other strategies the Prefer 05 strategy results in the greatest number of people experiencing more than five events per night above 60 dBA but the least number experiencing more than 20 events per night at this noise exposure level.</p>	<p>The complexities of developing optimal mitigation measures and preferred operating procedures based on a single noise descriptor are acknowledged. The discussion paper <i>Expanding Ways to Describe and Assess Aircraft Noise</i> includes measures that have been designed to enable comparison of the environmental implications of different operating strategies. These measures allow the total noise load generated by an airport to be computed by summing, over the exposed population, the total number of instances where an individual is exposed to an aircraft noise event above a specified noise level over a given time period. They also provide a mechanism for comparing options at a particular airport in terms of the extent of noise concentration or sharing. The formal airspace design process will utilise a range of noise exposure measures to quantify and compare different operating strategies and procedures and to inform the development of optimised flight paths on the basis of safety, efficiency, capacity, noise and environmental considerations.</p> <p>This will include further evaluation of the efficacy of flight paths based on Open STARs, Closed STARs and Point Merge models and the adoption of appropriate noise mitigation measures for the preferred model. The proposed airspace design arrangements would be formally referred under the EPBC Act in accordance with the process described in Section 7.8 (Volume 1) and would involve extensive community consultation.</p>

Theme	Stakeholders	Summary of issue	Response
Overflights	<p>Senators and Members of Parliament</p> <p>Local councils</p> <p>Residents</p> <p>Community groups</p> <p>Blue Mountains environmental groups</p> <p>Business and tourism groups and enterprises</p>	<p>Operation of a 24-hour airport</p> <p>Submissions raised concern and objection to the potential noise impacts of night time aircraft overflights. Many submitters considered that curfew arrangements consistent with those in place at Sydney (Kingsford Smith) Airport should be implemented at the proposed airport to protect residential amenity. The imposition of a curfew was seen as a way of addressing a perceived inequity that would otherwise exist between the two Sydney airports. Some submissions advocated lifting the curfew at Sydney Airport to allow both airports to operate on the same 24-hour basis.</p> <p>Submissions stated that the draft EIS did not assess alternative operating modes to reduce night time aircraft noise impacts. Comments were also made that there is not currently enough information to determine whether or not a curfew is required to ensure compliance with noise standards for sleep disturbance.</p> <p>Business and tourism groups were generally supportive of 24-hour airport operations, stating that they would optimise the proposed airport's capability, boost Sydney's attraction as a destination for international airlines and create more jobs in Western Sydney. Curfew-free operations were viewed by these submitters as critical to the airport's commercial success. Other submissions sought more information about whether the airport would still be financially viable with a curfew.</p>	<p>Consideration of night time noise is addressed in both Chapters 10 and 13 (Volume 2a). The assessment indicates that night time noise would have the potential to cause awakenings in some areas near the airport site. As part of future airspace design processes, the minimisation of night time noise on residents and communities will be a key consideration. As acknowledged in Section 7.8 (Volume 1), the change in air traffic complexity at night enables greater flexibility in designing arrival and departure routes for night operations at the proposed airport and improved scope to minimise aircraft noise impacts from these particularly sensitive operations.</p> <p>The EIS describes a possible 'head-to-head' operating mode that would involve both aircraft departing to, and arriving from, the south-west end of the airport at night when aircraft demand is relatively low. The EIS compares the forecast number of people to be affected by this operating mode with the number of people potentially affected by the Prefer 05 and Prefer 23 operating strategies.</p> <p>The economic assessment in Appendix P3 (Volume 4) includes additional content regarding the economic disadvantages that would be imposed by a curfew at the proposed airport. The assessment concludes that a curfew at the proposed airport would have wide reaching effects on the operation and associated economic benefits of the proposed airport.</p>

Theme	Stakeholders	Summary of issue	Response
Overflights	Community groups Local councils Residents	<p>Diversion of aircraft to Western Sydney Airport during Sydney Airport's curfew hours</p> <p>Submissions suggested that aircraft currently operating at Sydney Airport during the airport's curfew could be diverted to the proposed Western Sydney Airport to make the new airport more financially viable. Submitters stated that this would result in air traffic movements and associated noise impacts rapidly exceeding the levels predicted in the draft EIS. More information was sought about the types of freight aircraft movements expected to occur during the night having regard to the requirements of the <i>Sydney Airport Curfew Act 1995</i>.</p>	<p>The <i>Sydney Airport Curfew Act 1995</i> provides that the current permissions for certain classes of freight aircraft to land or take-off during the curfew period at Sydney Airport (11.00 pm to 6.00 am) would cease to apply after the Infrastructure Minister notifies that the proposed airport at Badgerys Creek is able to be used for night aircraft movements. Small (less than 34,000 kg) noise certified propeller driven aircraft and 'low noise' jets (mostly business and small freight jets) are currently allowed to operate without a quota on the number of their movements. A limited number of freight movements by 'medium size' (e.g. BAE-146) Chapter 3 noise-certified freight aircraft are also permitted each week during curfew hours. The transfer of these operations to the proposed Western Sydney Airport has been assumed in the air traffic forecasts underpinning the EIS noise assessment. Accordingly, the EIS has had regard to any likely transfer of aircraft to Western Sydney Airport, and the noise assessment in the EIS addresses this.</p> <p>The provisions of the Act that allow certain international passenger aircraft movements to occur during curfew shoulder periods at Sydney Airport would not be affected by the availability of the proposed airport.</p> <p>Airservices Australia produces monthly operational statistics for Sydney Airport. The statistics for April 2016 show that on average between 10 and 11 aircraft movements per night occurred between 11.00 pm and 6.00 am. Whether these movements would transfer to the proposed airport, when available, would ultimately be a decision for the operators of these services and the ALC.</p>

Theme	Stakeholders	Summary of issue	Response
Overflights	Local councils	<p>Comparison of noise impacts to the 1985 EIS</p> <p>One submission identified physical and operational differences between the airport proposal assessed in the 1985 EIS and the current airport proposal that is the subject of this EIS. Further discussion of the differences and the broad implications of these on predicted aircraft noise impacts was requested.</p>	<p>The EIS includes figures that compare the currently predicted ANEC 20 contour with the ANEC 20 contour presented in the 1985 EIS. The 1985 ANEC contour provides the basis for existing land use controls around the airport site. The ANEC 20 contour presented in Chapter 10 (Volume 2a) of the finalised EIS is a combination of the ANEC 20 contours calculated for the 'Prefer 05' and 'Prefer 23' operating strategies considered in the noise modelling. The ANEC contours for both strategies have been combined in recognition that a preferred operating strategy for the proposed airport is yet to be determined.</p> <p>Proposals to develop a major airport at Badgerys Creek have been the subject of two earlier EISs – one in 1985 and the other in 1997-1999. Similarities between the current proposal and those considered in the previous environmental assessments include a first stage single runway development, an ultimate two-parallel runway design and an approximate south-west to north-east runway orientation. The 1997-1999 EIS also considered airport layout options with a crosswind runway and one option with a north-south parallel runway alignment. Reflecting the most up to date information available at the time, all three EISs have assumed different indicative flight path configurations, different fleet mixes and different passenger and air traffic demand forecasts. Each of these factors has some effect on the distribution and intensity of noise exposure. Given the many differences between the current proposal and those previously assessed, there is little value in undertaking a detailed analysis of the differences in noise exposure forecasts as part of this EIS.</p>

Theme	Stakeholders	Summary of issue	Response
Overflights	NSW Government Conservation groups Residents	<p>General aviation noise impacts</p> <p>Submissions sought additional information about general aviation demand and activities at the proposed airport, including flight paths, flight numbers and impacts. Submitters questioned why, for example, the potential noise impacts of helicopter operations are not assessed in the EIS.</p>	<p>The Government's primary objectives for a Western Sydney Airport are to improve access to aviation services for Western Sydney and solve the long term regular public transport (RPT) capacity constraints in the Sydney basin. The revised draft Airport Plan acknowledges that Bankstown Airport remains the principal general aviation aerodrome in the Sydney basin. While not explicitly planning for general aviation, future use of the proposed airport for such activity is not excluded and investment in associated support facilities will be a commercial decision for the ALC in consultation with the general aviation sector, and subject to relevant approvals.</p> <p>It could generally be expected that operations by general aviation aircraft, and in particular helicopters, would not follow the RPT standard departure and arrival flight paths to the same extent as regular commercial aircraft. Given the greater flexibility and uncertain purpose of these operations it is difficult to identify flight routes likely to be used by general aviation aircraft</p> <p>Given the airport site's proximity to the GBMWhA, two types of operation that could be based at the proposed airport (either on a temporary or more permanent basis) are firefighting and hazard reduction operations, and scenic tourist flights. Although emergency operations would generally be conducted at low altitude, they would occur infrequently. At most airports, standard departure and arrival procedures ensure that, if possible, twin engine helicopters do not fly over residential areas below 1,500 feet (noting that lower levels may be flown during landing and take-off or in emergency situations).</p> <p>Several airports have established Fly Neighbourly Agreements (FNAs) between aircraft operators and airports or local councils. FNAs normally include advice on how to avoid noise sensitive areas and procedures for minimising noise over residential areas. A FNA is in place for scenic flights over the Blue Mountains National Park. Prior to departure, pilots undertaking sightseeing flights should obtain details of the areas to be avoided and the preferred scenic routes. Except when operating on preferred scenic routes, pilots are requested to maintain a minimum altitude of 2,000 feet above the surface of the park (the surface being the highest point of terrain within a radius of 600 m). Any scenic flight operations based at the proposed airport would be expected to comply with the conditions of this FNA and any other applicable FNA so as to reduce the impact of these activities on residential and other noise sensitive areas.</p>

Theme	Stakeholders	Summary of issue	Response
Take-off/landing	Residents	<p>Levels of noise impact on local residents</p> <p>Submissions raised concerns about noise associated with the take-off and landing of aircraft. Issues included the increased noise levels generated by aircraft throttling up or down during take-offs and landings and the low altitudes at which these noise levels would occur. Submitters also commented that the flight path selection process should consider the amenity of rural employees and residents, and not favour flight paths that minimise potential noise impacts on urban populations.</p>	<p>Noise from aircraft at the start of a take-off, and noise from “reverse thrust” applied after landing is included in the calculations performed by the INM noise modelling program used for the EIS. The INM is considered to give a realistic prediction of average noise levels from these events. It is noted, however, that when noise is generated on the ground, its level is likely to show greater variability under different meteorological conditions than noise generated by the aircraft in the air and thus the level of variability in the predictions for these aspects is increased.</p> <p>The noise and amenity impacts of aircraft operations on residents in rural locations near the airport site will be closely examined in the flight path design process and in developing noise abatement operational procedures for the proposed airport.</p> <p>Section 10.6.1.3 (Volume 2a) of the EIS includes additional information about potential noise abatement methods for mitigating airport operational noise. These include approaches that have been adopted at other airports to reduce noise associated with aircraft departures and landings. The potential applicability of any particular measure to operations at the proposed airport would require detailed consideration during the future airspace and flight path design process and ongoing review after the commencement of operations.</p>

Theme	Stakeholders	Summary of issue	Response
Take-off/landing	Aviation industry Aircraft Noise Ombudsman Local councils	<p>Validity of continuous descent assumptions</p> <p>Submissions questioned the appropriateness of the assumption of continuous descent approaches for all aircraft arrivals in the noise impact assessment of aircraft overflights. Submitters stated that the draft EIS should be revised to include a noise assessment of using a conventional aircraft approach regime, which would be expected to have higher noise impacts.</p>	<p>The Point Merge configuration adopted as part of the preliminary airspace design provides a method of synchronising aircraft and directing them to the runway in a structured manner. This allows for the use of a continuous descent profile, which limits the use of engine power settings above idle and assists in reducing fuel consumption and minimising noise emissions from aircraft on final approach to the airport site. The use of a continuous descent approach is therefore considered good practice to mitigate noise impacts on communities surrounding the airport site and was included in the preliminary airspace design used to model noise impacts in the EIS.</p> <p>The air routes developed by Airservices Australia for the preliminary airspace design and used in the EIS noise modelling were specifically designed where possible to facilitate continuous climb and descent profiles even during periods of heavy traffic demand. The assumption that all arriving aircraft would utilise a continuous descent approach is considered reasonable for the purposes of noise modelling. The aircraft operating procedures to be implemented at the proposed Western Sydney Airport will be more efficient than those currently used at Sydney (Kingsford Smith) Airport and are expected to result in a higher proportion of continuous descent approaches. The actual number of aircraft complying with a continuous descent approach would be monitored by Airservices Australia following the commencement of operations.</p> <p>The determination of final flight paths will be subject to a future detailed design process. Flight paths and operating procedures will be optimised for noise management purposes, including consideration of achieving full compliance with a continuous descent approach. The final airspace design will be subject to further consultation and EPBC Act referral prior to becoming operational.</p>
Take-off/landing	Local councils	<p>Use of noise abatement departure procedures</p> <p>Submissions questioned why noise abatement departure procedures (NADPs) were not used in the noise modelling given that data for these operations are contained in the INM software and can be used to calculate the potential effectiveness of NADP operations for a given airport.</p>	<p>Section 2.9 of the Aircraft Overflight Noise technical report (Appendix E1, Volume 4) states that INM's "standard" height-vs.-distance profiles were used for all departures. NADP departure profiles were not assumed. Noise abatement climb procedures, which are designed to encourage aircraft to gain height as quickly and as safely possible, can help reduce noise exposure levels in areas close to the departure end of a runway. The use of standard departure procedures for the noise modelling is a conservative assumption. The potential benefits of utilising noise abatement climb procedures, when safe to do so, at the proposed airport will be considered as part of the formal airspace design process.</p>

Theme	Stakeholders	Summary of issue	Response
Noise management	Local councils	<p>Detailed airspace design process</p> <p>Submissions requested a clear explanation of the detailed airspace and flight path design process be included in the finalised EIS.</p>	<p>Chapter 7 (Volume 1) has been updated to provide a comprehensive description of the future airspace design process for the proposed airport, including details of the key activities and outputs for each phase of the process, indicative timings and overarching principles that would apply.</p>
Noise management	Aviation industry Senators and Members of Parliament	<p>ICAO Balanced Approach</p> <p>Submissions contended that the ICAO Balanced Approach to aircraft noise management should be adopted for planning and operations at the proposed airport. Others considered that the preliminary airspace design should have been aligned with the actions and processes contained in the Balanced Approach.</p>	<p>Section 10.6.1 (Volume 2a) provides information about the key elements of the ICAO Balanced Approach and their potential applicability to the proposed airport. The future airspace design principles identified in Table 7-1 (Volume 1) state that noise mitigation measures would be developed consistent with the strategies established in the Balanced Approach and other relevant policies.</p> <p>While noise mitigation measures such as the assumption of continuous descent approaches were taken into account in the preliminary airspace design and noise modelling for this EIS, it is not feasible for all possible noise abatement procedures and other relevant operational factors to be compared and fully assessed at this stage. The detailed airspace and flight path design process will seek to develop flight paths and operational procedures that avoid or reduce noise over populated and other sensitive areas. This will occur in consultation with regulatory agencies, industry and the community.</p>
Noise management	Senators and Members of Parliament	<p>Respite from aircraft noise</p> <p>Submissions suggested that the noise management plan for the proposed airport should consider opportunities for the provision of periods of respite from aircraft noise, including the possible adoption of a curfew for part of the night.</p>	<p>As outlined in Chapter 28 (Volume 2b), the detailed airspace and flight path design for the proposed airport would identify alternative flight paths that do not concentrate aircraft arrivals over any one community as far as it is possible to do so. Noise abatement and noise respite opportunities will be examined throughout the design process. Identifying flight paths and procedures that minimise aircraft noise impacts at night would be a critical component of this work.</p>

Theme	Stakeholders	Summary of issue	Response
Noise management	Local councils Planning bodies Business and tourism groups and enterprises Residents	<p>Land use planning</p> <p>Submissions noted that the existing planning instruments used to control development around the airport site would be expected to limit the extent of potential aircraft noise impacts. Concern was expressed that land use controls could be applied over a larger area and development in Western Sydney could be inhibited if the National Airports Safeguarding Framework (NASF) was used as a tool for guiding future land use planning. Submissions stated that the EIS must contain a clear commitment to AS 2021 as the basis for residential land use planning in the vicinity of the airport site. Other submissions stressed the importance of protecting surrounding land and airspace from inappropriate development, including through the use of the NASF.</p> <p>Submissions also commented that the ANEC contours produced for the Stage 1 airport proposal provide limited guidance for land use planning. Submitters requested the preparation of a revised set of ANEF contours based on the EIS noise assessment to inform land use planning.</p> <p>Submitters stated that no assessment is provided of the extent to which land use controls may change relative to the measures which have been in place since 1985. Submissions also highlighted the latest AS 2021 guidance on how ANECs for multiple operating scenarios may be combined to define an overall area where planning controls should apply.</p>	<p>The NASF was endorsed in May 2012 by the Australian, State and Territory governments and provides guidance on the development of State policies that are intended for dissemination to local governments. NASF supports the continued use of the Australian Noise Exposure Forecast System and the Australian Standard 2021 <i>Acoustics – Aircraft Noise Intrusion – Building Siting and Construction</i> for land use planning purposes but acknowledges that a complementary suite of noise metrics (e.g. N60s and N70s) would better inform strategic planning and community engagement. These alternative measures are not intended as a substitute for the ANEF system or the land use planning guidance provided by AS 2021; rather they are a complementary tool that could, for example, assist local government in communicating the nature of aircraft noise at a specific location.</p> <p>Section 10.5.2 (Volume 2a) states that the ANEC figures for Stage 1 operations are not intended to guide future land use planning. Any change to current land use planning instruments would necessarily be based on long term forecasts of noise exposure and the final airspace design. An official long term ANEF chart will be produced as an output of the detailed design phase of the airspace and flight path design process.</p> <p>The EIS includes figures that compare the currently predicted ANEC 20 contour with the ANEC 20 contour presented in the 1985 EIS. Existing land use controls are based on the 1985 contour.</p> <p>ANEC contours that combine the predicted noise exposure contours derived for the two principal airport operating strategies considered in the EIS (i.e. the ‘Prefer 05’ and ‘Prefer 23’ strategies) are presented in Section 10.5.2 (Volume 2a).</p>

Theme	Stakeholders	Summary of issue	Response
Noise management	Residents NSW Government Senators and Members of Parliament Local councils Educational institutions	<p>Noise mitigation and noise amelioration works</p> <p>Submissions expressed support for the implementation of a noise insulation and acquisition programme, similar to those established at other Australian airports, for residences and other sensitive receivers close to the airport site. This was a particular concern for residents in Luddenham, who requested details of the noise attenuation measures that would be installed and the noise exposure criteria that would trigger actions to mitigate impacts to residential and non-residential places, such as schools. Local residents also stated that additional properties on Willowdene Avenue, immediately to the south-west of the airport site, should be acquired having regard to the changed location of the northern runway compared to that shown in the 1999 EIS and the community severance resulting from previous government property acquisitions. Luddenham residents advocated building the southern runway first so as to avoid short to medium term impacts on the community, including noise impacts associated with possible head-to-head operations at night.</p> <p>Submissions stated that retrofitting insulation and other noise attenuation measures to light-weight timber or asbestos buildings in noise affected areas would be prohibitively expensive and potentially ineffectual. Clarification was sought as to whether insulation measures would only be considered within certain ANEF areas, or if such measures would be considered at all locations where internal noise levels may be expected to exceed AS 2021 internal design criteria as a result of operations at the proposed airport.</p> <p>Submissions sought information about the funding options for noise amelioration works at schools. The need to compensate or 'buy-out' those predicted to be most severely noise affected at "unblighted" value was advocated.</p> <p>Submissions also commented on the need for the proposed airport's noise management plan to further investigate inbound and outbound flight patterns that avoid populated areas and help mitigate predicted noise impacts.</p>	<p>A policy on property acquisition and noise insulation is expected to be announced during the detailed design phase of the formal airspace and flight path design process. The policy would be informed by investigations of noise abatement flight path options and operational procedures, which would seek to reduce the extent of community noise impact to the greatest extent practicable having regard to safety and other operational considerations. This policy would also take into account the outcomes of extensive community and stakeholder consultation. Understanding the specific concerns of local residents and identifying appropriate noise mitigation and/or amelioration measures for those members of the community predicted to be exposed to the highest noise levels from airport operations, such as the residents of Luddenham, would be a key consideration.</p> <p>It is expected that the policy would identify eligibility criteria for the possible insulation or acquisition of buildings exposed to the highest noise levels, with guidance provided by AS 2021 and relevant Australian Government policy including the planning principles of the National Airports Safeguarding Framework. The noise management and mitigation measures identified in the airspace and flight path design process — and recorded in the ALC's first airport noise management plan — would be subject to ongoing review and adaptation in response to future growth in aviation activity.</p> <p>The nature of any noise amelioration programme and its funding arrangements would ultimately be a matter for the Australian Government.</p>

Theme	Stakeholders	Summary of issue	Response
Noise management	Local councils	<p>Prioritising and evaluating noise mitigating measures</p> <p>Submissions sought clarification about the preferred strategies for managing aircraft noise impacts, including reference to mitigation priorities and the manner in which alternative mitigation measures would be evaluated.</p>	<p>As outlined in Chapter 28 (Volume 2b), the future airspace and flight path design process will identify and test a range of potential noise mitigation measures and noise abatement procedures. This iterative process of design and validation is a complex and lengthy technical task that is beyond the scope of this EIS. The evaluation of each measure and procedure is expected to be based on a broad range of criteria that would take into account issues such as:</p> <ul style="list-style-type: none"> • the number of people exposed to the highest noise levels; • the total number of people exposed to threshold noise levels; • impacts on residential and non-residential areas; • the effectiveness of noise abatement departure procedures under different operating scenarios; • the number and noise intensity of overflights of residential areas and noise sensitive facilities; and • the safety, efficiency, capacity, noise and other relevant environmental impacts of airport operations. <p>The evaluation of noise mitigation measures and noise abatement procedures would be conducted in consultation with regulatory and other government agencies, industry, the community and other stakeholders. This will enable key stakeholders to influence the final design and ensure the community is fully informed.</p>
Noise management	Environmental groups Community groups Residents Local councils	<p>Mitigating noise impacts in the Blue Mountains</p> <p>Some submitters commented that the noise mitigation measures were generic and not tailored to the unique characteristics of the Blue Mountains. These submissions stated that mitigation measures should be provided for Blue Mountains communities expected to be impacted by aircraft noise.</p> <p>Some submissions suggested that the Point Merge system and other features of the flight paths should be shifted over to unpopulated areas such as the GBMWhA. Other submissions stated that flight paths should not occur over populated areas or over the GBMWhA as both areas are equally sensitive to aircraft noise.</p>	<p>The concern expressed by various sectors of the community about potential overflight noise impacts on residential populations and the GBMWhA are acknowledged. The future detailed airspace and flight path design process, outlined in Chapter 28 (Volume 2b), will aim to optimise flight paths on the basis of safety, efficiency, capacity, and noise and other environmental considerations.</p> <p>As outlined in Chapter 28 (Volume 2b), community consultation will be undertaken during the detailed design process. A preferred preliminary airspace design will be referred to the Environment Minister under the EPBC Act. Extensive public consultation activities will occur at this time to ensure community views on these matters are taken into account before final flight paths and noise abatement procedures are settled.</p>

Theme	Stakeholders	Summary of issue	Response
Noise management	Senators and Members of Parliament NSW Government	<p>Aircraft noise and flight path monitoring system</p> <p>Submissions stated that noise monitoring measures should be put in place that address community concern about aircraft noise impacts. Submissions supported the installation of permanent noise monitors and a flight tracking system that would provide real-time noise and flight tracking results online together with historic aircraft noise data. Such a system was seen as a valuable tool for informing future airport planning. The establishment of a mechanism for responding to public enquiries and complaints on aircraft noise issues was supported.</p>	<p>Airservices Australia currently provides a service (WebTrak) available to the public via its website that uses information from air traffic control radars to monitor aircraft at major Australian airports which are within 50 kilometres of the airport and up to 30,000 feet above mean sea level (AMSL). Aircraft noise data are collected and reported daily from noise monitors strategically located around communities close to major Australian airports and provided on the Airservices Australia website. Additional information about the monitoring of aircraft noise is available in Section 28.5.1.2 (Volume 2b).</p> <p>A noise and flight path monitoring system similar to those established at other major Australian airports is expected to be operated at the proposed airport by Airservices Australia. This system would provide real-time noise and flight tracking information. The design of the monitoring system would be considered as part of the airspace and flight path design process and would be informed by input from a community and stakeholder reference group.</p>
Noise management	NSW Government	<p>Community Aviation Consultation Group</p> <p>The establishment of a Community Aviation Consultation Group (CACG) was supported as a mechanism for providing effective and open discussion of airport operations and their impacts on nearby communities.</p>	<p>The Department of Infrastructure and Regional Development proposes to convene a community and stakeholder reference group to participate in, and exchange information on, the future airspace and flight path design process. Before airport operations commence, and consistent with arrangements at other major Australian airports, the ALC would establish a CACG. This group would continue as a permanent forum for interested parties to exchange information on issues relating to airport operations and their impacts.</p>

14 Airport construction and ground operations noise

Volume 2 (Stage 1 Development), Chapter 11 (Noise (ground operations, construction, road and rail)) of the draft EIS outlined the assessment of potential impacts associated with ground-based noise generated onsite from a number of potential sources, including aircraft taxiing, the ground running of aircraft engines for maintenance testing, construction activities and road traffic associated with the proposed airport.

The chapter drew on a noise assessment, which was included as Appendix E2 (Airport ground-based noise and vibration).

14.1 About the submissions on this chapter



Table 14–1 Submissions related to noise (ground operations, construction, road and rail)

Issue	Number of times the issue was raised	Percentage of total submissions
Noise – construction	11	0.2%
Noise – ground operations	63	1.3%
Noise – road	20	0.4%

14.1.1 Origin of submissions

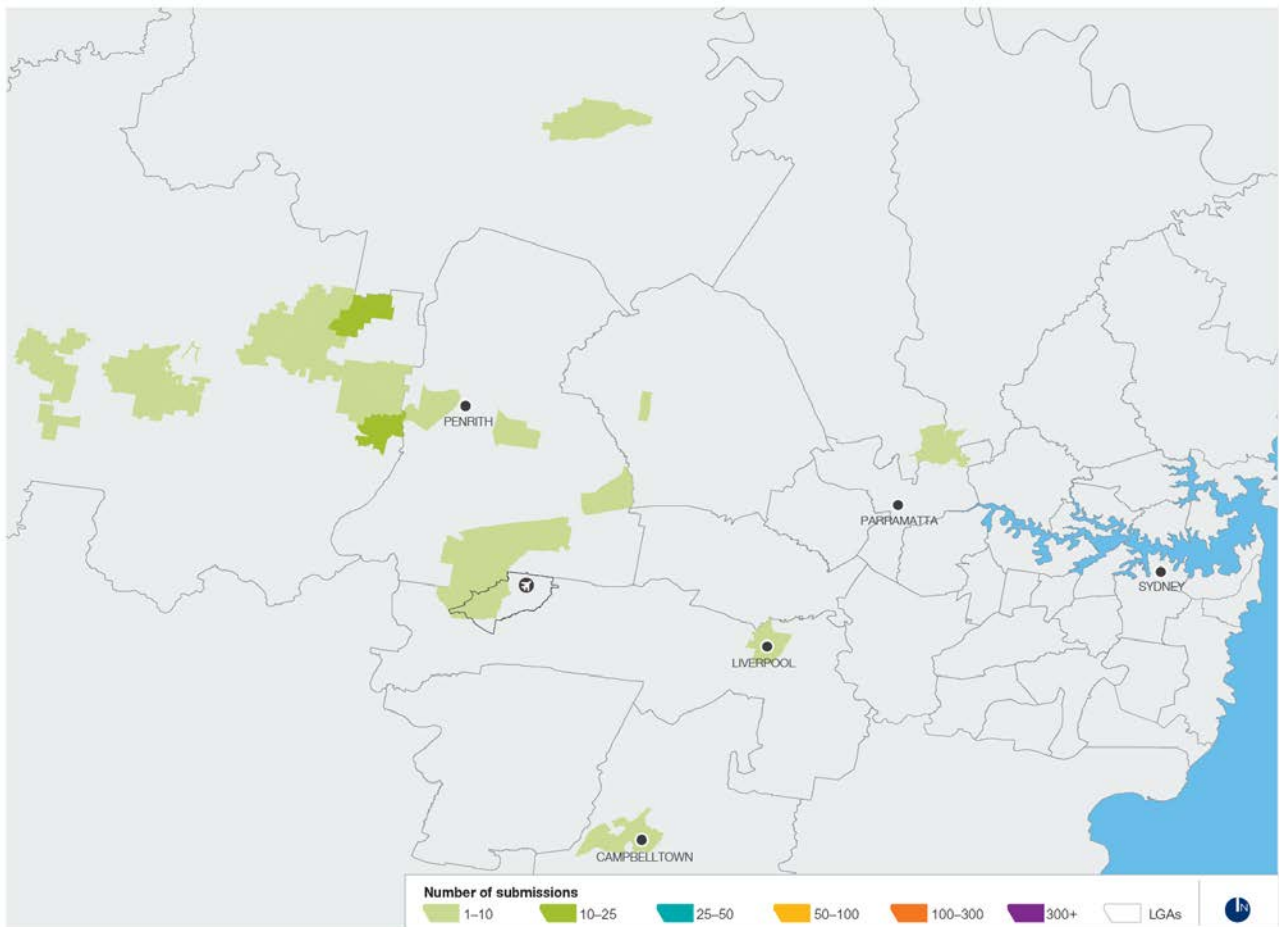


Figure 14–1 Map depicting origin of submissions in relation to Chapter 11 of the draft EIS

14.2 Summary and response

14.2.1 Overarching summary of submissions

Submissions suggested that the finalised EIS should include a clearer explanation of the difference between ground-based and aircraft overflight noise, and an outline of mitigation measures proposed. Submissions suggested that the draft EIS does not meet the guidelines for the content of a draft Environmental Impact Statement, as issued by the Minister for the Environment. It was also suggested that the draft EIS did not demonstrate an understanding of the baseline noise levels in all local areas surrounding the airport.

The key themes from the submissions are summarised under the following headings:

- construction noise;
- ground operations;
- assessment methodology; and
- road related noise.

The submission comments are summarised and addressed in section 14.2.3.

14.2.2 Overarching response to issues raised

Following publication of the draft EIS, the ground noise assessment was updated to include:

- information on blasting during construction;
- assessment of revised road traffic volumes;
- assessment of the performance of a possible acoustic enclosure for engine maintenance testing; and
- re-modelling of ground-running noise and taxiing noise.

Information on blasting during construction was included as a result of ongoing geotechnical work at the airport site indicating the potential to encounter hard rock.

The road traffic noise assessment was refined as a consequence of changes to the traffic, transport and access assessment. The assessment considered 81 locations on Mamre Road, Luddenham Road, Elizabeth Drive, Camden Valley Way, Bringelly Road, Adams Road, Erskine Park Road, The Northern Road, Narellan Road, Wallgrove Road, M7, M31, M4, the proposed M12 and Outer Sydney Orbital for Stage 1 operations and in 2063. This represents an improvement in the scope of the assessment compared to the 17 locations assessed in the draft EIS. The revised assessment identified two locations for Stage 1 operations and six locations in 2063 where road traffic noise would perceptibly increase compared with the baseline scenario of future urban development with no airport.

The ground noise assessment in Appendix E2 of the finalised EIS also includes a preliminary assessment of an acoustic enclosure at the engine run-up bay to demonstrate the effectiveness of a possible mitigation option, should it be required in the future based on operational experience.

Re-modelling of ground-running noise and taxiing noise was also completed.

The revised assessment is presented in Chapter 11 (Volume 2a) and Appendix E2 (Volume 4).

14.2.3 Issues and responses

Theme	Stakeholders	Summary of issue	Response
Construction noise	Residents Local councils	<p>Impacts of construction machinery on the local community</p> <p>Submissions discussed noise impacts arising from construction activities around the airport site. Concerns focused mainly on additional noise impacts including additional truck movements and the use of heavy machinery.</p>	<p>Construction noise is assessed in Chapter 11 (Volume 2a) of the EIS. The construction noise assessment includes consideration of construction activities at the airport together with construction related traffic on the local road network. Noise emissions during construction will predominantly be limited to the airport site and increased noise from construction traffic is predicted to be less than 2 dBA, which is unlikely to be perceptible.</p> <p>A Noise and Vibration Construction Environment Management Plan would be developed and implemented to manage and monitor noise from construction traffic and activities during development of the proposed airport. The plan would also include avenues for complaints and other feedback, rectification measures and contingency actions.</p>
Ground operations	Local councils	<p>Engine ground running</p> <p>Submissions questioned the assumption adopted for the ground noise modelling that one high power engine run-up would occur for less than 5 minutes in any night.</p>	<p>The duration and engine power setting during an engine run-up are dependent on the systems being tested. Most engine testing is performed at relatively low power settings, but a run-up may include short periods of high power testing. Maintenance staff will generally attempt to minimise the duration of a run-up to reduce fuel burn and wear on engine components. Given the number of aircraft operations anticipated Stage 1 operations, the assumption of one 5-minute high power engine run-up on any night is considered reasonable.</p> <p>Airports in Australia have rules and procedures governing engine ground running to ensure they are conducted safely and at an appropriate location, heading and time of day so as to reduce noise disturbance to residents. For example, at some airports, engine testing above a ground idle power setting is not permitted at certain locations during the night. Engine ground running procedures would be developed by the Airport Lessee Company and approved through the Noise Operational Environmental Management Plan (OEMP) prior to the commencement of operations to manage how, where and when run-ups are conducted at the proposed airport. Noise generated by these operations would be regulated under the Airports (Environment Protection) Regulations 1997 (AEPR), which contain a general duty to take reasonable and practicable steps to prevent offensive noise intruding on individual, community or commercial amenity.</p>

Theme	Stakeholders	Summary of issue	Response
Ground operations	Residents	<p>Noise impacts on Luddenham residents</p> <p>Submissions raised concerns about the severity of noise impacts from engine ground running and aircraft taxiing on the residents of Luddenham. They also highlighted the draft EIS finding that ‘significant residual impacts would still result’ even if mitigation measures for ground noise were deemed feasible.</p> <p>Given the proximity of Luddenham village to the airport site, submissions stated that background noise levels should have been measured at a location in the village instead of 2 Twin Creeks Road, which is approximately 5 km from the airport boundary. Submitters stated that the health assessment (Appendix G of the draft EIS) did not address the effects of ground noise on EEG awakenings in Luddenham village.</p> <p>The greenfield nature of the development was seen as an opportunity to design the airport in such a way as to minimise noise impacts on the local community. Submitters stated that the most effective mitigation measure to protect the residents of Luddenham from noise associated with construction, runway operations, engine run-up and 24-hour operations would be to construct the southern runway as part of the initial airport development, away from any existing residential township. Submissions commented that construction of the southern runway would also:</p> <ul style="list-style-type: none"> • give residents time to adjust to living with airport operations before a second runway was constructed; and • alleviate noise impacts on Luddenham Public School from aircraft ground operations and provide time to either insulate or relocate the school on the western side of the town. <p>Submitters advocated the establishment of clearly defined construction noise limits and work hours to reduce disturbance of local residents. They also stated that the airport site was large enough to relocate the engine run-up area further away from Luddenham village. Submissions stated that, given the severity of predicted negative effects, efforts should focus on consulting with local residents about noise mitigation options and other tailored approaches to managing noise impacts.</p>	<p>The EIS acknowledges that the residential population of Luddenham village will experience the highest levels of noise exposure from ground-based noise sources, during both the construction and operational phases of the proposed airport. Management plans prepared for the construction and operational stages of development will identify measures and strategies for mitigating these impacts to the extent practicable. The Luddenham community will be consulted about noise-generating activities and proposed mitigation measures as construction planning and detailed design work progresses. Local representation on the community and stakeholder reference group will be sought to ensure the views of local residents are taken into account during the airspace and flight path design process. Local representation will also be sought on the Community Aviation Consultation Group (CACG) in developing a Noise OEMP for the proposed airport</p> <p>Additional baseline noise monitoring was undertaken at Luddenham village in March 2016 in response to submissions and results are presented in Chapter 11 (Volume 2a). Background noise levels measured at Luddenham were fairly typical of other western Sydney locations where monitoring was undertaken. Table 36 of Appendix G in Volume 4 of the EIS shows the predicted number of additional EEG awakenings per person per year due to ground operations noise. The locations shown in the table include the Luddenham Public School, which was considered to be representative of residential locations within the village. The health assessment found that the area most impacted by EEG awakenings is Luddenham where a significant increase in the number of awakenings from both aircraft and ground operations is predicted.</p> <p>The Stage 1 development provides for a single runway in the northern portion of the site, close to the boundary, referred to as the ‘northern runway’. The northern runway was selected to be the first runway at the airport site for the following reasons:</p> <ul style="list-style-type: none"> • reduced earthworks requirements (cut and fill) associated with the northern runway; • fewer constraints on how and when a future rail line may be accommodated on the airport site; • impacts on airport site biodiversity values would be avoided until required for future aviation development; and • shortest distance to connect utility trunk lines around the airport site.

Theme	Stakeholders	Summary of issue	Response
Road traffic noise	NSW Government Local councils	<p>Traffic noise outside the airport site</p> <p>The NSW Government suggested that further consideration be given to the impact of ground-based transport impacts outside the airport site. Submissions stated that the road traffic noise assessment did not consider the impacts associated with the proposed M12 Motorway, which would provide the primary road link to the proposed airport.</p>	<p>The noise assessment of road traffic generated by the airport has been updated to take account of revisions to the traffic and transport modelling. These revisions are described in Appendix J (Volume 4). The ground-based noise assessment has been updated to show road traffic noise increases for the M12 Motorway (Table 11-15 (Volume 2a) and Table 5-1 of Appendix E2, (Volume 4)). The M12 will also be subject to an environmental assessment process that will be managed by NSW Roads and Maritime Services.</p>
Road traffic noise	Residents	<p>Road generated noise impacts</p> <p>Noise impacts associated with road traffic were mentioned in a small number of submissions. The main concern raised was that increased traffic generated by airport staff and visitors would result in increased noise for properties surrounding the airport.</p>	<p>Increased road traffic noise associated with passengers and workers at the airport site is considered in the ground-based noise assessment (operational road traffic) assessment. The results indicate a range of increases and reductions in road traffic noise at different locations (see Table 11-15, Chapter 11 (Volume 2a)). The highest predicted noise level increase is 2.4 dBA on the section of the proposed M12 Motorway between Mamre Road and the airport access road. Only one other section of road (Elizabeth Drive west of Lawson Road) is predicted to experience a road traffic noise level increase above 2 dBA. An increase in noise level of 2 dBA or less is unlikely to be perceptible at the nearest sensitive receivers. The alignment of the M12 is not known at this stage, but impacts associated with it will be considered as part of the planning for the proposed airport. The M12 will be subject to an environmental assessment process that will be managed by NSW Roads and Maritime Services.</p>
Assessment methodology	NSW Government Residents	<p>Scope of ground-based noise assessment</p> <p>Submissions questioned whether engine start, taxiing and take-off form part of the ground-based noise operations assessment.</p>	<p>For the purposes of this EIS, the aircraft overflight noise assessment (Chapter 10 (Volume 2a) and Appendix E1 (Volume 4)) did not model noise exposure from aircraft taxiing operations. Consequently, taxiing is considered in the ground-based noise assessment whereas the take-off and landing stages of a flight cycle are included in the modelling and assessment of overflight noise.</p> <p>Part 6 of the Airports Act and the AEPR set out the framework that will regulate the generation of noise at the proposed airport, other than noise generated by aircraft in flight (including when landing, taking off or taxiing at the airport). The framework that applies to managing and monitoring noise described in the aircraft overflight report applies to taxiing as taxiing is not considered to be part of the ground-based noise regulatory framework established under the AEPR. This reflects the general division of responsibility for noise management between Airservices Australia and the ALC.</p>

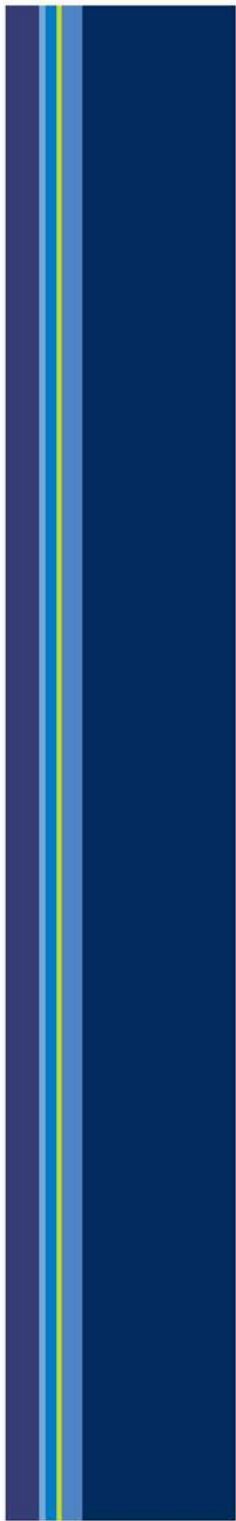
Theme	Stakeholders	Summary of issue	Response
Assessment methodology	Local councils	<p>Background noise monitoring and assessment criteria</p> <p>Submissions questioned the level of detail in the noise assessment, with specific comments on:</p> <ul style="list-style-type: none"> the assumed single rating background level for all receptors, rather than several location-specific values. This generalisation was considered to underestimate the magnitude of noise impacts at receptors closest to the airport that are currently exposed to low levels of environmental noise; and background monitoring for sensitive receptors in Bringelly, Greendale, Luddenham and Wallacia, including details about the positioning of noise monitoring equipment on the selected properties. 	<p>Background monitoring was undertaken during preparation of the draft EIS at 10 representative receiver locations surrounding the airport site including Bringelly and Wallacia. The results of additional baseline monitoring undertaken at Luddenham in March 2016 are presented in Chapter 11 (Volume 2a). The background monitoring data were used to develop criteria for assessing aircraft taxiing and engine ground running noise against intrusiveness criteria based on the NSW <i>Industrial Noise Policy</i>.</p> <p>The adopted single rating background level of 35 dBA $L_{Aeq,15min}$ is a reasonable benchmark for developing the intrusiveness criteria. Use of a single rating level is consistent with approaches taken for similar EIS studies and aids interpretation of the assessment. Given the different characteristics of the respective noise sources (i.e. generally continuous noise for taxiing and intermittent noise for engine runs), an intrusiveness criterion of 40 dBA $L_{Aeq,15min}$ was determined for aircraft taxiing noise and a night time criterion of 45 dBA $L_{Aeq,15min}$ was determined for engine ground running. By the time the proposed airport becomes operational, background noise levels in the area surrounding the airport site are likely to have increased due to increased road traffic and associated urban development. Consequently, the 35 dBA $L_{Aeq,15min}$ rating background level is considered conservative.</p> <p>Noise loggers were positioned at representative locations to cover the range of circumstances in the area. All measurement locations were free field locations on the side of the building towards the proposed airport. The area is rural and rural-residential and the measurement locations reflect this environment. This approach is considered appropriate given the area to be covered by the noise assessment.</p>

Theme	Stakeholders	Summary of issue	Response
Assessment methodology	Local councils	Noise impacts from other aircraft power sources Submissions sought more information about the potential noise impacts from alternative power supply sources for aircraft.	<p>It is expected that power and preconditioned air will be supplied at terminal gates and aircraft will not use their auxiliary power units while parked. Noise emissions generated from alternative power supplies would only occur during very infrequent contingency arrangements associated with disruptions to existing power supplies.</p> <p>There is limited information regarding the design or operation of possible alternative power supplies to accurately model emissions. However, alternative power supplies are unlikely to represent a contributing noise source in the context of the overall airport operations and would not increase the overall noise emissions from the airport site, especially given the opportunity to design noise control measures for these as part of the detailed design.</p>

Theme	Stakeholders	Summary of issue	Response
Assessment methodology	Local councils	<p>Engine ground running</p> <p>Submissions stated that the building assumed to be located near the engine run-up bay was not a certain development and that modelling of engine ground running noise should include a scenario where the building does not provide any acoustic shielding.</p> <p>Submissions claimed that, while a sound power level of 151 dBA had been assumed for aircraft engine ground running, no information was provided about the type of aircraft this applied to or the range of typical levels that might be expected.</p>	<p>The assessment presented in this EIS is based on the indicative airport site layout described in the revised draft Airport Plan. This represents only one indicative layout. The revised draft Airport Plan acknowledges that the location and shape of certain buildings may differ from that shown in the indicative airport site layout provided they comply with the Land Use Plan and the development objectives for the airport. Similarly, the location of the engine run-up bay may be subject to change.</p> <p>All modelling used for assessing the future environmental impacts of proposed actions relies on the use of assumptions. The noise exposure contours modelled for engine ground running show the shielding effect of a maintenance hangar that, consistent with the airport site layout in the revised draft Airport Plan, is assumed to be situated to the west-northwest of the Stage 1 engine run-up bay. While actual ground running noise exposure levels at specific locations around the airport site may differ from those calculated in this EIS, the modelled contours are considered to provide a reasonable and generally conservative representation of the intensity and geographic extent of noise generated by this activity. In particular, the modelling assumes worst case meteorological conditions and that the noise source is omnidirectional. The final location of the engine run-up bay will be considered in the detailed design of the airport having regard to operational factors, such as proximity to aircraft maintenance and other facilities, and opportunities to minimise noise disturbance for residents in the vicinity of the airport site.</p> <p>Section 3.6.1 of Appendix E2 (Volume 4) explains that the sound pressure level of 151 dBA was derived from empirical measurement of aircraft take-off at Brisbane Airport. Table 3-4 of Appendix E2 shows the aircraft types measured and the range of sound power levels recorded. The 151 dBA level used in the modelling of engine ground running represents the loudest levels recorded at Brisbane Airport.</p>

Theme	Stakeholders	Summary of issue	Response
Assessment methodology	Local councils	<p>Aircraft taxiing noise</p> <p>Submissions stated that insufficient information was provided regarding assumed noise source levels used in the assessment, particularly in relation to noise from taxiing aircraft.</p>	<p>Appendix E2 (Volume 4) describes the basis for the noise source levels used for assessing aircraft taxiing and engine ground running noise exposure levels. For aircraft taxiing, a sound power level of 138 dBA (noise at source) for each aircraft has been assumed and aircraft have been assumed to be taxiing on the taxi-ways shown in the indicative layout for the Stage 1 development. Table 3-5 of Appendix E2 shows that this sound power level is representative of the highest noise levels measured for aircraft taxiing operations at Brisbane Airport. This is a conservative assumption that has been used in the noise modelling.</p>
Assessment methodology	Local councils NSW Government	<p>Cumulative noise impact</p> <p>Submissions sought further information about the cumulative noise impact at the nearest sensitive receptors from all ground-based noise sources. Noise sources identified in submissions include external road and rail infrastructure.</p>	<p>A response addressing the issue of cumulative noise from ground-based aircraft sources is provided in Section 30.2 of this Volume of the EIS.</p> <p>The road traffic noise assessment for the EIS is based on surface transport modelling that takes into account both traffic generated by the proposed airport as well as other projected regional road traffic based on population and employment forecasts and travel patterns in the Sydney Greater Metropolitan Area. This approach inherently captures the cumulative noise impacts of airport-generated traffic.</p> <p>The road network upgrades under the Western Sydney Infrastructure Plan have been assessed as adequate to support anticipated airport demand for at least a decade after operations commence. The construction and operation of offsite road and rail infrastructure, including any enabling work for the provision of rail services that may be required during the Stage 1 development (e.g. to future proof a rail corridor), will be subject to separate approval processes. These processes would consider construction and operation noise effects and potential mitigation measures.</p>
Assessment methodology	Local councils	<p>Construction noise criteria</p> <p>Submissions contended that for some receptors the noise management level for construction activities should be 39 dBA; not the 45 dBA (weekday) and 40 dBA (weekend and early morning works) criteria adopted for the assessment. It was claimed that this potentially underestimates the noise impacts from construction by up to 6 dBA.</p>	<p>For daytime construction activities, the noise management level is calculated by adding 10 dB to the background noise level at residential locations. Table 11-1 (Chapter 11, Volume 2a) shows that a daytime rating background level of 29 dBA (equivalent to a 39 dBA noise management level) would apply to only one location at which measurements were taken, and that that location is in Springwood in the lower Blue Mountains. Due to Springwood's distance from the airport site it would not be affected by construction noise. The criteria adopted for the assessment of construction noise are considered appropriate.</p>

Theme	Stakeholders	Summary of issue	Response
Assessment methodology	Local councils	<p>Number of sensitive receptors exposed</p> <p>Submissions stated that the EIS should identify how many sensitive receptors will be exposed to noise levels 5 dB, 10 dB, etc. above the assessment criteria established for engine ground running and aircraft taxiing noise.</p> <p>Submissions also commented that the noise sensitive receptors represented in the draft EIS reflect only existing communities, not potential future receptors. It was suggested that data should be remodelled using the South West Growth Centre Structure Plan.</p>	<p>The EIS includes estimates of the residential population predicted to be exposed to noise levels above the criteria established for engine ground running and taxiing noise assessment. The respective noise exposure contour diagrams for these activities (Figure 11-10 and Figure 11-11, Volume 2a) show the geographic extent of noise exposure levels in 5 dBA increments. Together, this information is considered adequate for indicating the scale of predicted impact from ground-based noise.</p> <p>Existing and forecast population estimates were developed for the assessment based on NSW Bureau of Transport Statistics (September 2014), which take into account metropolitan planning development forecasts for future land use in Sydney as well as NSW Department of Planning and Environment population forecasts.</p>



Theme	Stakeholders	Summary of issue	Response
Noise management	Local councils	<p>Engine run-up noise</p> <p>Submissions stated that high power engine running at night time should be conditioned appropriately as part of the approval of the Stage 1 development. Submissions also recommended that semi-enclosed pens and bunded areas should be considered further as part of subsequent design stages to reduce noise impacts on surrounding communities.</p> <p>Submissions also stated that consideration should be given to relocating the engine run-up bay further to the south-east to reduce the noise impact on Luddenham.</p>	<p>Airports in Australia have rules and procedures governing engine ground running to ensure they are conducted safely and at an appropriate location, heading and time of day so as to reduce noise disturbance to residents. For example, at some airports, engine testing above a ground idle power setting is not permitted at certain locations during the night. Engine ground running procedures would be developed by the ALC and approved through the Noise Operational Environmental Management Plan prior to the commencement of operations to manage how, where and when run-ups are conducted at the proposed airport. Noise generated by these operations would be regulated under the Airports (Environment Protection) Regulations (AEPR), which contain a general duty to take reasonable and practicable steps to prevent offensive noise intruding on individual, community or commercial amenity.</p> <p>The final location of the engine run-up bay will be considered in the detailed design of the proposed airport having regard to operational factors, such as proximity to aircraft maintenance and other facilities, and opportunities to minimise noise disturbance for residents in the vicinity of the airport site.</p> <p>It may also be practicable to construct barriers near the run-up area, or design surrounding buildings to provide greater noise shielding from these activities. As described in Appendix E2 (Volume 4), reductions of around 10 dBA could be achieved with provision of a purpose-built ground running enclosure at least 10 metres high, but moderate residual impacts would still occur under worst case meteorological conditions. Night time high power engine run-ups occur infrequently at major airports in Australia. The provision of an enclosure for conducting engine runs is not currently proposed, but could be further considered if noise from this activity results in unacceptable night time noise impacts based on operational experience.</p>

Theme	Stakeholders	Summary of issue	Response
Noise management	Local councils	<p>Aircraft taxiing noise</p> <p>Submissions commented that a number of potential mitigation measures could be considered to reduce aircraft taxiing noise, including single engine taxiing, engine off taxiing and the installation of acoustic barriers at effective locations.</p>	<p>The Noise OEMP (see Table 28-23 in Chapter 28 (Volume 2b)) requires the ALC to identify noise mitigation measures proposed to be implemented for ground-based noise generating activities. It also requires the completion of additional noise modelling and assessment during the detailed design phase to:</p> <ul style="list-style-type: none"> • update and refine the noise exposure modelling undertaken for this EIS; • inform the development of additional noise mitigation measures; and • test the effectiveness of any proposed noise mitigation measures and identify any residual excessive noise levels in areas surrounding the airport site. <p>The results of this further modelling and assessment would provide a basis for determining the need for any specific measures to address aircraft taxiing noise.</p>
Noise management	Local councils	<p>Use of auxiliary power units (APUs)</p> <p>One submission noted that the use of ground power and pre-conditioned air are not included in Table 11-13 of Chapter 11 of the draft EIS, which sets out the mitigation and management measures, nor is any mention of the restriction over APU usage. It was contended that if there is a possibility of ground power units being used as an alternative power source to APUs, then the noise emissions from this source should have been considered.</p>	<p>It is expected that power and preconditioned air will be supplied at terminal gates and aircraft will not use their auxiliary power units while parked. Noise emissions generated from alternative power supplies would only occur during very infrequent contingency arrangements associated with disruptions to existing power supplies.</p> <p>The Noise OEMP will describe the measures taken to minimise the use of APUs, including the provision of fixed electrical ground power units and preconditioned air at aircraft gates and any measures to minimise APU use by stationary aircraft at other locations on the airport site (see Table 28-23 in Chapter 28 (Volume 2b)).</p> <p>There is limited information regarding the design or operation of possible alternative power supplies to accurately model emissions. However, alternative power supplies are unlikely to represent a contributing noise source in the context of the overall airport operations and would not increase the overall noise emissions from the airport site, especially given the opportunity to design noise control measures for these as part of the detailed design.</p>

Theme	Stakeholders	Summary of issue	Response
Noise management	Local councils	<p>Assessing the effectiveness of noise mitigation measures</p> <p>One submission stated that the effectiveness of noise mitigation measures described in the draft EIS is not able to be determined.</p>	<p>Chapter 11 (Volume 2a) shows that aircraft engine ground running is anticipated to be the activity that generates the highest levels of ground-based noise. Additional modelling was undertaken in finalising the EIS to determine the likely noise reduction that could be achieved from construction of an engine run-up enclosure. As described in Appendix E2 (Volume 4), reductions of around 10 dBA could be achieved with provision of a purpose-built ground running enclosure at least 10 metres high, but moderate residual impacts would still occur under worst case meteorological conditions. The provision of an enclosure for conducting engine runs is not currently proposed, but could be further considered if noise from this activity results in unacceptable night time noise impacts based on operational experience.</p> <p>The Noise OEMP (Chapter 28 (Volume 2b)) requires the completion of additional noise modelling and assessment during the detailed design phase to:</p> <ul style="list-style-type: none"> • update and refine the noise exposure modelling undertaken for this EIS; • inform the development of additional noise mitigation measures; and • test the effectiveness of any proposed noise mitigation measures and identify any residual excessive noise levels in areas surrounding the airport site. <p>The Noise OEMP will also detail any noise amelioration actions proposed to mitigate offsite noise exposure that cannot be managed appropriately by operational and other onsite mitigation measures.</p>

15 Air quality and greenhouse gases

Volume 2 (Stage 1 Development), Chapter 12 (Air quality and greenhouse gases) of the draft EIS outlined the assessment of potential impacts associated with air quality and greenhouse gases. Air quality impacts were modelled for the construction and operation of the proposed airport, covering both local and regional impacts.

The chapter drew on two assessments, which were included as Appendix F1 (Local air quality and greenhouse gas) and F2 (Regional air quality) in the draft EIS.

15.1 About the submissions on this chapter



Table 15–1 Submissions related to air quality and greenhouse gases

Issue	Number of times the issue was raised	Percentage of total submissions
Air quality and greenhouse gases	1,533	30.8%

15.1.1 Origin of submissions

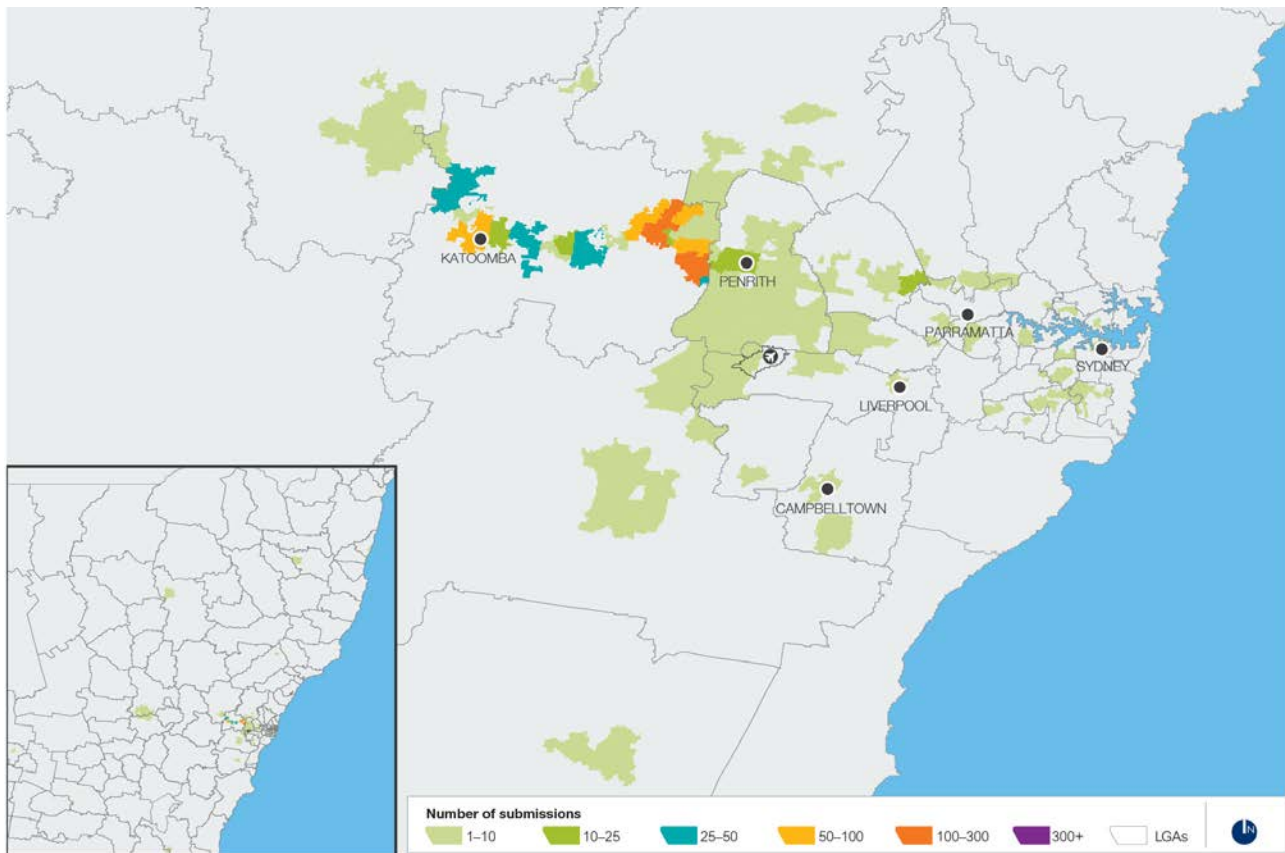


Figure 15–1 Map depicting origin of submissions in relation to Chapter 12 of the draft EIS

15.2 Summary and response

15.2.1 Overarching summary of submissions

Submissions stated that while the assessment of both local and regional impacts on the air environment has broadly followed accepted methodologies and guidelines, the draft EIS did not fully explore the cumulative air quality impacts of the airport in relation to urban development in Western Sydney. Submissions also suggested that the unique topography of the Western Sydney region and the nature of air movement throughout the Sydney basin were not adequately taken into account.

Some submissions suggested that the air quality impact assessment should model the impact of fuel jettisoning, irrespective of the limited frequency of occurrences.

The key themes from the submissions are summarised under the following headings:

- methodology;
- existing environment;
- impact assessment; and
- environmental management.

The submission comments are summarised and addressed in section 15.2.3.

15.2.2 Overarching response to issues raised

Following publication of the draft EIS, the air quality assessment was updated to reflect changes to the traffic, transport and access assessment (Appendix J (Volume 4)) explained in Section 18.2.3 below. The updates included a recalculation of emissions on external roadways and remodelling of their dispersion.

The results of the updated modelling for the Stage 1 development were generally consistent with the findings of the draft EIS. Based on the current air quality criteria, predicted emissions of nitrogen dioxide, particulate matter, carbon monoxide and sulfur dioxide were predicted to be met at all modelled receptor locations. However, predicted emissions of particulate matter less than 2.5 microns in diameter (PM_{2.5}) would exceed a future National Environment Protection Measure (NEPM) ambient air quality objective for 2025 at a number of receptor locations. This exceedance is primarily attributable to background concentrations from general urban development in the region.

The updated modelling also found that current criteria for air toxics were met at all modelled receptors except for formaldehyde that exceeded the criteria at two receptors located on the airport site, up from one in the draft EIS. Similarly, updated modelling for predicted ozone concentrations in the regional air quality assessment showed that changes from the draft EIS were marginal and in the order of 0.1 parts per billion.

The revised assessment is presented in Chapter 12 (Volume 2a), Appendix F1 and Appendix F2 (Volume 4).

15.2.3 Issues and responses

Theme	Stakeholders	Summary of issue	Response
Methodology	Local councils NSW Government Environmental groups	<p>Assessment scenario</p> <p>Some submissions questioned the appropriateness of limiting the assessment timeframe for air quality impacts to the Stage 1 development to 2030. It was suggested that this was substantially underreporting the impacts of the Stage 1 development. Submissions also criticised the hypothetical nature of the long term development in the air quality assessment.</p> <p>The NSW Government submission also suggested that it would be beneficial to assess changes in indirect impacts such as air quality based on different operating modes, once the operating strategy for the proposed airport is finalised.</p>	<p>The draft EIS provides a detailed consideration of potential environmental impacts arising from the Stage 1 development as described in the Airport Plan. All subsequent airport development will be subject to additional approvals under the Airports Act.</p> <p>A strategic-level assessment of a potential long term development was also undertaken. This was done in recognition that approval for the Stage 1 development would facilitate growth of the proposed airport and to ensure the full extent of potential impacts were considered as part of the approval of the Stage 1 development. The strategic-level assessment recognises the uncertainty in predicting impacts that may occur nearly 50 years into the future and the additional approval requirements to facilitate future development. Detailed assumptions used for modelling the long term development are included in Appendix F1 (Volume 4).</p> <p>It should also be noted that modelling of the long term development used emission data from aircraft currently in operation and is therefore considered to be inherently conservative as over time existing aircraft are expected to be replaced with more efficient and less emission intensive models.</p>
Methodology	Local councils Residents	<p>Types of emissions considered</p> <p>Some submissions queried whether specific air quality pollutants known to be carcinogenic had been included in the analysis and suggested that the air quality predictions should be compared against the most stringent national and international criteria.</p>	<p>Appendix F1 (Volume 4) has evaluated the impacts of specific air toxics applicable to airport operations by referencing dispersion model predictions against the advisory standard for air toxic investigation levels specified within the <i>National Environment Protection (Air Toxics) Measure</i>.</p> <p>Atmospheric dispersion model predictions have been compared against a range of air quality criteria as outlined in Section 12.3 (Volume 2a). These criteria are in the form of legislation, guidelines and standards that have been introduced at the Commonwealth and State government levels and are the most stringent relevant criteria.</p>

Theme	Stakeholders	Summary of issue	Response
Methodology	NSW Government Local councils Residents	<p>Sources of emissions considered</p> <p>Some submissions stated that further consideration should be given to particular emissions sources at the airport site, including:</p> <ul style="list-style-type: none"> landscape maintenance activities, such as the operation of whipper snippers, leaf blowers and other equipment; quarantine waste incineration; and development of the commercial zones on the airport site. 	<p>The EIS includes an assessment of all key emission sources for both construction and operation of the proposed airport.</p> <p>In relation to landscape maintenance activities, these are anticipated to be transitory and are not suited to being incorporated within a dispersion modelling exercise. Further, the impacts of these activities to air are considered to be readily managed through conventional dust management techniques such that their impacts can be minimised. Any air quality impacts of existing landscape maintenance activities in areas surrounding the airport site would be reflected in the ambient air quality data used in the assessment.</p> <p>As stated in Section 25.6.3 (Volume 2a), it is planned that quarantine waste would be sterilised in an autoclave at the proposed airport prior to disposal at an appropriately licensed facility. Emissions associated with the decay or incineration of the waste thereafter would be under the operational control of the waste facility operator.</p> <p>The development of business parks on the airport site are largely outside the scope of the Stage 1 development and this EIS. While the revised draft Airport Plan contains a Land Use Plan which identifies zones on the airport site for which business development would be acceptable, it does not specifically authorise the construction or operation of those developments. These types of developments would be subject to separate assessment and approval processes.</p>
Methodology	Environmental groups	<p>Calculation of emissions from aircraft</p> <p>Some submissions stated that the draft EIS was not clear about how emissions from aircraft are calculated, and whether it includes emissions generated while aircraft are in flight or moving on the tarmac at the airport site.</p>	<p>The approach to aircraft emission calculation was outlined in Section C.2.2 of the local air quality and greenhouse gas assessment in Appendix F1 (Volume 4). Emissions are calculated by the Emissions and Dispersion Modelling System (EDMS) that references the ICAO Engine Exhaust Emissions Data Bank. This approach is accepted in the Australian regulatory setting and has been used in a variety of applications including the assessment of Sydney (Kingsford Smith) Airport. The emissions factors embedded in the EDMS account for aircraft in six modes of transit including approach, climb out, start-up, take-off, taxi-in and taxi-out.</p>

Theme	Stakeholders	Summary of issue	Response
Methodology	Local councils Environmental groups	<p>Fuel jettisoning</p> <p>A number of submissions raised concerns about the impacts of fuel jettisoning on air quality.</p> <p>Some submissions suggested that the air quality impact assessment should model the impact of fuel jettisoning, irrespective of the limited frequency of occurrences. Some submissions suggested a risk assessment would be appropriate to better understand potential air quality impacts and risks of fuel jettisoning.</p>	<p>Fuel jettisoning is not considered likely to have a significant impact on local air quality. Local effects of fuel jettisoning at the site would be limited due to the inability of many aircraft to perform fuel dumps, the quick vaporisation and dispersion of aircraft fuel, and the strict guidelines on fuel jettisoning altitudes and locations.</p> <p>Fuel jettisoning occurs very rarely and only after authorisation from air traffic control. In 2014 there were 10 instances of civilian aircraft jettisoning fuel in Australia, representing approximately 0.001 per cent of all domestic and international aircraft movements across the nation.</p> <p>Accordingly, fuel dumping has not been considered a key environmental risk in contemporary assessments. The environmental impact assessment and major development plan for the new parallel runway at Brisbane Airport discounts fuel jettisoning as a key environmental risk for the same reasons as those stated above. Further risk assessment is considered unnecessary.</p>

Theme	Stakeholders	Summary of issue	Response
Methodology	Local councils	<p>Identification of sensitive receptors</p> <p>Some submissions questioned the way in which sensitive receptors were identified and assessed. In particular, some submissions stated that the draft EIS:</p> <ul style="list-style-type: none"> • did not identify all sensitive receptors; • identified a subset of receptors which was limited and was not representative of all receptors; • did not identify future sensitive receptors; and • incorrectly classified community receptors as separate to residential receptors and incorrectly considered them as less important than residential receptors. 	<p>A sensitive receptor is defined as a location where people are likely to work or reside. Sensitive receptors may include dwellings, schools, hospitals, offices or public recreational areas.</p> <p>A representative sample of sensitive receptors was selected for detailed assessment in the air quality and greenhouse gas assessment. This approach is more practicable than conducting a detailed assessment at all receptors and provides an indication of the range of potential impacts that would require mitigation and management. The exclusion of certain sensitive receptors (including future receptors) in this regard is consistent with industry standard practice and does not compromise the results of the assessment.</p> <p>For the assessment a total of 152 sensitive receptors were identified. The approach taken was to identify a representative subset of receptors to represent individual residences and clusters of residences located within about 5 km of the airport. This subset included 18 residential receptors, two onsite receptors and 75 community receptors.</p> <p>The receptors are considered representative as they are grouped over geographical area, distance from the proposed airport and type. All receptors were considered to be of equal importance, regardless of type or geographical location.</p> <p>The contour plots provided in Appendix F1 (Volume 4) showing the geographical representation of predicted air quality concentrations can also be used to identify impacts at particular locations.</p>
Methodology	Local councils Residents	<p>Location of data sources</p> <p>It was suggested that documentation of the locations of existing monitoring stations and reference to baseline data from these sites would be beneficial.</p>	<p>As noted in Section 4.2 of the air quality assessment in Appendix F1 (Volume 4), the NSW Office of Environment and Heritage monitoring station at Bringelly collects air quality data for air quality parameters including PM₁₀, NO₂ and SO₂. The Bringelly monitoring station is located 3.9 km south-east of the airport site.</p> <p>The Bringelly monitoring station does not measure all air quality parameters investigated as part of the assessment. For this reason, data from NSW Office of Environment and Heritage monitoring stations elsewhere in Western Sydney have also been referenced.</p> <p>A map of the locations of the air quality monitoring stations is provided as Figure 4-9 of Appendix F1 (Volume 4).</p>

Theme	Stakeholders	Summary of issue	Response
Methodology	Local councils Residents Community groups Environment groups	<p>Modelling of topographic and meteorological conditions</p> <p>Some submissions questioned whether the air quality assessment took into account how topography and meteorological conditions in Western Sydney would affect the dispersion of air quality impacts from the proposed airport.</p>	<p>The unique characteristics of the Sydney basin have been taken into account as part of the air quality assessments undertaken as part of the EIS. The air quality assessment in Appendix F1 (Volume 4) considers the existing air quality and meteorology of the local area – including site-specific data collected by the automated weather station installed by the Bureau of Meteorology at the airport site in 1995. The dispersion model also accounts for the effects of local topography. The use of site-specific meteorological and topographic data in this way is considered to be industry best practice.</p> <p>The regional air quality assessment in Appendix F2 (Volume 4) also considers existing air quality and meteorology using a nested grid model configuration covering an area of 210 kilometres by 270 kilometres within and surrounding the Sydney basin. The regional air quality model was validated against regional meteorological and air quality data and was found to be adequate.</p>
Methodology	Local councils	<p>Peer review of findings in draft EIS</p> <p>Some submissions questioned why consultants undertaking a peer review of the draft EIS for the Western Sydney Regional Organisation of Councils were not granted access to relevant input and output files used to undertake the air quality assessment. It was suggested that the provision of such information is a routine expectation and is a minimum requirement for the NSW EPA for such studies.</p> <p>The peer review which formed the basis of many of these submissions confirmed that the methodology used to assess air quality impacts, including regional air quality and greenhouse gas impacts, was appropriate.</p>	<p>Information was provided to the peer reviewer as and when requested but in some cases was prohibited by contractual obligations. The draft EIS was prepared in line with <i>Guidelines for the Content of a Draft Environmental Impact Statement</i> and meets the requirements set out under the EPBC Act. Confirmation of the methodologies employed in the air quality and greenhouse gas assessments is acknowledged.</p>

Theme	Stakeholders	Summary of issue	Response
Existing environment	Residents Local councils Community groups Environment groups	<p>Existing air quality and topography of Western Sydney region</p> <p>Some submissions stating that existing air quality characteristics and the topography of the Western Sydney region mean that it was inappropriate to develop an airport at Badgerys Creek.</p> <p>In particular, submissions raised concerns that urban development combined with existing topography and meteorological conditions in the region is already resulting in increasing air quality issues and that development of the proposed airport could potentially increase some identified impacts.</p> <p>Some submissions also argued that air quality assessment should discuss the effects of climate change on Sydney Basin dynamics and the implications for air quality.</p>	<p>Strategic alternatives to service a growing aviation demand in Sydney have been assessed over a number of decades and have consistently found that the development of a new airport at Badgerys Creek was most effective to address demand. This was confirmed in the 2012 <i>Joint Study on Aviation Capacity in the Sydney Region</i> (Joint Study) which examined 18 localities in the Sydney region and surrounding areas using a detailed multi-criteria analysis including a variety of environmental and social criteria.</p> <p>The unique characteristics of the Sydney basin have been taken into account as part of the air quality assessments undertaken as part of the EIS. The air quality assessment in Appendix F1 (Volume 4) considers the existing air quality and meteorology of the local area – including site-specific data collected by the automated weather station installed by the Bureau of Meteorology at the airport site in 1995. The dispersion model also accounts for the effects of local topography. The use of site-specific meteorological and topographic data in this way is considered to be industry best practice.</p> <p>The regional air quality assessment in Appendix F2 (Volume 4) also considers existing air quality and meteorology using a nested grid model configuration covering an area of 210 kilometres by 270 kilometres within and surrounding the Sydney Basin. The regional air quality model was validated against regional meteorological and air quality data and was found to be adequate.</p> <p>The effects of climate change on local meteorology are unable to be accounted for in current atmospheric dispersion modelling given the inherent uncertainties involved.</p>

Theme	Stakeholders	Summary of issue	Response
Impact assessment	Local councils Residents	<p>Presentation of impacts</p> <p>Submissions argued that the result of the impact assessment should have been presented in terms of various categories of receptors across all affected local government areas and with regard to targeted air quality criteria depending on the vulnerability of those receptors.</p>	<p>A representative sample of sensitive receptors was selected for detailed assessment in the air quality and greenhouse gas assessment. This approach is more practicable than conducting detailed assessment at all receptors and provides an indication of the range of potential impacts that would require mitigation and management.</p> <p>A total of 152 sensitive receptors were identified within about 5 km of the proposed airport. This included 18 residences (or clusters of residences), 75 community areas and two receptors at the airport site.</p> <p>While sensitivity of a sensitive receptor is a key consideration in assessing potential impacts, impacts are also dependent on a number of other factors including meteorology and distance from the emissions source. As such, presentation of impacts across receptor types alone would not present an accurate indication or summary of potential impacts.</p>
Impact assessment	Environmental groups	<p>Conclusion of ozone assessment</p> <p>Some submissions noted that ozone exceedances are already occurring in Western Sydney and questioned how the draft EIS could come to the conclusion that ozone impacts would be marginal if the proposed airport is predicted to increase the presence of ozone in the region.</p>	<p>Ozone impacts are described as marginal when comparing the predicted ozone concentrations with the proposed airport with predicted ozone without the proposed airport. Predicted ozone increases attributable to the proposed airport were in the order of one to five parts per billion. Description of these increases as marginal is considered justified, especially in the context of greater trends due to the broader urbanisation of Western Sydney.</p>

Theme	Stakeholders	Summary of issue	Response
Impact assessment	NSW Government Residents Community groups Environmental groups Local councils	<p>Cumulative impacts</p> <p>Some submissions suggested that the cumulative air quality impacts of the proposed airport had not been fully considered, including:</p> <ul style="list-style-type: none"> existing and planned urban development in the region; major projects; increased road traffic; and the concentration of air quality impacts in areas with increased traffic congestion. 	<p>Cumulative air quality impacts were considered as part of both the local and regional air quality assessments undertaken as part of the EIS.</p> <p>The assessment of predicted air quality impacts of the proposed airport considers existing air quality based on air quality data. Existing air quality data included emissions from other existing sources in the region such as major projects, urban development and road traffic.</p> <p>Assessment of planned urban development, major projects and road traffic is dependent on the public availability of information and the confidence in that information. In any case, approval of other planned major projects and urban developments in the region would typically be contingent on separate environmental assessments, which would typically include an assessment of potential air quality impacts.</p> <p>Existing and future road traffic was modelled as this information is embedded in version 3 of the Strategic Transport Model (STM3) that was utilised in the traffic, transport and access assessment. The model includes representation of road traffic associated with the rapidly increasing population of Western Sydney and supporting major transport infrastructure projects such as The Northern Road upgrade, the proposed M12 Motorway and other major projects such as WestConnex.</p> <p>Given the strategic scale of the transport model, air quality emissions at particular intersections were not assessed in detail. These potential impacts may be considered during detailed design. However emissions at these locations would not typically have far reaching implications in the context of emissions from the broad road network or other industrial scale emissions sources.</p>
Impact assessment	Environmental groups	<p>Inconsistency with international climate law</p> <p>Some submissions suggested that, because the development of the proposed airport will result in the emission of greenhouse gases, the development is inconsistent with Australia's obligations under international climate law.</p>	<p>Australia is committed to taking strong domestic and international action on climate change. The Australian Government is implementing national policies to reduce emissions and adapt to the impacts of climate change in the context of coordinated global action.</p> <p>The construction and operation of the proposed airport will be consistent with all relevant domestic laws and will not preclude the achievement of the Australian Government's national emission reduction targets.</p>

Theme	Stakeholders	Summary of issue	Response
Impact assessment	Local councils Residents Community groups Environmental groups	<p>Presentation of greenhouse gas emissions</p> <p>Submissions contended that any statement of the total greenhouse gas emissions from the development should include Scope 1, 2 and 3 emissions. Some submissions suggested that the presentation of greenhouse gas emission figures in the draft EIS was misleading.</p> <p>Some submissions suggested that the presentation of greenhouse gas emissions is particularly relevant because it would assist in making the case for the development of high speed rail system using renewable energy instead of development of the proposed airport.</p>	<p>Scope 1, 2 and 3 greenhouse gas emissions are quantified within Chapter 12 (Volume 2a) and Section 8 of the Air Quality Assessment in Appendix F1 (Volume 4). A total figure for emissions across construction and operation was not presented given the total figure for construction is for the entire construction period while the figure for operation is per annum. A per annum figure during operation is appropriate given the proposed airport is intended to operate for a long period of time. It is considered that the figures presented in the draft EIS provide a clear indication of predicted greenhouse gas emissions.</p>
Impact assessment	Local councils Residents Community groups Environmental groups Residents	<p>Error in reporting greenhouse gas emissions</p> <p>Some submissions noted that the draft EIS contained an error in the reporting of greenhouse gas emissions for the proposed airport. Submissions criticised the amendment of this error during public exhibition of the EIS. Some submissions suggested that the errors in the reporting of greenhouse gas emissions were indicative of an overall inadequacy of the assessment.</p>	<p>During the exhibition period, a typographical error from an earlier version of the draft EIS was corrected in the standalone digital copies of Chapters 12 (Volume 2) and 32 (Volume 3) on the website. The typographical error did not alter the overall findings of the draft EIS. When this error was recognised, these chapters were updated to be consistent with the accurate information contained in the printed versions of these chapters, the consolidated digital version of the draft EIS on the website and the versions on USB flash drives. The accurate information in the consolidated digital version of the draft EIS was available on the website and USBs, and in printed form at static displays, throughout the consultation period.</p>

Theme	Stakeholders	Summary of issue	Response
Impact assessment	Local councils	<p>Inconsistencies in the reporting of findings</p> <p>Some submissions suggested that there were a number of inconsistencies in how the findings of the air quality assessment were presented in the draft EIS and that these issues must be addressed in the final EIS, including:</p> <ul style="list-style-type: none"> • inconsistencies in emissions inventories; • inconsistencies in the air pollutant concentrations at sensitive receptors that are presented in tables, compared with the concentration that may be inferred by considering the relevant contour plots; • errors in the total emission rates due to airport and roadways presented in all tables; • incorrect pollutants or averaging periods being reported; • incorrect units stated in tables, resulting in concentrations being reported as 1,000 times lower than actual; and • contour lines on figures that do not cover all identified receptors, indicating that some receptors may not have been included in the modelling. 	<p>During the exhibition, a typographical error from an earlier version of the draft EIS was corrected in the standalone digital copies of Chapter 12 (Volume 2) and Chapter 32 (Volume 3) on the website. The typographical error did not alter the overall findings of the draft EIS. When this error was recognised, these chapters were updated to be consistent with the accurate information contained in the printed versions of these chapters, the consolidated digital version of the draft EIS on the website and the versions on USB flash drives. The accurate information in the consolidated digital version of the draft EIS was available on the website and USBs, and in printed form at static displays, throughout the consultation period.</p> <p>Contour plots were prepared to show the spatial distribution of each pollutant. Contour plots for one-hour average NO₂ (both for the airport and with cumulative contributions), and maximum cumulative 24-hour average PM₁₀ and PM_{2.5} (with background contributions) are based on outputs for the receptors only and not on the entire modelling grid. For NO₂, this is because the Ozone Limiting Method (OLM) used to convert NO_x to NO₂ would not necessarily characterise the dispersion conditions. For the maximum 24-hour average PM₁₀ and PM_{2.5}, daily contemporaneous background contributions were referenced. Cumulative processing has been completed for each gridded and discrete receptor for subsequent revision to the draft EIS.</p> <p>Amendments to the local air quality and greenhouse assessment have been made to address typographical errors identified in:</p> <ul style="list-style-type: none"> • total airport and roadways emissions; • averaging period reported in results tables; and • unit measures for carbon monoxide amended, noting that CO predictions are still well below the impact assessment criteria. <p>All identified sensitive receptors included in the local air quality study were included in the modelling as discrete receptors to allow for additional analysis (e.g. NO_x to NO₂ OLM conversion). Results at sensitive receptors were not inferred from contour plots.</p>

Theme	Stakeholders	Summary of issue	Response
Environmental management	NSW Government Community groups Local councils	<p>Monitoring network</p> <p>The NSW Government submissions recommended the early establishment of a comprehensive air quality monitoring network for construction and operational impacts.</p> <p>Some submissions suggested that a local and regional scale air quality monitoring programme may help manage potential future air quality (and health) concerns and that such a network be discussed with relevant NSW Government agencies.</p>	<p>As outlined in the Air Quality CEMP in Chapter 28 (Volume 2b), pre-construction air quality monitoring will be undertaken to establish baseline data. An air quality monitoring station will be established at the airport site to continually monitor air quality during construction and, as outlined in the Air Quality OEMP, throughout operation of the Stage 1 development.</p> <p>The implementation of this monitoring station would provide scientifically robust data to demonstrate that any changes in local air quality associated with the development are within regulatory guidelines.</p> <p>The establishment of the air quality monitoring station on the airport site will complement the existing air quality monitoring network operated by the NSW Office of Environment and Heritage. As outlined in Chapter 28 (Volume 2b), air quality monitoring on the airport site will include consultation with the NSW Environment Protection Authority.</p> <p>The Airports (Environment Protection) Regulation 1997 (AEPR) also requires the Airport Lessee Company (ALC) to undertake regular air quality monitoring.</p>

Theme	Stakeholders	Summary of issue	Response
Environmental management	NSW Government	<p>Regional air quality targets</p> <p>The NSW Government submissions stated that, given the existing air quality issues in Western Sydney and the planned development of the region, further modelling should be done to forecast potential human health and environmental impacts. This modelling could then be used to establish operational air quality targets for the whole of Western Sydney. These targets would be set by the Commonwealth and NSW Government through a joint plan.</p>	<p>The development of regional air quality targets is a matter which is beyond the scope of this EIS. To the extent that such targets are developed, they would be considered in the preparation and implementation of the Air Quality CEMP and Air Quality OEMP as outlined in Chapter 28 (Volume 2b).</p> <p>It is noted that the Australian Government and NSW Government have existing arrangements established for the implementation of national air quality targets. The Commonwealth <i>National Environment Protection Council Act 1994</i> and complementary State and Territory legislation allow the National Environment Protection Council to make National Environment Protection Measures (NEPMs). NEPMs are a special set of national objectives designed to assist in protecting or managing particular aspects of the environment. NEPMs are made by the National Environment Protection Council and are implemented separately by governments in each jurisdiction. At the Commonwealth level this regulatory framework is administered by the Department of the Environment and Energy.</p> <p>The development of regional air quality targets is a matter which is beyond the scope of this EIS. To the extent that such targets are developed, they will be considered in the preparation and implementation of the air quality environmental management plans.</p> <p>A future ALC would also be required to consult with relevant authorities when developing master plans and airport environment strategies during operations.</p>

Theme	Stakeholders	Summary of issue	Response
Environmental management	NSW Government	<p>Mitigation of exceedances</p> <p>The NSW Government submission noted that predicted air quality would exceed regional ozone and nitrogen dioxide standards and argued that the air quality assessment did not present a clear mitigation strategy for these air quality issues.</p>	<p>Minor exceedances of regional ozone and nitrogen dioxide adopted criteria were identified for the assessment of the long term development. The mitigation and monitoring measures detailed in the EIS present reasonable and feasible methods of reducing the impact of the proposed airport and allow for flexibility and adaptability in future airport planning.</p> <p>The exceedance of nitrogen dioxide criteria are predicted to occur at a very small number of sensitive receptors for between one and two hours per year. The regional air quality assessment indicates minimal change in peak ozone levels for the long term development, notwithstanding that the predicted increase in peak ozone for the long term development over a hypothetical 2030 base case is greater than the predicted increase for the Stage 1 development over the same hypothetical 2030 base case.</p> <p>Developments beyond the proposed Stage 1 development would be subject to separate assessment and approval processes.</p>
Environmental management	Local councils	<p>Effectiveness of mitigation measures</p> <p>Some submissions questioned the effectiveness of mitigation measures proposed in the draft EIS. In particular, it was suggested that the effectiveness of mitigation measures has not been quantified and therefore the draft EIS has failed to demonstrate that compliance with the relevant air quality criteria could be achieved.</p>	<p>The air quality assessment outlined in Chapter 12 (Volume 2a) states that emissions from Stage 1 operations will generally fall within air quality guidelines.</p> <p>Air emissions will in any case be managed through the Air Quality CEMP and the Air Quality OEMP as outlined in Chapter 28 (Volume 2b). As part of the CEMP and OEMP, specific mitigation measures will be developed and implemented as part of this framework to further reduce air quality impacts during construction and operation. Chapter 28 (Volume 2b) also provides detailed information about the overall objectives and performance criteria for the CEMP and OEMP as well as monitoring and reporting measures to demonstrate effectiveness over time.</p>

Theme	Stakeholders	Summary of issue	Response
Environmental management	NSW Government Members of Parliament and Senators Environmental groups Community groups Peak bodies Residents Local councils	<p>Proposed mitigation measures</p> <p>A number of submissions put forward suggestions for measures to reduce air quality and greenhouse gas impacts from the proposed airport. Suggested measures included:</p> <ul style="list-style-type: none"> • auxiliary power units at gates; • vapour recovery at fuel storage; • electric ground support vehicles; • low-emission vehicles for transporting passengers around the airport site; • development of public transport connections, such as a rail link, to reduce the number of private vehicles accessing the site; • installation of charging stations at the airport site to encourage the use of electric vehicles; • purchase of 100 per cent of electricity from renewable sources; and • purchase of carbon offsets for emissions that cannot be mitigated by the airport operator. <p>Some submissions stated that mitigation measures should be certified by a suitably qualified and experienced air quality consultant.</p>	<p>The air quality assessment outlined in Chapter 12 (Volume 2a) states that emissions from the operation of the Stage 1 development will generally fall within air quality guidelines.</p> <p>Air quality impacts will be managed through the Air Quality CEMP and Air Quality OEMP as outlined in Chapter 28 (Volume 2b). Specific mitigation measures will be developed and implemented as part of the CEMP and OEMP to further reduce air quality impacts during construction and operation. Chapter 28 (Volume 2b) also provides detailed information about the overall objectives and performance criteria for the CEMP and OEMP as well as monitoring and reporting measures to demonstrate effectiveness over time.</p> <p>A number of the mitigation measures proposed by submissions have already been identified for inclusion or will be considered for inclusion in the CEMP and OEMP.</p>
Environmental management	NSW Government	<p>Air quality management plan</p> <p>The NSW Government submissions proposed the development of an air quality management plan to minimise air quality impacts during construction and operation. It was suggested that this plan should consider the use of best-practice environmental management systems to meet or exceed the standards represented in the <i>Sydney Airport Environmental Strategy 2013-2018</i>.</p>	<p>Air quality impacts will be managed through the Air Quality CEMP and Air Quality OEMP as outlined in Chapter 28 (Volume 2b). Specific mitigation measures will be developed and implemented as part of the CEMP and OEMP to further reduce air quality impacts during construction and operation. Chapter 28 (Volume 2b) also provides detailed information about the overall objectives and performance criteria for the CEMP and OEMP as well as monitoring and reporting measures to demonstrate effectiveness over time.</p> <p>The CEMP and OEMP will be developed in consultation with the relevant authorities including the NSW Environment Protection Authority.</p>

Theme	Stakeholders	Summary of issue	Response
Environmental Management	Community groups Local councils	<p>Mitigation of air quality impacts</p> <p>Submissions stated that the mitigation and management measures presented in the draft EIS were lacking detail or demonstrable effectiveness. Other submissions suggested that mitigation should be targeted at particularly vulnerable groups.</p>	<p>The air quality mitigation and management measures outlined in Chapter 28 (Volume 2b) are consistent with expected air quality impacts.</p> <p>As noted earlier, following publication of the draft EIS, the environmental management framework was comprehensively reworked to provide clearer objectives for the environmental management plans such as those relating to air quality. Mitigation and management measures were also updated to provide further clarity to commitments and responsibilities.</p> <p>Air quality impacts would largely be governed by the AEPR. The AEPR sets out enforceable obligations for an ALC to manage air quality emissions and includes a comprehensive regulatory regime for the establishment of environmental performance targets, as well as provisions for monitoring and reporting to ensure compliance with those targets.</p> <p>The suggestion that mitigation measures be targeted at particularly vulnerable groups is noted. The EIS identifies (e.g. in Appendix G (Volume 4)) that more vulnerable groups would be included amongst the population predicted to experience impacts from the proposed airport. Mitigation measures and frameworks identified in the EIS will be implemented and the predicted levels of impacts will be reduced including on more vulnerable groups.</p>
Environmental Management	NSW Government	<p>Mitigation of construction impacts</p> <p>The NSW Government recommended the implementation of mitigation and management measures during construction in line with the local government air quality toolkit administered by the NSW Environment Protection Authority.</p>	<p>As outlined in Chapter 28 (Volume 2b), an Air Quality CEMP will be developed to mitigate and manage air quality impacts during construction. The CEMP will include the preparation of a dust management plan which would be developed with due consideration to all relevant legislation and guidance – including the NSW Environment Protection Authority's local government air quality toolkit.</p>

Theme	Stakeholders	Summary of issue	Response
Environmental Management	NSW Government	<p>Management of regional impacts</p> <p>The NSW Government recommended cooperation between the NSW Government and the Australian Government in implementing a joint an air quality management plan including regional air quality targets.</p>	<p>The development of a regional air quality management plan is a matter which is beyond the scope of this EIS. To the extent that such a plan is developed, it would be considered in the preparation and implementation of the Air Quality CEMP and Air Quality OEMP as outlined in Chapter 28 (Volume 2b).</p> <p>It is noted that the Australian Government and NSW Government have existing arrangements established for the implementation of national air quality targets. The Commonwealth <i>National Environment Protection Council Act 1994</i> and complementary State and Territory legislation allow the National Environment Protection Council to make National Environment Protection Measures (NEPMs). NEPMs are a special set of national objectives designed to assist in protecting or managing particular aspects of the environment. NEPMs are made by the National Environment Protection Council and are implemented separately by governments in each jurisdiction. At the Commonwealth level this regulatory framework is administered by the Department of the Environment and Energy.</p>
Environmental management	NSW Government	<p>Management of diesel emissions</p> <p>The NSW Government submissions stated that emissions standards for diesel equipment would need to meet or exceed the emission standards in the NSW Government Resource Efficiency Policy.</p>	<p>As outlined in the Environmental Management Framework in Chapter 28 (Volume 2b), the proposed airport will be required to comply with air quality emissions standards as set out in the AEPR. Chapter 12 (Volume 2a) states that the operation of the Stage 1 development is not expected to result in exceedances of the air quality guidelines at any of the identified receptors outside the airport site.</p>
Environmental management	NSW Government	<p>Assessment of Stage 1 following detailed design</p> <p>The NSW Government submission recommended the preparation of a revised assessment based on the detailed design of the proposed airport including incorporation of contemporary data, methods and standards in place at that time.</p>	<p>The air quality assessment presented in Appendix F1 (Volume 4) is considered to adequately assess the potential air quality impacts of the proposed airport. Developments beyond the proposed Stage 1 development would be subject to separate assessment and approval processes.</p>

16 Human Health

Volume 2 (Stage 1 Development), Chapter 13 (Human health) of the draft EIS outlined the potential health risks associated with construction and operation of Stage 1 of the proposed airport. The assessment focuses on potential risks from aircraft noise, ground based noise, air quality, and water quality.

The chapter drew on the health risk assessment undertaken, which was included as Appendix G (Community health).

16.1 About the submissions on this chapter



Table 16–1 Submissions related to human health

Issue	Number of times the issue was raised	Percentage of total submissions
Human health – general health impacts	2,484	49.9%
Human health – asthma	152	3.1%
Human health – sleep deprivation	496	10.0%

16.1.1 Origin of submissions

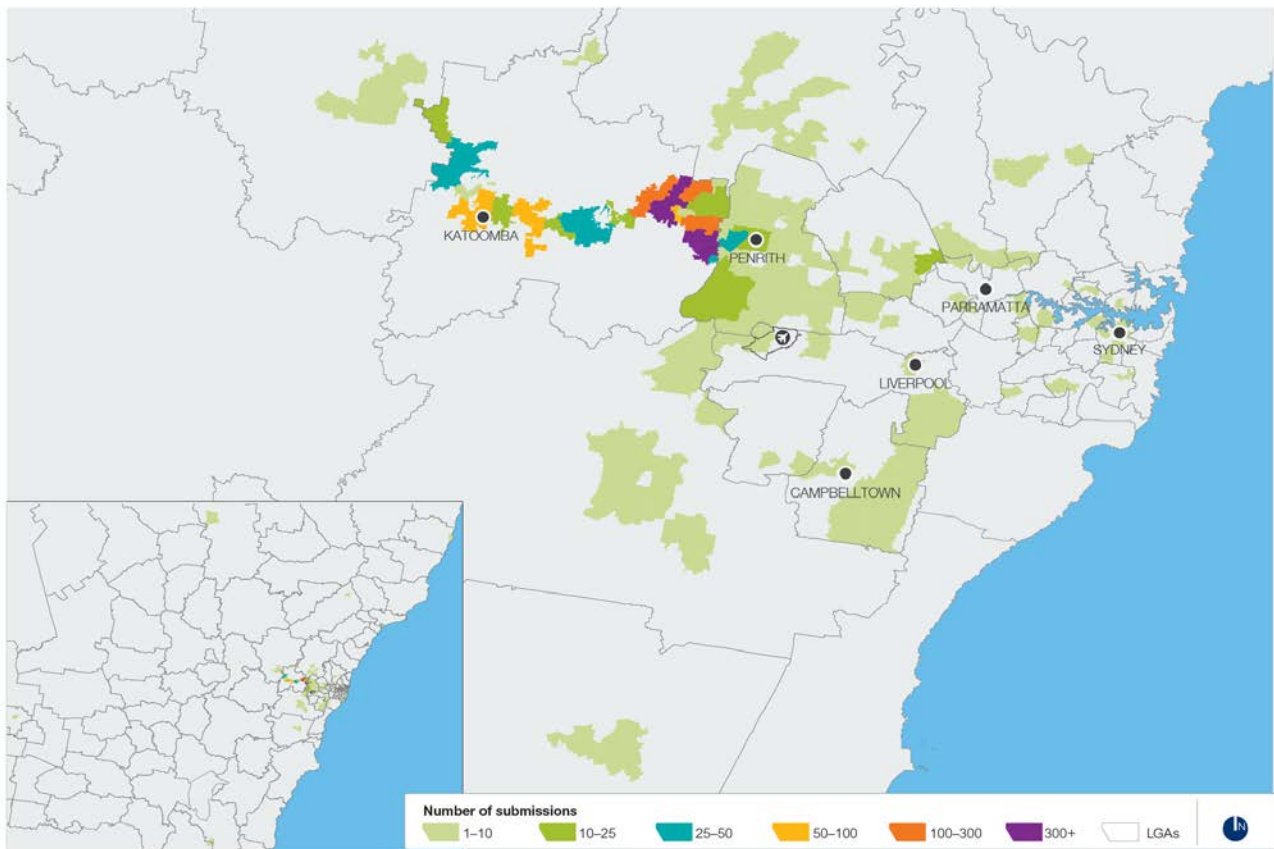



Figure 16–1 Map depicting origin of submissions in relation to Chapter 13 of the draft EIS

16.2 Summary and response

16.2.1 Overarching summary of submissions

A number of submissions raised concerns about the potential health impacts from construction and operation of the Stage 1 development. Specific health issues raised in submissions included sleep deprivation, stress, cardiovascular disease, depression, fatigue, asthma and other respiratory illnesses and impairment in cognitive development among children. Submissions referenced medical research that was conducted in Australia and overseas to support their concerns about the potential negative health impacts that may be caused by the operation of the proposed airport. Some submissions stated that it is unacceptable that the Australian Government could approve any development that might result in increased health risks for the general population.

Some submissions questioned whether the methodology used to assess potential health risks was appropriate for this project and questioned why a health risk assessment was prepared instead of a health impact assessment.



The key themes from the submissions are summarised under the following headings:

- assessment methodology;
- general health impacts; and
- environmental management.

The submission comments are summarised and addressed in section 16.2.3.

16.2.2 Overarching response to issues raised

Following publication of the draft EIS, the health risk assessment was revised to reflect updates to the traffic, ground-based noise, air quality, and water quality assessments. The revised health risk assessment concluded that the change in human health risk was generally within or at the upper bound of the range considered acceptable by Australian and international regulators. The revised health risk assessment is presented in Chapter 13 (Volume 2a) and Appendix G (Volume 4) of the final EIS.

16.2.3 Issues and responses

Theme	Stakeholders	Summary of issue	Response
Assessment methodology	Local councils Residents	<p>Health impact assessment</p> <p>Submissions questioned the justification for conducting a health risk assessment as opposed to a health impact assessment. It was suggested that for a project of this scale that a health impact assessment would have been a more appropriate methodology.</p> <p>Some submissions suggested that a health impact assessment would be able to provide a better understanding of the proposed airport's impacts on human welfare, including positive health impacts associated with the increased economic growth and development opportunities.</p>	<p>The health risk assessment presented in Appendix G and Chapter 13 of the EIS is appropriate to assess the health risks for the proposed airport. The health risk assessment was prepared in accordance with the requirements of State and Commonwealth legislation, the Guidelines for the Western Sydney Airport EIS, and the assessment completed for the previous EIS in 1997–1999.</p> <p>The health risk assessment employed a quantitative approach to assess the potential for human health risks due to the operation of the proposed airport. The health effects assessed in the health risk assessment, including those relating to air quality and aircraft noise, were identified with reference to Australian and international literature including publications from the World Health Organization.</p> <p>The health risk assessment also included assessment of specific groups including those particularly at risk based on age or medical condition. This approach was discussed with key health stakeholders prior to undertaking the study.</p>
Assessment methodology	Local councils Residents	<p>Extent of health impacts assessed</p> <p>Submissions suggested that the assessment should be broadened to include mental health impacts as well as the less severe (or non-chronic) health effects, including perceived health issues, and the full range of environmental and social determinants on health. A discussion of potential health issues where quantification is not currently recommended by national guidelines, but for which there is a widely acceptable evidence base, was also suggested to be beneficial.</p> <p>Submissions also suggested that other severe health impacts should have been included in the assessment, including incidences of chronic bronchitis in adults, air quality health impacts on children, and morbidity effects of short-term exposure.</p>	<p>The focus of the health risk assessment was on the chronic health risks that are most likely to be associated with environmental hazards including air pollution and noise. As detailed in Chapter 13 (Volume 2a) of the EIS, the assessment was undertaken on a population basis, consistent with international practices in health risk assessments.</p>

Theme	Stakeholders	Summary of issue	Response
Assessment methodology	Local councils Residents	<p>Geographic scope of the assessment</p> <p>Submissions questioned why the geographic scope of the health assessment excluded areas west of the Nepean River, particularly residents and communities in the Blue Mountains. These submissions requested that the health assessment be extended to the Blue Mountains. In addition, some submissions requested an assessment of the cumulative health impacts from development in the broader Western Sydney region.</p>	<p>The receptors used in the health risk assessment were selected based on modelling of air quality and noise. Receptors were selected to represent a range of receivers and impact severity and where an increase in noise and air pollution was expected. Additional areas were identified through consultation with Local Health Districts and these were also included in the assessment. Local population data was used for each local government area and the baseline health status of the study area was taken into account.</p> <p>As demonstrated in the EIS, the effects of noise and air pollution from the proposed airport generally reduce with increasing distance from the airport site. The health risks at communities close to the airport site were found to be within or at the upper bound of levels considered acceptable by national and international regulators. Areas further away from the airport site, such as the Blue Mountains, would have even lower levels of health risks. Specific issues such as noise in the GBMWHHA was also addressed in the EIS. It is therefore not considered necessary to increase the geographic scope of the health risk assessment as suggested.</p>
Assessment methodology	Local councils	<p>Indirect and synergistic impacts</p> <p>Submissions raised concerns that the health risk assessment was limited to defined “end points” associated with direct impacts documented in national and international guidelines. It was suggested that indirect and synergistic impacts were worthy of consideration. Submissions emphasised that for some pollutants, there is no safe limit of exposure.</p>	<p>The health risk assessment has treated all pollutants as non-threshold pollutants – meaning that there is no safe level of exposure. The risks that have been calculated reflect this approach. This has been discussed in the hazard assessments conducted as part of the health risk assessment and are emphasised in the EIS.</p> <p>There is no methodology available at present that enables the assessment of the synergistic effects of the pollutants on health. The approach used in the health risk assessment is consistent with international approaches.</p>
Assessment methodology	Local councils	<p>Overall risk rating</p> <p>Some submissions suggested that aggregating the risk from the individual pollutants into an overall level of risk would better communicate the scale of the issue.</p>	<p>The health risk assessment has been conducted according to national and international guidance. It is not appropriate to combine the individual risks into a single score. There is no index that is available to assess the impacts in that way. Using one index would not necessarily provide an accurate description of predicted health risks.</p>

Theme	Stakeholders	Summary of issue	Response
Assessment methodology	Local councils	<p>Presentation of health impacts</p> <p>Some submissions requested that health impacts be presented in a manner that communicates the scale of the population affected.</p>	<p>The health risk assessment presented in Appendix G (Volume 4) and Chapter 13 (Volume 2a) of the EIS reports health risks in line with the relevant regulatory guidelines, literature published by international bodies such as the World Health Organization, and industry standard practice for health risk assessments. The discussion of health risks is typically supported by a quantification of predicted risks over time to effectively communicate the scale of impact.</p>
Assessment methodology	Local councils	<p>Focus of the health assessment</p> <p>Submissions stated that the assessment should focus on the impact to more sensitive or vulnerable groups or those who live closer to the airport site.</p>	<p>The health risk assessment focussed on the most sensitive groups to air and noise pollution, as identified in Australian and international literature. All communities close to the airport site, including those adjacent to the airport site, were included in the assessment.</p>
Assessment methodology	Local councils Residents	<p>Limitations to health assessment of water quality</p> <p>Submissions noted that a complete health risk assessment is not provided for surface and ground water quality due to the limitations in water quality sampling (i.e. only 1997 data was available; no new data was collected for the draft EIS) and that further data is required.</p>	<p>The health risk assessment was prepared based on water quality data available at the time the draft EIS was prepared. Water quality monitoring has been undertaken following the publication of the draft EIS, commencing in November 2015, and will continue after finalisation of this EIS, with a view to having a period of at least 24 months continuous data available. The assessment presented in the final EIS has been reviewed and updated in light of this additional water quality data.</p>
General health impacts	Local councils Residents Community groups Environmental groups Members of Parliament and Senators	<p>Fuel jettisoning</p> <p>Submissions raised concerns regarding the health impacts from possible contamination of drinking water supplies due to fuel jettisoning from overflights. Submissions stated that an assessment of risks to health from emergency fuel jettisoning over water supply areas should be undertaken.</p>	<p>Fuel jettisoning is an extremely rare event as demonstrated by statistics in the EIS which indicate that fuel jettisoning was performed by only 0.001 per cent of all civilian aircraft movements in Australia in 2014. Public authorities in NSW develop contingency management plans for their infrastructure and in the extremely rare event that a fuel jettisoning incident was to occur within the water supply areas of Sydney, the contingency management plan would be implemented to counteract any potential impacts on water supply.</p>

Theme	Stakeholders	Summary of issue	Response
General health impacts	Residents Community groups Environmental groups Local councils	<p>Unacceptability of any health impacts</p> <p>A number of submissions raised concerns about the predicted health risks associated with the proposed airport. Specific health issues raised in submissions included sleep deprivation, stress, cardiovascular disease, depression, fatigue, asthma and other respiratory illnesses and impairment in cognitive development among children.</p> <p>Some submissions raised concerns that the proposed airport would exacerbate existing health and socio-economic disadvantage in the region.</p> <p>Some submissions stated that any increase in health risks is unacceptable and that it is unacceptable that the Australian Government could approve any development that might result in increased health risks for the general population.</p>	<p>A number of the issues identified in submissions were assessed by the health risk assessment. The health outcomes assessed in the health risk assessment are those that are most likely to be exacerbated by air pollution and noise from this development. The health risk assessment also included health profiles for communities within the region and assessment of groups within the population that have been shown to be more susceptible to the effects of air pollution including people with existing heart and lung disease. The health effects associated with exposure to aircraft noise were identified from international literature, including from the World Health Organisation, and these have been assessed in the health risk assessment.</p> <p>The health risk assessment includes the documentation of existing health profiles/statistics relevant to Western Sydney, and in particular, the Liverpool LGA in which the airport is located. The report acknowledges that some of the communities most likely to be affected may be more vulnerable to the types of effects assessed as a result of existing socio-economic conditions. The assessment also provides an outline of the results of previous studies into air quality and health effects in Sydney to provide a context for the predicted risks associated with the project. In the main, the additional risks posed by the airport are relatively low.</p> <p>A social impact assessment was also undertaken and included in Appendix P1 (Volume 4). The social impact assessment provides extensive social baseline data for each region in Western Sydney and considers the impact of the proposed airport upon social values including community health and impacts upon lifestyle and amenity.</p>
General health impacts	Residents	<p>Personal medical conditions</p> <p>Some community members cited personal medical conditions that may be exacerbated due to the operation of the proposed airport.</p> <p>Many submissions referenced medical research that was conducted in Australia and overseas to support their submission about the potential negative health impacts that may be caused by the operation of the airport.</p>	<p>Personal medical conditions may render certain individuals more vulnerable to specific pollutants as a result of the proposed airport. However, it is not possible to account for individual susceptibilities in a health risk assessment.</p> <p>The health risk assessment at Appendix G (Volume 4) includes a comprehensive summary of literature concerning the potential health effects of each of the pollutants included in the assessment.</p>

Theme	Stakeholders	Summary of issue	Response
General health impacts	NSW Government Education institutions Residents Community groups	<p>Impact of noise on learning capability in children</p> <p>Submissions raised concern about the impacts from overflight noise on educational facilities across Western Sydney, particularly schools. Submitters stated that overflight noise could impact on the learning capability of students.</p> <p>Submissions requested more information on the criteria for assessing acceptable noise levels and what mitigation measures would be considered for educational facilities, particularly schools.</p>	<p>The health risk assessment conducted for noise assessed the potential impact of both ground-based and overflight noise on learning and cognitive development in children. A number of schools in the study area were selected as receptors to be used in the study, including schools in the suburbs adjacent to the airport site. The impacts were assessed in accordance with the World Health Organization Community Noise Guidelines.</p> <p>The health risk assessment showed that for a small number of schools there were small exceedances of the World Health Organization guidelines. Australian Standard AS 2021 <i>Acoustics – Aircraft noise intrusion – Building siting and construction</i> provides guidance on the siting and construction of buildings in the vicinity of airports to minimise aircraft noise intrusion. The assessment of potential aircraft noise exposure at a given site is based on the Australian Noise Exposure Forecast (ANEF) system. AS 2021 indicates that new schools are “acceptable” in areas exposed to less than 20 ANEF, while they are “conditionally acceptable” in areas exposed to between 20 and 25 ANEF. If a school is proposed to be built on a site classified as “conditionally acceptable” aircraft noise attenuation should be applied in accordance with the construction guidelines described in the Standard.</p> <p>AS 2021 and other relevant considerations would be taken into account by the Australian Government in determining its policy for any acquisition and noise insulation programme to be implemented on the basis of aircraft overflight noise exposure at the proposed airport (see Section 28.5 (Volume 2b)). The need to protect the welfare and wellbeing of school children in high noise exposure zones would be an important consideration in defining the parameters of such a programme.</p>



Theme	Stakeholders	Summary of issue	Response
Environmental management	Local councils	<p>Development of a health management plan</p> <p>Submissions requested that an outline of specific health impact mitigation measures be presented with an explanation of how and to what extent they would mitigate the identified issues.</p> <p>There were suggestions that a health management plan be included among the mitigation measures proposed and that it include measures aimed at addressing impacts on vulnerable groups and sensitive social infrastructure as well as opportunities where health can be improved and equity enhanced.</p>	<p>The health risk assessment found that predicted health risks from air quality, noise and water quality would largely be within a range considered acceptable by national and international regulators. These risks are based on expected environmental impacts before mitigation measures are implemented. The implementation of mitigation measures for aircraft noise, ground-based noise, air quality, and water as outlined in Chapter 28 (Volume 2b) would further reduce the identified health risks.</p> <p>Impacts to community health will also be managed through the Community and Stakeholder Engagement Plan which will establish a process for the community to register complaints about environmental impacts during construction and operation. Under the plan, the ALC will be required to log all complaints, undertake investigations and implement corrective action where necessary.</p>
Environmental management	Local councils Residents	<p>Mitigation measures</p> <p>Submissions raised concerns that there is no discussion on mitigation measures and the extent to which any measures will mitigate the identified health impacts.</p>	<p>As stated in Section 13.11 (Volume 2a), health risks were derived from related noise, air quality and water quality impact assessments conducted for the EIS. These assessments were presented separately in Chapters 10, 11, 12 and 18 (Volume 2a). Chapter 28 (Volume 2b) provides a comprehensive framework of measures to mitigate and manage impacts in each of the areas identified by the health risk assessment, including air quality, noise and water. As outlined in the health risk assessment, by mitigating and managing these impacts, the measures would also effectively mitigate and manage the identified health risks.</p>



17 Hazard and risk

Volume 2 (Stage 1 Development), Chapter 14 (Hazard and risk) of the draft EIS outlined the key hazards and risks that may arise from the construction and operation of the proposed Western Sydney Airport.

The chapter drew on two assessments, which were included as Appendix H (Hazard and Risk) and Appendix I (Bird and Bat Strike) (Volume 4).

17.1 About the submissions on this chapter



Table 17–1 Submissions related to hazard and risk

Issue	Number of times the issue was raised	Percentage of total submissions
Hazard and risk – fuel storage and transport	392	7.9%
Hazard and risk – general hazards and risk	304	6.1%
Hazard and risk – hazard reduction and aerial firefighting	409	8.2%

17.1.1 Origin of submissions

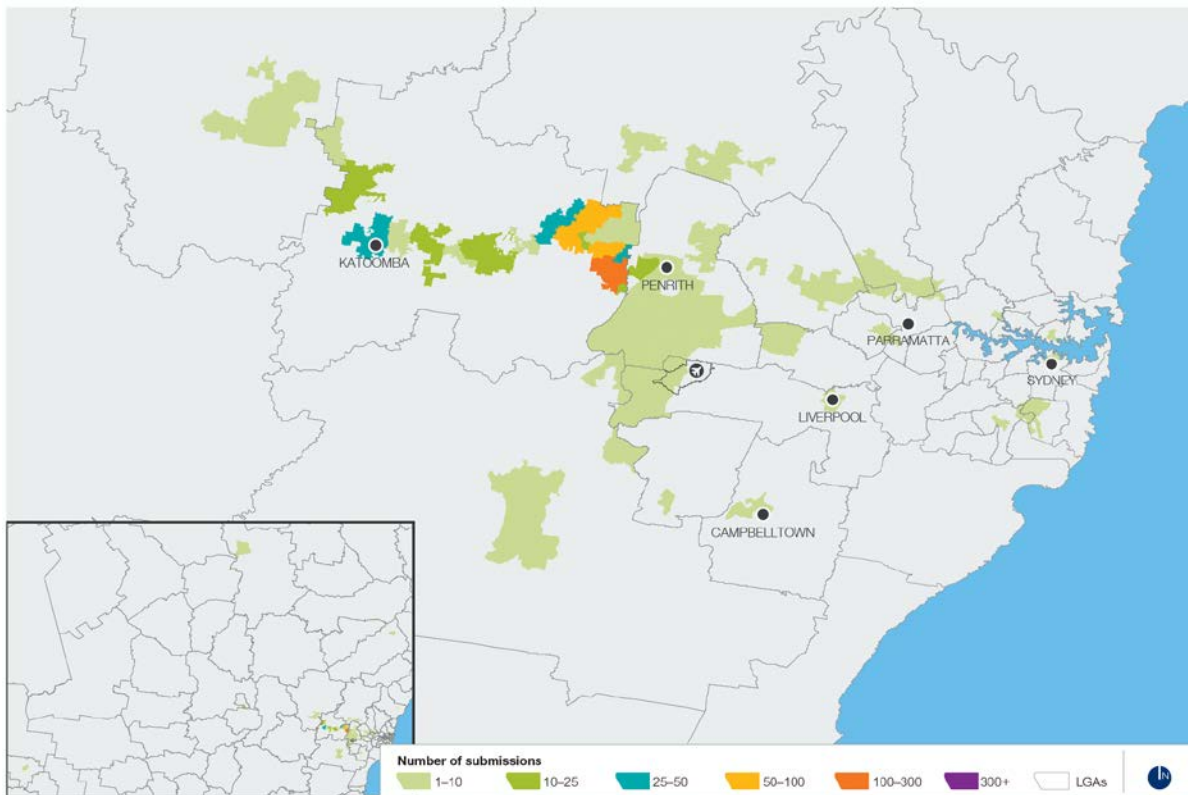


Figure 17–1 Map depicting origin of submissions in relation to Chapter 14 of the draft EIS


17.2 Summary and response

17.2.1 Overarching summary of submissions

A key issue raised in submissions was the risk associated with the transport of aviation fuel to the airport site by road. A number of submissions suggested that a fuel pipeline would result in lower risks for communities and road users. It was also stated that a fuel pipeline would have additional benefits such as mitigating air quality and traffic impacts and providing operational benefits to the airport operator and users. The location of storage of fuel on the airport site was also raised as an issue which required further consideration.

Another key issue identified by submissions was the potential impact on bushfire hazard reduction operations and aerial firefighting. A number of submissions were concerned that the proposed airport could limit the ability of emergency services to respond to events and to undertake hazard reduction burns. On a related topic, some submissions suggested that the bushfire risk assessment needs to be revised to take into account bushfire events which occur both on and off the airport site.

Other issues included the need for further assessment of bird and bat strike risks, the impact of adverse weather conditions on aviation safety, the potential for aviation accidents to impact on critical public infrastructure, and fuel jettisoning.



The key themes from the submissions are summarised under the following headings:

- methodology;
- fuel storage and transport;
- aviation accidents;
- emergency planning;
- meteorology;
- airport operations;
- contaminated lands;
- bushfire hazard reduction and aerial firefighting;
- impacts on flora and fauna;
- fuel jettisoning; and
- bird and bat strike.

The submission comments are summarised and addressed in Section 17.2.3.

17.2.2 Overarching response to issues raised

Following publication of the draft EIS, the hazard and risk assessment was updated to improve readability and reflect the finalisation of the EIS. These minor revisions are presented in Chapter 14 (Volume 2a) and Appendix H (Volume 4) of the final EIS.

17.2.3 Issues and responses

Theme	Stakeholders	Summary of issue	Response
Methodology	Environment groups	<p>Assumptions of Stage 1 development</p> <p>Some submissions suggested that the hazard and risk assessment for the Stage 1 development should have been based on single runway at full capacity in 2050. It was suggested that this would allow for a more accurate assessment of risks associated with the proposed airport.</p> <p>It was also suggested that a risk assessment should be undertaken for the long term development. Questions were raised about the ability to manage risks in the long term when aircraft movements increase significantly. Submissions argued that it would not be appropriate to proceed with the Stage 1 development if the long term development resulted in unacceptable risks.</p>	<p>The assessment of potential environmental impacts in the EIS is based on a particular scale of infrastructure development and a corresponding level of aviation activity. The scale of development adopted for the EIS is the Stage 1 airport development as outlined in the revised draft Airport Plan. The Stage 1 development incorporates a single runway and support facilities to cater for an operational capacity of approximately 10 million annual passengers and approximately 63,000 air traffic movements per year.</p> <p>Expansion of the proposed airport beyond the Stage 1 development would be subject to separate planning and approval processes under the Airports Act.</p> <p>The EIS recognises that approval of the Stage 1 development would directly facilitate growth of the proposed airport over time. A strategic level assessment was undertaken of the impacts arising from the long term development (which could occur nominally around 2063). The EIS acknowledges the uncertainty in predicting impacts that may occur nearly 50 years into the future and the additional approval requirements for all future development.</p> <p>Chapter 28 (Volume 2b) of the EIS outlines the legislative framework for the implementation of the strategies, measures and plans outlined in the EIS. A number of plans will be implemented to cover different aspects of the airport's construction and operation and will be developed either by the Department or the Airport Lessee Company (ALC), depending on the nature of the work. These plans will address and put in place mitigation measures for the risks identified in the EIS.</p>

Theme	Stakeholders	Summary of issue	Response
Fuel storage and transport	NSW Government	<p>Long term assessment of storing fuel</p> <p>The NSW Government submission suggested that the final EIS should include a risk assessment of storing and managing jet fuel for the long term development.</p>	<p>The risk assessment undertaken focuses on the Stage 1 airport requirements for storing and managing fuel. As the volumes of fuel use at Western Sydney Airport increase, resulting in a need to increase capacity at the fuel storage site, it should be expected that specific risk assessments would be undertaken to meet airport planning and development requirements.</p> <p>Fuel delivery for the Stage 1 development will initially be undertaken by fuel tanker. It is anticipated that fuel truck movements would comply with relevant legislation and that transportation routes will avoid tunnels in accordance with existing industry practice.</p> <p>A fuel supply pipeline is expected to be established in response to increasing demand beyond Stage 1 and will be a commercial decision between the ALC and the fuel industry. The NSW Government has commenced initial investigations to identify a potential fuel pipeline corridor, with a view to reserving the required land. Given that the reservation of a corridor and subsequent construction is outside the scope of this EIS, the construction of a fuel line will be subject to a separate assessment and approval process under NSW legislation. This also includes obtaining permits providing the right to operate the pipeline.</p>
Fuel storage and transport	NSW Government	<p>Buffer and location of fuel farm</p> <p>The NSW Government submission noted the conclusion of the draft EIS that the 80 metre fuel farm buffer included in the concept design would be adequate to mitigate significant impacts due to a fuel storage fire. However, the submission raised concerns that the draft EIS did not assess potential larger events which may have impacts outside the airport site boundary. The submission suggested that land use restrictions may have to be placed on offsite areas near the fuel farm to manage this risk and that this would impact on current landowners.</p> <p>In the context of these issues, the submission stated that consideration should be given to the relocation of the fuel farm away from the airport site boundary. Alternatively, it was suggested that land be acquired adjacent to the proposed fuel farm location.</p>	<p>The assessment of construction and ground-based operation impacts in the EIS is based on the indicative airport site layout presented in the revised draft Airport Plan and this may be refined through the process of detailed design (see Chapter 3 (Volume 1), which will include the location and arrangements for the location of the fuel farm. The location of the fuel farm will be confirmed through the detailed design process, taking into account relevant planning, safety and security considerations.</p> <p>In addition, the development of the Environmental Management Framework (as outlined in Chapter 28 (Volume 2b)), the identification of the specific developments to be authorised for the proposed airport in Part 3 of the revised draft Airport Plan (and detailed in Chapter 5 (Volume 1)), as well as the existing Airports Act regulatory framework, provide certainty about how a future airport would be developed and how environmental impacts would be managed.</p>

Theme	Stakeholders	Summary of issue	Response
Fuel storage and transport	Residents Aviation industry NSW Government Local councils	<p>Acceptable risk of transportation of aviation fuel</p> <p>A number of submissions raised concerns with the proposal to transport aviation fuel to the airport site by road. Submissions questioned whether transporting large quantities of aviation fuel on public roads was an acceptable risk to public health and safety.</p> <p>Many submissions were critical of the draft Airport Plan due to the lack of plans for a fuel pipeline as part of the proposed Stage 1 development, suggesting that a fuel pipeline would be a much safer and more acceptable option than transporting aviation fuel by road.</p>	<p>Fuel delivery for the Stage 1 development will initially be undertaken by fuel tanker. As outlined in the hazard and risk assessment in Chapter 14 (Volume 2a), approximately five years after opening, the expected fuel demand would require approximately 43 B-Double fuel deliveries per day. This is not a large number of trucks, relative to road capacity or existing heavy vehicle volumes. This number of deliveries is expected to rise in line with the increased aircraft movements at the airport site, subject to aircraft scheduling.</p> <p>It is expected that the majority of the fuel truck trips would be by high capacity, arterial roads and/or motorways. It is anticipated that fuel truck movements would comply with relevant legislation and that transportation routes will avoid tunnels in accordance with existing industry practice.</p> <p>A fuel supply pipeline is expected to be established in response to increasing demand beyond Stage 1 and will be a commercial decision between the ALC and the fuel industry.</p> <p>The NSW Government has commenced initial investigations to identify a potential fuel pipeline corridor, with a view to reserving the required land. Given that the reservation of a corridor and subsequent construction is outside the scope of this EIS, the construction of a fuel pipeline will be subject to a separate assessment and approval process under NSW legislation. This also includes obtaining permits providing the right to operate the pipeline.</p>

Theme	Stakeholders	Summary of issue	Response
Fuel storage and transport	Residents Aviation industry NSW Government Local councils	<p>Fuel pipeline</p> <p>A large number of submissions suggested that risks associated with the transportation of aviation fuel by road should be mitigated by the inclusion of a fuel pipeline as part of the Stage 1 development.</p> <p>A number of submissions also suggested that this measure would be more efficient, reduce air quality and traffic impacts, improve competition for fuel suppliers and provide operational benefits to the proposed airport and its users.</p> <p>Some submissions suggested that a fuel pipeline alignment should be identified and protected in statutory instruments prior to commencement of operations. Submissions suggested that this was necessary to maintain construction viability of the pipeline and to avoid long term reliance on the road system to transport aviation fuel. A number of submissions noted that any proposal to develop a fuel pipeline or reserve a corridor will require consultation with the community and stakeholders.</p> <p>A number of suggestions were made for the alignment of a fuel pipeline. These included:</p> <ul style="list-style-type: none"> • utilising fuel storage capacity at RAAF Base Richmond and piping fuel south to the airport site; and • aligning the fuel pipeline along the M5 corridor. 	<p>Fuel delivery for the Stage 1 development will initially be undertaken by fuel tanker. A fuel supply pipeline is expected to be established in response to increasing demand beyond Stage 1 and will be a commercial decision between the ALC and the fuel industry.</p> <p>The NSW Government has commenced initial investigations to identify a potential fuel pipeline corridor, with a view to reserving the required land. Given that the reservation of a corridor and subsequent construction is outside the scope of this EIS, the construction of a fuel pipeline will be subject to a separate assessment and approval process under NSW legislation. This also includes obtaining permits providing the right to operate the pipeline.</p>

Theme	Stakeholders	Summary of issue	Response
Fuel storage and transport	NSW Government	<p>Long term assessment of transporting fuel</p> <p>The NSW Government submission suggested that the EIS should contain an assessment of transport risks associated with the supplying of fuel to the airport site by road beyond 2030.</p> <p>The submission also stated that the EIS should contain an economic assessment which compares the costs and benefits of transporting aviation fuel by road and by a fuel pipeline over the long term.</p>	<p>Fuel delivery for the Stage 1 development will initially be undertaken by fuel tanker. A fuel supply pipeline is expected to be established in response to increasing demand beyond Stage 1 and will be a commercial decision between the ALC and the fuel industry. The NSW Government has commenced initial investigations to identify a potential fuel pipeline corridor, with a view to reserving the required land.</p> <p>The final fuel supply route(s) and supplier(s) will be subject to commercial negotiations between the ALC and a fuel supplier. The EIS includes a review of potential suppliers such as fuel terminals at Clyde and Banksmeadow and traffic movements associated with the delivery of fuel by B-Doubles. The final access routes cannot be determined until the completion of commercial negotiations and an assessment of transport risks associated with the fuel delivery would be undertaken at this point.</p> <p>The economic assessment in Appendix P3 (Volume 4) predicts the economic impacts associated with the proposed airport for the proposed Stage 1 development and an indicative long term development. Given that the reservation of a corridor and subsequent construction is outside the scope of this EIS, the economic assessment did not specifically include consideration of long term economic impacts associated with a fuel pipeline.</p>

Theme	Stakeholders	Summary of issue	Response
Aviation accidents	Residents Local councils Environmental groups Community groups	<p>Hazards from aviation related accidents</p> <p>Submissions raised concerns that development of the proposed airport would increase the risk of damage or destruction to vital infrastructure in the region, such as water, electricity, telecommunication, roads, bridges and rail due to aviation accidents. Concerns were also raised about the risk to the supply of water, energy and other services to communities if such an event was to occur</p> <p>A number of submissions suggested that the EIS should contain a risk assessment of these potential incidents.</p>	<p>All State-owned entities in NSW have responsibility for developing and implementing contingency plans for a range of natural and man-made events if they were to occur. These plans would already address low likelihood/ high consequence events, similar to those which might occur as a result of the proposed airport. It is therefore not considered necessary to undertake a risk assessment of these events occurring as the likely mitigation or response is already in place.</p> <p>The EIS found that aircraft operations were unlikely to represent a significant risk to water quality in Warragamba Dam and that the indicative flight paths would avoid key infrastructure locations such as the Warragamba Dam wall and Prospect Reservoir.</p> <p>The revised draft Airport Plan indicates that some mobile telephone towers and power transmission lines intrude into the Obstacle Limitation Surface (OLS) for the proposed airport. The TransGrid transmission line occurring onsite will be relocated before the airport opens and other potential intrusions of the airport's OLS will be identified and, if necessary, removed, marked and/or lit and noted in aeronautical publications to ensure the safety of aircraft operations.</p>
Emergency planning	Aviation industry	<p>Development of emergency plans</p> <p>Some submissions noted that emergency plans will need to be developed for the proposed airport. It was highlighted that these plans need to take into account emergency response times for emergency services such as ambulance, fire (including hazardous materials) and police and ensure that all potential hazardous situations on the airport site are considered.</p>	<p>As a major airport, the proposed airport will be required to meet a range of security and safety requirements set out in Commonwealth legislation such as the Civil Aviation Safety Regulations 1998, the <i>Aviation Transport Security Act 2004</i> and relevant work health and safety legislation. This will include the requirement for aerodromes with regular passenger transport services to be certified and have a safety management system and aerodrome emergency plan in place.</p>

Theme	Stakeholders	Summary of issue	Response
Meteorology	Local councils Residents	<p>Consideration of weather events in hazard and risk assessment</p> <p>Some submissions noted that weather events, particularly fog, at the airport site may impact on the ability to operate aircraft safely and that this should be considered in the hazard and risk assessment.</p>	<p>Aircraft safety is the paramount consideration for all aircraft operations. Air traffic control and pilots are acutely aware of the performance capabilities of aircraft under their control and how they operate under different weather conditions. If adverse weather conditions at the proposed airport posed an unacceptable risk to particular aircraft operations, those operations would be suspended and alternative arrangements made for managing affected aircraft.</p> <p>As outlined in Chapter 7 (Volume 1) and the Bureau of Meteorology Western Sydney Airport Usability report at Appendix D (Volume 4), weather phenomena such as fog, low cloud and low visibility conditions may lower the usability of the proposed airport. Fog can occur in Western Sydney during all months of the year, and often for extended periods of time. Many high functioning airports in Australia and around the world manage these situations through the use of modern navigational systems and processes that enable aircraft to land safely in dense fog and when visibility is low.</p> <p>Section 3.2.6 of the revised draft Airport Plan specifies that the proposed Stage 1 runway will be designed to accommodate CAT IIIB instrument approach procedures on both runway ends. The provision of a CAT IIIB instrument landing system (ILS) will mitigate the effects of reduced visibility caused by these weather phenomena.</p> <p>An airport in Western Sydney will experience different, and generally more benign, weather conditions to those at Sydney Airport. Development of the proposed airport will increase runway capacity in the Sydney basin and may provide an alternative for managing aircraft that are unable to use Sydney Airport because of adverse weather.</p> <p>All major airports occasionally experience weather phenomena that stop aircraft operations. This can result in delays in aircraft departures and landings or the potential diversion of some aircraft to an alternative airport. If the Stage 1 runway at the proposed airport were not available, air traffic control and pilots would manage airborne aircraft in accordance with standard safety and operational procedures by placing aircraft in holding patterns or diverting them to a suitable alternative airport.</p>

Theme	Stakeholders	Summary of issue	Response
Airport operations	Local councils	<p>Regulation of hazardous or offensive industry</p> <p>Some submissions raised concerns that the draft EIS did not contain any reference to the State Environment Planning Policy No 33: Hazardous and Offensive Development (SEPP 33). Submissions stated that the draft EIS did not confirm whether a risk screening procedure has taken place to assist in determining whether the proposed airport is a potentially hazardous or offensive industry to which the SEPP 33 applies or whether a preliminary hazard analysis has been prepared as required under SEPP 33.</p>	<p>The Stage 1 development has been assessed in accordance with the EIS Guidelines issued for the proposed airport and a hazard and risk assessment has been undertaken as part of the EIS to consider the risk of the airport to the surrounding community.</p> <p>State and Environmental Planning Policy No 33 – Hazardous and Offensive Development (SEPP 33) requires the consent authority to consider particular matters in determining a development application for a project that is a potentially hazardous industry or potentially offensive industry.</p> <p>SEPP 33 applies to developments which are defined as industry under the applicable local planning instrument and require development consent under Part 4 of the NSW <i>Environmental Planning and Assessment Act, 1979</i> (EP&A Act).</p> <p>As the Stage 1 development would occur on land owned by the Commonwealth and for a development which would be regulated by the Airports Act the EP&A Act and SEPP 33 do not apply to the proposed airport.</p>

Theme	Stakeholders	Summary of issue	Response
Contaminated lands	Local councils	<p>Assessment of risks from contaminated lands</p> <p>Some submissions raised concerns that preliminary contamination assessment does not provide enough information to properly assess the risk of contamination events on humans or the environment. Submissions questioned the finding in the hazard and risk assessment that contamination would not be a particular concern for operations, stating that without having access to the published contamination assessment it was not possible to verify this conclusion.</p> <p>Submissions suggested that a detailed contamination assessment should be incorporated into the final EIS to allow for a proper assessment of hazards and risks. It was suggested that this was necessary to determine the suitability of the airport site for the development of an airport and to undertake appropriate remediation to satisfy requirements under the State Environment Planning Policy No 55: Remediation of Land (SEPP 55).</p>	<p>The Stage 1 development has been assessed in accordance with the EIS Guidelines issued for the proposed airport. A preliminary contamination investigation of the airport site was undertaken to inform the EIS. The results of the assessment were summarised in Chapter 17 (Volume 2a). As the Stage 1 development would occur on an airport site regulated by the Airports Act, the <i>State Environmental Planning Policy No 55—Remediation of Land</i> (SEPP 55) does not apply. However, the preparation of the preliminary investigation is consistent with the intent of the SEPP 55.</p> <p>More detailed contamination work commenced following the publication of the draft EIS, including a Phase 2 Contamination Assessment to support ongoing design and construction planning.</p> <p>Chapter 17 (Volume 2a) has been updated to include the results of this assessment. Consistent with the findings of the preliminary contamination investigation, no significant contamination issues have been identified at the airport site.</p> <p>As outlined in Chapter 28 (Volume 2b), further contamination investigations will take place prior to Main Construction Works – including remediation, if required to make land suitable for its intended purpose. Chapter 28 (Volume 2b) also includes further recommendations to ensure appropriate handling and disposal of contaminated material at the site.</p>

Theme	Stakeholders	Summary of issue	Response
Bushfire hazard reduction and aerial firefighting	Residents Local councils Environmental groups Community groups	<p>Hazard reduction and aerial firefighting operations in the region</p> <p>A large number of submissions were concerned that the operation of the proposed airport and associated aircraft movements would impact on emergency services' ability to manage bushfires. In particular, questions were raised on:</p> <ul style="list-style-type: none"> whether aerial firefighting aircraft in operation over the Blue Mountains would be impacted by commercial airline operations and whether they would get preference for the use of airspace during an emergency; and whether emergency services would be prevented from conducting hazard reduction burns because of smoke generated from these fires impacting on the safety of ground operations at the airport site, or the safety of aircraft approaching and departing the proposed airport. <p>Some people stated that there was a lack of information surrounding hazard reduction and aerial firefighting, with many suggesting they were unable to accurately assess the impacts.</p> <p>Some submissions suggested that, to mitigate the risk of interference with aerial firefighting operations, a risk management plan be developed to ensure that adequate measures are available to redirect commercial flights to other facilities when a bushfire is within a predetermined radius of the airport site.</p>	<p>An airport at Badgerys Creek can operate safely and in the vicinity of aerial firefighting and hazard reduction activities over the Blue Mountains and in the Sydney basin.</p> <p>Emergency services aircraft and commercial air traffic routinely operate safely and efficiently all over Australia, allowing aerial firefighting to occur alongside the operation of commercial aircraft. Fixed-wing aircraft and helicopters conduct firefighting operations at altitudes well below those of regular commercial airline operations. Any passenger aircraft using a Western Sydney Airport would operate at significantly higher altitudes in the vicinity of the Blue Mountains, well away from those performing water drops. The proposed Western Sydney Airport would not impede hazard reduction burns.</p> <p>Airservices Australia is responsible for the safe and efficient operation of air space in Australia, and closely manages aircraft operating around airports and during flights. Airspace is managed to ensure the safe movement of all aircraft, including emergency services. During times of emergency and during hazard reduction services, emergency services aircraft will be managed by Airservices Australia.</p> <p>Airservices Australia also works with the Bureau of Meteorology to advise pilots of hazards as appropriate, such as haze or smoke caused by bushfires or controlled burning. Where smoke does reduce visibility at an airport, usual procedures for flying in low-visibility conditions would apply.</p>

Theme	Stakeholders	Summary of issue	Response
Bushfire hazard reduction and aerial firefighting	Environmental groups Community groups Residents	<p>Offsite bushfires in the bushfire risk assessment</p> <p>Some submissions stated that the bushfire risk assessment and associated mitigation measures in the draft EIS did not consider the risk of a fire starting off the airport site and spreading onto the site. Similarly, submissions stated that the assessment did not consider the risk of bushfires which start on the airport site but which spread offsite.</p> <p>Some submissions raised concerns that the operation of aircraft would increase the risk of bushfires in the region as jettisoned fuel, emissions, and unburnt aviation fuel will increase the combustibility of vegetation in the region. Other submissions suggested that the transportation of aviation fuel to the airport site by road would also increase the risk of bushfires in the region. It was suggested that the bushfire risk assessment should also take this impact into consideration.</p> <p>Submissions stated that the draft EIS did not acknowledge all relevant NSW Rural Fire Districts and Bushfire Management Committees and the role they would have in the management of bushfires. It was noted that while reference had been made to the Macarthur Rural Fire District and the Macarthur Bushfire Management Committee, entities responsible for managing bushfires in areas adjacent to or near the airport site, including Wollondilly, Blue Mountains and Penrith local government areas, were ignored. It was suggested that representatives from these Districts should be consulted so that appropriate measures can be put in place to manage any potential increased risk of bushfires.</p>	<p>Given the extremely low occurrence of fuel jettisoning, the standards that apply to these emergency events and the high evaporation rates known to occur, aircraft operations at the proposed Western Sydney Airport are not considered likely to increase the risk of bushfires or adversely impact the health of people and wildlife.</p> <p>As outlined in Chapter 28 (Volume 2b), as part of ongoing site management activities, the Department of Infrastructure and Regional Development has prepared and implemented a bushfire management plan for the Commonwealth owned land at Badgerys Creek. This plan addresses current bushfire risk and identifies response actions. The existing bushfire management plan will be reviewed and updated in consultation with the NSW Rural Fire Service to minimise the risk of bushfire and associated impacts on adjoining areas of native vegetation during construction and operation of the proposed airport, including the proposed environmental conservation area.</p>
Impacts on flora and fauna	Environmental groups Community groups	<p>Consideration of risks of death or injury to flora and fauna</p> <p>Some submissions questioned why the risk assessment did not consider the risk of death or injury to wildlife on or near the airport site, particularly in the event of fire.</p>	<p>The risk of injury to wildlife in the vicinity of the site was considered in the preliminary bird and bat strike risk assessment included as Appendix I (Volume 4). The results of the bird and bat strike risk assessment informed both the hazards and risk assessment and the biodiversity assessment included as Appendix H and K1 (Volume 4) respectively. The assessments included in that material consider the risk of bushfires at the airport site and the potential for indirect impacts upon wildlife as a result of the proposed airport.</p>

Theme	Stakeholders	Summary of issue	Response
Fuel jettisoning	Local councils Environmental groups Members of Parliament and Senators Residents Large land owners	<p>Assessment of risk of fuel jettisoning</p> <p>A number of submissions raised concerns about the potential impact from fuel jettisoning on sensitive receivers such as urban areas, water drinking facilities, the Greater Blue Mountains World Heritage Area, and agricultural areas.</p> <p>Submissions noted the draft EIS conclusion that fuel jettisoning was a low risk. Some submissions suggested that despite the low risk, further assessment of fuel jettisoning risks and impacts should take place, including a more detailed risk assessment undertaken by an independent body. Some submissions suggested that an assessment should be undertaken to understand the worst-case impacts from a fuel jettison event.</p> <p>A number of submissions questioned the conclusion in the draft EIS that fuel jettisoning was a low risk. Some submissions suggested that many sensitive receivers in the region would have aircraft flying over them at an altitude which would not be high enough to allow jettisoned fuel to vaporise. Some submissions also noted that while jettisoned fuel may vaporise, it would still result in air quality impacts.</p> <p>Some submissions stated that the EIS should provide more information on the assessment of fuel jettisoning risks because of the sensitive nature of the environment where these actions could occur. The peer review which formed the basis for many of these submissions stated that information on fuel jettisoning presented in the draft EIS was appropriate.</p>	<p>Aircraft do not jettison fuel as a standard procedure when landing. Section 7.11.4 (Volume 1) describes the emergency situations under which fuel may need to be jettisoned by an aircraft and the procedures that must be followed. The most common domestic aircraft used in Australia, such as the Boeing 737 and Airbus A320, are not capable of jettisoning fuel. All international long-haul aircraft and some medium-to-long haul aircraft are able to jettison fuel.</p> <p>Fuel jettisoning occurs very rarely and only after authorisation from air traffic control. In 2014 there were 10 instances of civilian aircraft jettisoning fuel in Australia, representing approximately 0.001 per cent of all domestic and international aircraft movements across the nation.</p> <p>A controlled fuel jettison is usually conducted in clear air at an altitude of at least 6,000 feet (approximately 1,800 metres) in an area nominated by air traffic control. Most emitted fuel evaporates within the first few hundred metres and the risk of fuel reaching the ground or entering Sydney's drinking water supply, is extremely low. It is also important to note that all drinking water is tested and treated at one of Sydney's water filtration plants before entering the water supply network to ensure it is of excellent quality and meets the Australian Drinking Water Guidelines.</p> <p>Any fuel jettisoned in flight would be rapidly dispersed as a result of the altitude of the aircraft as well as the effects of wind and temperature. It is unlikely that vaporised fuel would occur at concentrations that would pose a significant health or environmental risk.</p> <p>Given the extremely low risk of fuel jettisoning, the standards that apply to these emergency events and the high evaporation rates known to occur, aircraft operations at the proposed Western Sydney Airport are not likely to increase the risk of bushfires or adversely impact the health of people and wildlife.</p>

Theme	Stakeholders	Summary of issue	Response
Fuel jettisoning	Members of Parliament and Senators Large land owners Local councils	<p>Mitigation measures</p> <p>Some submissions suggested, despite the low risk, that mitigation measures should be developed to manage the risk of fuel jettisoning. Particular measures proposed included that:</p> <ul style="list-style-type: none"> only modern aircraft should be permitted to use the proposed airport as they will have limited or no ability to jettison fuel; emergency landings should only occur at Sydney (Kingsford Smith) Airport so that fuel jettisoning events take place over the ocean, rather than the Greater Blue Mountains World Heritage Area; a two kilometre exclusion zone over and around specific agricultural properties be established to prevent fuel dumping events from impacting on agricultural activities; and that a risk and hazard management plan be developed to include limitations on how fuel jettisoning can occur, including prohibition of fuel jettisoning over sensitive receivers and specifying minimum altitudes for the jettisoning of fuel. 	<p>The procedure for jettisoning fuel is specified in the En Route supplement of the Aeronautical Information Package published by Airservices Australia. When fuel jettisoning is required, the pilot in command requests authority from air traffic control before commencing the operation and must:</p> <ul style="list-style-type: none"> take reasonable precautions to ensure the safety of persons or property in the air and on the ground; where possible, conduct a controlled jettison in clear air at an altitude of above 6,000 feet (approximately 1.8 kilometres) and in an area nominated by air traffic control; and notify air traffic control immediately after an emergency jettison. <p>The Air Navigation (Fuel Spillage) Regulations 1999 prescribe penalties for the unauthorised release of fuel from an aircraft other than in an emergency.</p>

Theme	Stakeholders	Summary of issue	Response
Bird and bat strike	Local councils Aviation industry Environmental groups Residents Community groups	<p>Preliminary nature of assessment</p> <p>A number of submissions noted the preliminary nature of the bird and bat strike assessment and highlighted the importance of undertaking further assessments in the future.</p> <p>Some submissions raised concerns over the scope of the bird and bat strike assessment and questioned the conclusion of the draft EIS that the risk of bird and bat strike would be low. In particular, submissions stated that the assessment did not include:</p> <ul style="list-style-type: none"> adequate assessment of existing data and information on fauna habitat and movements in the region, season surveys; nocturnal surveys; longer periods and greater frequencies of surveys; adequate consideration of the geographical area where bird and bat strike may occur; adequate consideration of migratory species and threatened species; and adequate consideration of how bird and bat strikes may impact on the Greater Blue Mountains World Heritage Area. <p>Some submissions suggested that the assessment in the draft EIS did not comply with ICAO standards and the NASF.</p>	<p>Bird and bat strike</p> <p>The 'Preliminary Bird and Bat Strike Risk Assessment' undertaken by Avisure (Appendix I (Volume 4)) is considered appropriate for this EIS.</p> <p>The assessment acknowledges the preliminary nature of the survey and risk assessment undertaken and outlines a scope for further work to confirm the findings of the preliminary assessment and if necessary refine the recommended mitigation measures.</p> <p>As outlined in Chapter 28 (Volume 2b), additional surveys are proposed to confirm the findings of the preliminary bird and bat strike study and to develop and implement planning, design and mitigation measures to reduce risk and associated impacts on biodiversity.</p> <p>Blue Mountains and Warragamba Dam</p> <p>As documented in the 'Preliminary Bird and Bat Strike Risk Assessment' and the biodiversity assessment in Appendix K1 (Volume 4) (see Section 6.1.1), bird and bat strikes occur at take-off and landing and most often occur within 5 km of airports. The Blue Mountains World Heritage Area and Warragamba Dam are located outside a 5 km radius of the airport site. Species involved in air strike are generally those species typical of the habitats that occur in close proximity to the airport rather than migratory species moving at higher altitude across the landscape with 93 per cent of bird strikes occurring below 3,500 ft (approx. 1,100 m).</p> <p>Given the presence of proximate surrounding suitable habitat and the movements of birds and bats through the landscape there is a potential for birds to be struck on occasion. A commitment to further survey and assessment and a range of specific management and mitigation measures has been made to minimise the risk of this occurring (see above). Based on current statistics for airports throughout Australia, the relatively small numbers of birds and bats likely to be involved in air strike over time is highly unlikely to be of a magnitude that would adversely affect the viability of populations of native fauna in the local area.</p> <p>Potential for Impacts on Grey-headed Flying Fox</p> <p>The potential for bat strike associated with nearby camps and foraging areas for the Grey-headed Flying Fox is discussed in Section 6.1.1 of the biodiversity assessment in Appendix K1 (Volume 4). The assessment identifies the potential for occasional bat strike to occur as a result of movements between known roost camps and foraging habitats but concludes impacts are unlikely to be of a magnitude to substantially change the size of populations of local camps.</p>

Theme	Stakeholders	Summary of issue	Response
Bird and bat strike	Environmental groups Aviation industry Local councils Residents Community groups	<p>Mitigation measures</p> <p>Submissions highlighted the importance of implementing the proposed mitigation measures to address bird and bat strike risks.</p> <p>In particular, a number of submissions highlighted the need for further assessment of bird and bat strike risks. These further assessments were considered necessary to address the limitations of the preliminary assessment in the draft EIS, verify the conclusions presented in the draft EIS, and to refine mitigation measures accordingly.</p> <p>Submissions had different suggestions for when this further work should take place. A number of submissions suggested that these further surveys need only to occur prior to or closer to the commencement of operations. Some submissions also suggested that the further assessment work should occur in parallel to the detailed design process for the proposed airport. Some submissions suggested that further surveys should occur before the decision is made to develop the proposed airport, be presented in the final EIS, and questioned why a more comprehensive assessment of bird and bat strike was not included in the draft EIS.</p> <p>Some submissions suggested that consideration should be given to the risk of bird and bat strike when finalising flight paths.</p> <p>Some submissions suggested that the airport site was too close to conservation areas and water bodies which present a high risk of bird and bat strike but which there is very limited scope for these risks to be mitigated.</p>	<p>As outlined in Chapter 28 (Volume 2b), additional surveys will be conducted to confirm the findings of the preliminary bird and bat strike study and to develop and implement planning, design and mitigation measures to reduce risk and associated impacts on biodiversity. The implementation of these surveys will take place as part of the implementation of the biodiversity management plans outlined in the Environmental Management Framework in Chapter 28 (Volume 2b).</p>

18 Traffic, transport and access

Volume 2 (Stage 1 Development), Chapter 15 (Traffic, transport and access) of the draft EIS outlined the expected traffic and transport impacts associated with the construction and operation of the proposed airport.

The chapter drew on the traffic modelling and impact assessment undertaken, which was included as Appendix J (Surface transport and access) (Volume 4).

18.1 About the submissions on this chapter



Table 18–1 Submissions related to traffic, transport and access

Issue	Number of times the issue was raised	Percentage of total submissions
Traffic, transport and access – road network	690	13.9%
Traffic, transport and access – rail	1,442	29.0%
Traffic, transport and access – freight	850	17.1%

18.1.1 Origin of submissions

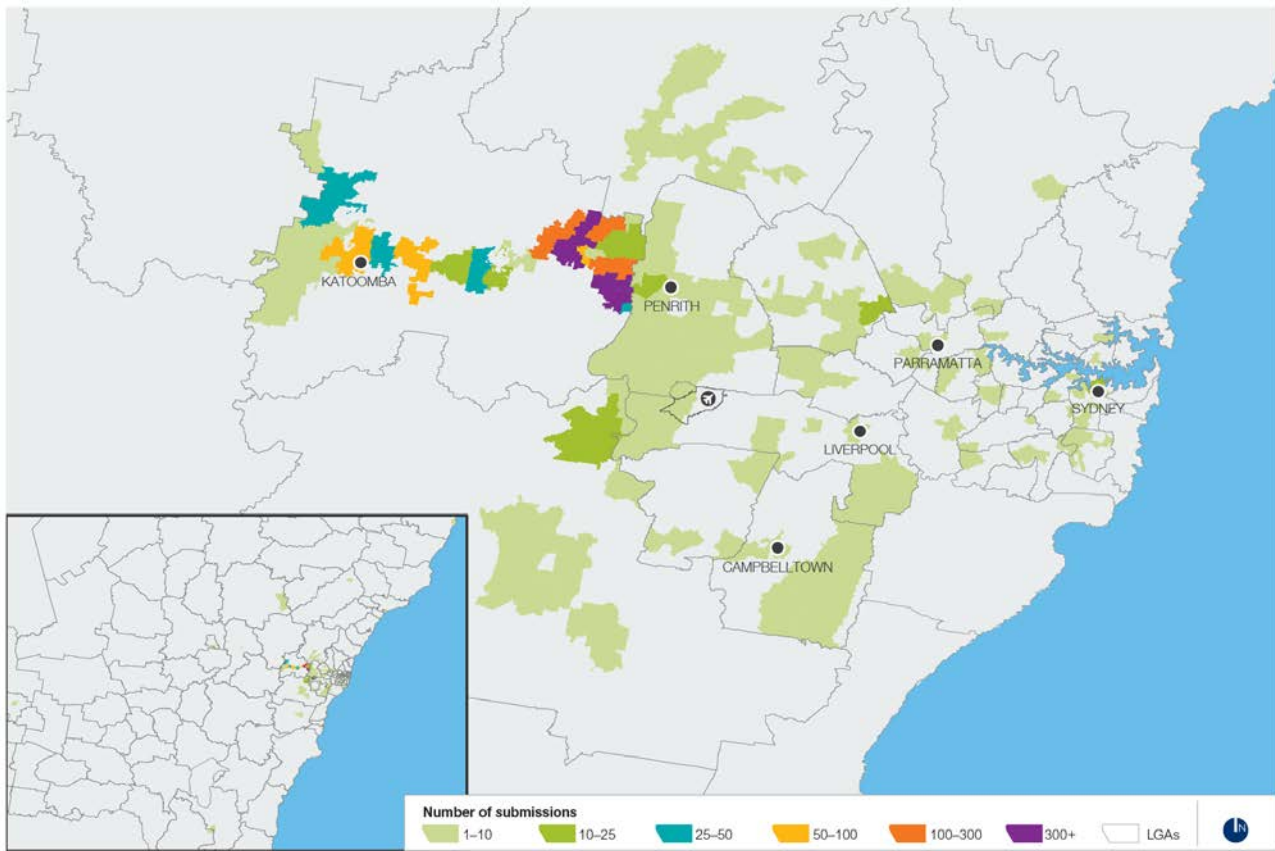



Figure 18–1 Map depicting origin of submissions in relation to Chapter 15 of the draft EIS

18.2 Summary and response

18.2.1 Overarching summary of submissions

Submissions expressed concerns about projected increased traffic movements that would result from the construction and operation of the proposed airport. Submissions stated that transport infrastructure in Western Sydney was already under stress with areas of significant traffic congestion. While some submissions welcomed current road upgrades and the development of new infrastructure under the Western Sydney Infrastructure Plan, there were perceptions that traffic from the proposed airport would exacerbate existing congestion.

There were concerns about the Stage 1 development relying on a road based transport system (private cars, as well as buses and taxis) placing strain on the local road network, including on areas outside of the scope of the Western Sydney Infrastructure Plan. It was suggested that roads leading to and from the airport site, as well as secondary or ‘feeder’ roads in the broader region, would not have capacity to cater for increased vehicle movements and that this will result in heavy road congestion and traffic impacts.



A large number of submissions expressed strong support for the planning and delivery of a multi-modal transport network to service the proposed airport. In particular, a rail link to the airport site at the commencement of operations of the Stage 1 development was seen as necessary to enhance economic and social benefits of the proposed airport, to minimise environmental impacts, and to support growth in Western Sydney. Submissions also suggested that it is crucial for a rail link to be in place at the commencement of airport operations, to enable the rail link to be developed before land around the airport becomes fully developed and to avoid entrenched reliance on the road network. In this context, a number of suggestions were put forward about how rail and bus services could be incorporated into the Stage 1 development.

A number of submissions queried the use of the Strategic Travel Model version 3 (STM3) used as the basis for the traffic modelling. Some submissions recognised the value in using the STM3 but suggested that additional analysis should be carried out with other traffic models to get a more detailed understanding of road network impacts. Other modelling issues identified in submissions included the need to model impacts on the rail network in the longer term, to clarify assumptions about transit and inter-airport transfer passengers, and to clarify the methodology and assumptions used in the draft EIS.

Another key issue raised by submissions was the need for long term planning coordination across all levels of government to ensure existing infrastructure projects are delivered on time, effectively manage the transport impacts from the proposed airport and surrounding development, and ensure that appropriate funding mechanisms are in place.

The key themes from the submissions are summarised under the following headings:

- modelling and impact assessment;
- rail access
- public transport
- onsite transport network;
- road network;
- freight;
- transport planning; and
- environmental management.

The submission comments are summarised and addressed in section 18.2.3.

18.2.2 Overarching response to issues raised

Following publication of the draft EIS, the traffic assessment was revised due to updates to the industry standard STM3 model administered by Transport for NSW, including:

- revised future road networks, including proposed projects;
- revised segmentation of road users based on toll participation; and
- revised land use forecasts and associated background traffic.

The assessment was also updated to align with development and refinement of the Airport Plan including relocation of the cargo terminal and separation of staff and passenger car parking. The modelling of rail access was also reviewed and improved in the revised chapter.

The revised assessment is presented in Chapter 15 (Volume 2a) and Appendix J (Volume 4).

18.2.3 Issues and responses

Theme	Stakeholders	Summary of issue	Response
Modelling and impact assessment	Local councils Residents	<p>Use of the Strategic Travel Model version 3 (STM3)</p> <p>A number of submissions noted the use of the STM3 to model and assess traffic and transport impacts.</p> <p>Local council submissions noted that the STM3 model is likely to be well suited to capture the effects of the proposed airport at a strategic level and that the limitations inherent within the model were disclosed in the draft EIS. However, it was also claimed that the STM3 may not have been effectively calibrated and validated for the purpose of the draft EIS.</p> <p>Some submissions raised particular concerns about the use of the STM3 model. These included:</p> <ul style="list-style-type: none"> • industry standards suggest strategic models like the STM3 should only be applied for strategic purposes and that it is generally accepted that strategic models can form strong baselines for transport impact assessments, but are not considered the best tool for detailed assessments; • the STM, as a strategic travel demand model, does not include representation of intersections and would not provide confidence in traffic forecasts at a corridor level; and • the model was used despite the proposed airport not having a clearly defined role (i.e. as a low-cost carrier hub, air freight hub, etc.) which would allow for more accurate assumptions about passenger and employee land trips. <p>It was noted in some submissions that other major transport infrastructure projects in Sydney had used a combination of strategic traffic modelling with more detailed intersection modelling, including the Sydney Metro Northwest; WestConnex Stages 1a and 1b; and NorthConnex.</p>	<p>The limitations on the use of the STM3 model made in various submissions are noted; however, given the indicative and conceptual nature of the airport layout and Land Use Plans presented in the EIS, the STM3 model is considered to be appropriately detailed for assessment purposes. This is detailed in Chapter 15 (Volume 2a) and Appendix J (Volume 4).</p> <p>The assessment results were presented as midblock volume/capacity ratio, providing an overarching description of road network performance at a regional and local level.</p> <p>Further and more detailed assessment of traffic, transport and access infrastructure would be a key task during detailed design of the proposed airport. Additional detailed modelling, including freight forecasts and intersection modelling, would be undertaken during this process as necessary.</p>



Theme	Stakeholders	Summary of issue	Response
Modelling and impact assessment	Local councils Residents	<p>Scope and detail of modelling</p> <p>A number of submissions outlined areas where further modelling should take place to enhance and verify the impact assessment undertaken on the basis of the STM3 model, and to provide stakeholders with greater clarity about the expected impacts of the proposed airport. In particular, submissions stated that the finalised EIS should include more detailed traffic and public transport patronage assessments such as:</p> <ul style="list-style-type: none"> • local traffic impacts and impacts on the local traffic road network as a result of the proposed airport as well as major developments such as the Broader Western Sydney Employment Area and the South West Priority Growth Area; • traffic impacts expected to occur 10 years after the commencement of operations (rather than approximately five years after); • detailed traffic intersection modelling which could be used to supplement the STM3 modelling and further capture impacts on road networks at a detailed level such as intersection performance and intersection layout requirements; • inclusion of traffic generated from activities associated with operating the proposed airport, including airline catering deliveries, garbage collection, retail and food deliveries for the terminal, etc; • assessment of traffic (passenger and freight) generated from non-aeronautical uses on the airport site, particularly from business developments expected to occur within the commercial development zones; • consideration of major transport infrastructure projects such as the Outer Sydney Orbital; • comparison of impacts associated with development of Wilton or RAAF Base Richmond as alternative airport locations; and • vehicle travel time comparisons need to be provided to enable a comprehensive assessment of the potential impacts of the proposed airport on the local and regional traffic network. 	<p>Given the indicative nature of the airport site layout and Land Use Plans presented in the EIS, the STM3 model is considered to be appropriately detailed for assessment purposes.</p> <p>The STM3 model includes a representation of existing and planned major transport infrastructure, as well as predicted background traffic growth. As such, the assessment reflects other existing or planned major developments in Western Sydney.</p> <p>Further detailed assessment of traffic, transport and access infrastructure would be a key task during detailed design of the proposed airport. Detailed intersection analysis would be undertaken during this process as necessary.</p>

Theme	Stakeholders	Summary of issue	Response
Modelling and impact assessment	Local councils	<p>Structural capacity of roads</p> <p>Some submissions suggested that it cannot be assumed that the existing pavement is structurally adequate, especially in rural areas where most roads have only very thin pavements composed of low-quality materials.</p> <p>It was suggested that the finalised EIS should consider the structural capacity of existing roads as many of them would not be able to handle high volumes of traffic or heavy vehicles. An analysis of this kind should quantify the impacts in terms of reduced life of the road asset and effects on maintenance costs.</p>	Maintenance and upgrading of roads will be an overarching strategic issue arising from the broader urbanisation of Western Sydney, including the proposed airport as well as a range of initiatives such as the Western Sydney Priority Growth Area and Western Sydney Infrastructure Plan. Maintenance of the road network would chiefly be the responsibility of the NSW Government and local governments.
Modelling and impact assessment	Local councils	<p>Modelling of long term impacts</p> <p>A number of submissions noted the indicative nature of the long term scenario and that the use of the STM3 was likely to be appropriate. However, a number of submissions recommended that should the long term development take place, the assessment should be undertaken with additional rigor that explicitly addresses the need for detailed passenger rail planning and detailed road network planning.</p>	As stated in Section 1.1 (Volume 1), approval is being sought for the Stage 1 development through the EIS. Future developments, including the long term development of the proposed airport, would be assessed through the master planning and major development planning provisions of the Airports Act.
Modelling and impact assessment	NSW Government	<p>Description of traffic modelling inputs</p> <p>The NSW Government submission stated that the description of model inputs from the STM3 could be improved. In particular, it was considered that the EIS should acknowledge the forecasts presented in the draft EIS were not provided by the NSW Government but that STM3 outputs were provided to the Western Sydney Airport project team to provide inputs to their own subsequent modelling process for the development of forecasts.</p>	As stated in Section 15.2.2 (Volume 2a), the traffic and transport assessment was conducted using version 3 of the Strategic Travel Model (STM3). STM3 outputs were used as land use, background traffic, transport infrastructure and policy scenarios. As stated in Section 15.2.2.3 (Volume 2a), traffic generated by the proposed airport was estimated using a trip generation model. These estimates and traffic generated by the airport were assigned to the model as an overlay on the STM3 outputs to provide an overall assessment of the impacts of traffic generated by the proposed airport in a number of scenarios.

Theme	Stakeholders	Summary of issue	Response
Modelling and impact assessment	Residents Local councils Members of Parliament and Senators	<p>Relevance of inputs used in traffic modelling</p> <p>Some submissions raised concerns that that traffic modelling was based on land use figures from 2011 which may be out of date and have resulted in an underestimation of background traffic in Stage 1 and the long term given the significant development that has occurred in the region since that time. Submissions noted that there were no calibration and validation of results provided in the draft EIS and that the NSW Bureau of Transport Statistics recommends using STM growth factors applied to 'known' base year data, rather than directly predicted STM volumes.</p> <p>A number of submissions noted that given the early stages of design of the airport, the methodology used to generate assumptions about mode split in the draft EIS were appropriate and fit for purpose.</p>	<p>The traffic, transport and access assessment was undertaken utilising the STM3 model that defines 2011 as the base year and future scenarios in five year increments. As such, 2031 was selected as the assessment year for the Stage 1 development (nominally in 2030) while 2063 was selected for the long term development (nominally 2063). 2051 is the limit of the forecasts included in the current version of the STM3 model.</p> <p>The Stage 1 development assessment scenario is considered appropriate as it is representative of operations several years following opening in the mid-2020s. The long term development assessment scenario represents the proposed airport operating at around peak capacity.</p> <p>The STM model included current and future proposed land use master planning (for example for the Greater Macarthur Priority Growth Area) and as such represents the latest land use planning available.</p> <p>Traffic count data for multiple years was collected for the traffic, transport and access assessment and is presented in Section 15.3.2 (Volume 2a) and Section 3.2 and Appendix A of Appendix J (Volume 4). The traffic count data were used to estimate natural traffic background growth levels to be used for future year prediction scenarios.</p>

Theme	Stakeholders	Summary of issue	Response
Modelling and impact assessment	Local councils NSW Government	<p>Presentation of findings and assumptions</p> <p>Submissions noted the presentation of findings and assumptions should be improved in the EIS, including that:</p> <ul style="list-style-type: none"> the draft EIS provides mid-block volume to capacity diagrams but does not provide tables with explicit volume to capacity values. Submissions noted that the provision of these values allows for a better interpretation of traffic impacts, particularly where existing traffic impacts are significant, and is generally accepted as industry best practice; identified congestion on the broader road network (M4, M5 and M7) has not been quantified and requires further investigation; the STM3 captured the combined effects of traffic generation from the proposed airport land uses and also traffic generated by future land uses in the region (e.g. South West Priority Growth Area and the Broader Western Sydney Employment Area). However, the draft EIS does not contain commentary about the assumptions used for those future land uses; the draft EIS uses a two-stage process to assign vehicles to road links. In particular, the second stage uses a toll-choice assignment to reflect those vehicle drivers who are willing to pay for tolls and those who are not. However, the methodology used to model toll choice was not disclosed in the draft EIS. This was raised as a potential risk in submissions as several major toll roads would provide access to the airport site in the future including the M4, WestConnex and the M7; and the EIS should detail the distribution of total airport traffic onto each surrounding road, including the identification of key passenger and freight routes, and detail about road treatments to be constructed to accommodate this traffic and to separate light and heavy vehicle types. 	<p>As outlined in Section 12.2.3 (Approach to Impact Assessment) (Volume 2a), future assessment of traffic and transport impacts and accompanying consultation processes will provide more certainty and clarity around tangible management measures.</p> <p>As outlined in Section 15.6 (Volume 2a), a detailed Traffic and Access Construction Environmental Management Plan would be developed prior to Main Construction Works to collate measures to mitigate and manage potential traffic impacts generated by the use of the road network for construction access including Elizabeth Drive.</p> <p>The plan would provide the overall plan and staging for managing traffic through and around each work site and would be prepared in accordance with the Roads and Maritime Services' <i>Road Design Guide</i>, the Roads and Maritime Services <i>Traffic Control at Work Sites</i> manual and AS 1742.3 <i>Manual of Uniform Traffic Control Devices – Traffic control for works on roads</i>, and any other relevant standard, guide or manual. The draft plan would be reviewed by relevant stakeholders including NSW Police, Transport for NSW, Road and Maritime Services and affected local councils prior to approval.</p>

Theme	Stakeholders	Summary of issue	Response
Modelling and impact assessment	NSW Government Local councils Community groups	<p>Inter airport transfers and transit passengers</p> <p>A number of submissions indicated a need to consider the impact of transfers between Sydney (Kingsford Smith) Airport and the Western Sydney Airport, as well as the impact of transit passengers, in more detail. This includes the:</p> <ul style="list-style-type: none"> • detailing of assumptions used for inter airport transfers and transiting passengers, given that transfer passengers would increase road network use and transit passengers would remain inside the airport and not result in a conversion to a landside trip; • benchmarking of air passenger transfer behaviours between airports and transit behaviours within the proposed airport to develop a better understanding of likely traffic impacts; • assessing the impact of airport transfers on overall air passenger numbers at the proposed airport; • assessing the impact of airport transfers on mode split and the need for a rail link; • examination of the increased risk of traffic accidents caused by additional vehicle movements; • consideration of employees and freight from the wider airport commercial development; • confirmation that the design provides adequate allowance for buses and coaches; and • ancillary private and public transport facilities and that a peer review of the model inputs be conducted. 	<p>The assessment addresses the requirements of the <i>Guidelines for the Content of a Draft Environmental Impact Statement – Western Sydney Airport</i> (EIS guidelines) issued by the Australian Government Department of the Environment. The EIS Guidelines include a requirement to assess all relevant impacts including specific consideration of changes in traffic movements during construction and operation (associated with both passenger movements and workers).</p> <p>Transfers between Sydney Airport and the proposed Western Sydney Airport are not specifically included in the traffic and transport assessment. However, the impacts of changes in traffic movements more broadly are assessed and this includes consideration of these transfer movements and their impact on the road network.</p>

Theme	Stakeholders	Summary of issue	Response
Modelling and impact assessment	Local councils Community groups	<p>Assumptions used in modelling of public transport access</p> <p>A number of submissions stated that there is insufficient supporting information in the draft EIS to effectively comment on the methodology used to assess public transport use in Stage 1. In addition, these submissions noted that assumptions and methodology of the modelling of public transport access remains unclear.</p> <p>Submissions requested further clarification about the following aspects of the modelling:</p> <ul style="list-style-type: none"> whether, in using the Sydney Airport Land Transport Model (SALTM) to predict the proportions of each transport mode used by air passengers to and from the proposed airport, adjustments were made to the mode proportions in the model to respond to the predicted capacity constraint of the main access road and the approach used in determining these adjustments; the draft EIS is inconsistent about whether the main access road is a constraint in Stage 1. While some parts of the EIS state that the main access road will be a constraint, the results shown in Figure 7-6 and 7-7 of the traffic, transport and access impact assessment (Appendix J (Volume 4)) does not show the main access road as coloured pink or red, and therefore suggests that it would operate below capacity during Stage 1 operations; and the draft EIS did not specifically assess any predicted impacts of future bus services on the local bus network, particularly given that the lack of a rail link in Stage 1 is likely to generate higher dependency on private vehicle usage and possibly higher dependency on buses and shuttles. Similarly, the draft EIS is not clear on whether the predicted bus trips for Stage 1 would be made using existing bus services (which are limited in that area) or whether additional services would be required. <p>Submissions suggested that further modelling and benchmarking of public transportation use of the proposed Western Sydney Airport against other airports of comparative size and function should be considered.</p>	<p>The traffic, transport and access assessment presented in Chapter 15 (Volume 2a) and Appendix J (Volume 4) of the EIS is primarily concerned with traffic generated by the proposed airport and its impact on the external road network.</p> <p>Assessment of the interaction of traffic generated by the proposed airport and public transport is inherently limited by the information available regarding the strategic planning of the priority growth areas and particularly the future transport infrastructure and services.</p> <p>Generally speaking, introduction of public transport such as bus services and a rail link would mitigate the impact of the proposed airport for trips that would otherwise be completed in private vehicles.</p> <p>As stated in Section 6.2.4 of Appendix J (Volume 4), mode split assumptions were developed to account for road network constraints that would not have otherwise been considered elsewhere. The assumed mode splits are presented in Table 6-3 of Appendix J. The mode splits were determined based on consideration of the SALTM model and industry best practice through a literature review of similar international airports.</p>

Theme	Stakeholders	Summary of issue	Response
Modelling and impact assessment	Community groups	<p>Assumptions on use of public transport in Western Sydney</p> <p>Some submissions stated that modelling assumptions should be adjusted to better reflect the reality of circumstances in Western Sydney. Examples include:</p> <ul style="list-style-type: none"> assumptions on public transport use and mode share, which are based on Sydney (Kingsford Smith) Airport, should be reviewed as communities in Western Sydney have different demographics, employment rates, income, private vehicle use and ownership which would suggest a greater reliance on public transport; and the assumption that employees would not use public transport during early morning hours due to service limitations and that private transport would be used does not reflect the experiences of some communities in Western Sydney. 	<p>The traffic, transport and access assessment presented in Chapter 15 (Volume 2a) and Appendix J (Volume 4) of the EIS is primarily concerned with traffic generated by the proposed airport and its impact on the external road network.</p> <p>Assessment of the interaction of traffic generated by the proposed airport and public transport is inherently limited by the information available regarding planning of future services and routes. In developing the mode splits for the Stage 1 development, the existing mode shares for workers and travellers in Western Sydney and at similar airports were taken into account.</p> <p>Generally speaking, introduction of public transport such as bus services and a rail link would mitigate the impact of the proposed airport on trips that would otherwise be completed in private vehicles.</p>

Theme	Stakeholders	Summary of issue	Response
Modelling and impact assessment	Local councils Peak bodies Residents	<p>Impact assessment of future rail link</p> <p>A number of submissions stated there were deficiencies in the scope of the rail assessment in the EIS including:</p> <ul style="list-style-type: none"> • there should be greater justification for why a rail link is not included as part of the Stage 1 development; • the EIS should include an assessment of all impacts of the proposed airport with and without a rail link to better understand the difference in direct and cumulative impacts that would result, including impacts to traffic, air quality, economics, social, and planning and land use; • the assessment of the long term scenario should be more explicit and provide greater detail on the broader impacts, given it assumes that a rail link would be in place by 2063; • the assessment of rail should include an assessment of impacts on the existing rail network and should include consideration of existing rail capacity and how that may affect uptake of rail by air passengers; and • the STM3 modelling only considers the morning peak public transport network. 	<p>The development of a rail link to the airport site is outside the scope of the Stage 1 development and has not been assessed in the EIS. Stage 1 does not currently include a proposal for a rail link because the road network upgrades currently underway or planned have been assessed as adequate to support anticipated airport demand for at least a decade after operations commence.</p> <p>The Australian Government is working with the NSW Government on a Joint Scoping Study on rail needs for Western Sydney and the proposed airport (Joint Scoping Study).</p> <p>The Joint Scoping Study will assess the economic, population and commercial drivers for different rail connections, travel speeds and service types in the region in order to define the preferred need, timing and service options for rail investment to service Western Sydney and the proposed airport. The Joint Scoping Study will also assess what it would take for rail to be operational at the proposed airport when it opens, or if not, how soon afterwards. The development of a rail link would be subject to separate environmental and planning processes.</p> <p>The EIS provides a strategic-level assessment of a potential long term development. As part of this, the long term traffic and transport assessment includes consideration of a future rail link to the proposed airport.</p>

Theme	Stakeholders	Summary of issue	Response
Modelling and impact assessment	Local councils NSW Government	<p>Freight modelling</p> <p>Submissions questioned the adequacy of the transport analysis and modelling, particularly the consideration of freight traffic generation from land uses in and around the proposed airport.</p> <p>A number of submissions noted that the draft EIS does not use the NSW Government's Freight Movement Model (FMM), which has been used in other transport planning assessments. It was noted that the FMM is used to provide an estimation of freight movements by professional drivers not found explicitly in the STM3 model.</p> <p>Submissions raised concerns about the scope of the freight modelling and highlighted two issues which should be included in the final EIS:</p> <ul style="list-style-type: none"> freight traffic generated from activities associated with operating the proposed airport, including airline catering deliveries, garbage collection, retail and food deliveries for the terminal, etc; and freight traffic generated from non-aeronautical uses on the airport site, particularly from business developments expected to occur within the commercial development zones. <p>However, some submissions did note that more detailed freight modelling would require a more detailed terminal plan.</p>	<p>The draft EIS was prepared in accordance with the requirements of the EPBC Act and the <i>Guidelines for the Content of a Draft Environmental Impact Statement – Western Sydney Airport</i> (EIS Guidelines) that were issued by the Department of the Environment on 29 January 2015.</p> <p>The impact assessment methodology for each environmental, social and economic value was developed to meet the requirements of the EIS Guidelines and also consider the intent and objectives of the New South Wales legislative framework where appropriate.</p> <p>Freight demand has been identified for air freight cargo and for the delivery of aviation fuel to the fuel storage. Demand estimates for airport consumables (e.g. food, retail items) or waste removal cannot be calculated before a detailed terminal plan is developed and have therefore been excluded from the assessment.</p> <p>The Australian Government will continue to work closely with State government agencies and local councils to ensure regional and local land use planning and other major development schemes complement the future operation of the proposed airport and that its infrastructure service needs are met. Future planning will integrate with local planning policies and land use planning to ensure that appropriate consideration is given to freight generation from land uses in and around the proposed airport.</p>

Theme	Stakeholders	Summary of issue	Response
Modelling and impact assessment	Local councils Residents	<p>Impact assessment of future fuel pipeline</p> <p>Submissions requested consideration of additional impact assessment scenarios including assessment of the benefits and disadvantages of implementing a fuel pipeline both on traffic, transport and access and on related issues such as health, hazards and risks, economics, social amenity, air quality and ecologically sustainable development.</p>	<p>The long term traffic and transport assessment included consideration of a fuel pipeline connection to the proposed airport.</p> <p>Fuel delivery for Stage 1 would initially be supplied by road tanker because the demand for fuel is not expected to be high enough to justify the construction of a dedicated fuel pipeline</p> <p>A fuel supply pipeline is likely to be established in response to increasing demand beyond Stage 1 and will be a commercial decision between the ALC and the fuel industry. The NSW Government has commenced initial investigations to identify a potential fuel pipeline corridor, with a view to reserving the required land. The reservation of a corridor and subsequent construction is outside the scope of this EIS, and the construction of a fuel pipeline would be subject to a separate assessment and approval process. This would also include obtaining permits providing the right to operate the pipeline.</p>
Modelling and impact assessment	NSW Government Local councils	<p>Peer review</p> <p>The NSW Government submission recommended that an independent peer review be undertaken of the traffic and transport methodology adopted for the draft EIS. It was suggested, in particular, that the peer review should analyse the EIS's traffic and transport assumptions including traffic generation, trip assignments, background traffic growth and road network assumptions.</p> <p>A number of local council submissions noted that a peer review had been undertaken by 11 councils from the Western Sydney Regional Organisation of Councils and the Macarthur Regional Organisation of Councils and noted the findings of the review in their submissions.</p>	<p>The draft EIS was prepared in accordance with the requirements of the EPBC Act and the <i>Guidelines for the Content of a Draft Environmental Impact Statement – Western Sydney Airport</i> (EIS Guidelines) that were issued by the Department of the Environment on 29 January 2015.</p> <p>The impact assessment methodology for each environmental, social and economic value was developed to meet the requirements of the EIS Guidelines and also consider the intent and objectives of the New South Wales legislative framework where appropriate.</p> <p>The draft EIS was subsequently provided to the Department of the Environment for adequacy review against the requirements of the EIS Guidelines and comments provided.</p> <p>During exhibition, a peer review of the draft EIS and its findings were jointly commissioned by 11 councils from the Western Sydney Regional Organisation of Councils (WSROC) and Macarthur Regional Organisation of Councils (MACROC). Issues raised by the peer review have been discussed in relevant sections of this report.</p>

Theme	Stakeholders	Summary of issue	Response
Rail access	Local councils Residents Community groups NSW Government Environmental groups Aviation industry Peak body groups Businesses Large land owners Education institutions Members of Parliament and Senators	<p>The need for a rail connection to the proposed airport and the region in Stage 1</p> <p>Concerns were raised in a large number of submissions about the need for a rail link, servicing the proposed airport and the residents, businesses and future developments in the broader Western Sydney region. While some submissions noted that the Stage 1 development would not be able to commercially support a rail link, the majority of submissions suggested that it is crucial for a rail link to be built to the airport site prior to the commencement of operations. The key arguments for this included:</p> <ul style="list-style-type: none"> • effective mass transit links are critical for the growth and efficiency of major international airports and it is considered to be best-practice to include rail links in such developments; • delivery of a rail link as part of the Stage 1 development is critical for meeting the objectives for the proposed airport, as stated in the Airport Plan, namely 'optimising the benefit of the Airport on employment and investment in Western Sydney' and 'delivering sound financial, environmental and social outcomes'; • it would enhance the economic and social benefits of the proposed airport, particularly through improved operational efficiency and capacity of the proposed airport, and improving connections to urban centres and tourist attractions in the region; • it would improve the integration of the airport site into the broader region; • it could help alleviate existing pressures and congestion on the rail and road network; • it would deliver more sustainable outcomes for the proposed airport, particularly in the reduction of air pollution and traffic impacts; • to reserve corridors before land around and on the airport site is developed and it becomes too expensive to acquire land and construct the rail link, particularly given the lengthy timeframes in planning, designing and constructing a rail link; 	<p>Passengers arriving and departing the airport site will use various modes of travel. The EIS has demonstrated that the \$3.6 billion package of road upgrades under the Western Sydney Infrastructure Plan would be adequate to support anticipated airport demand during Stage 1 and for at least a decade after the commencement of airport operations.</p> <p>The Australian Government is working with the NSW Government on a Joint Scoping Study on rail needs for Western Sydney and the proposed airport (Joint Scoping Study).</p> <p>The Joint Scoping Study will assess the economic, population and commercial drivers for different rail connections, travel speeds and service types in the region in order to define the preferred need, timing and service options for rail investment to service Western Sydney and the proposed airport. The Joint Scoping Study will also assess what it would take for rail to be operational at the proposed airport when it opens, or if not how soon afterwards.</p> <p>Access for rail across the airport site and for one or more stations in the terminal precinct will be preserved. The rail line will be predominantly underground through the airport site and be consistent with the final airport layout to avoid critical infrastructure while optimising ease of access for passengers.</p> <p>The final rail alignment through the airport site will be positioned such that it minimises impact to ongoing airport developments and operations whilst optimising passenger movement through to departure points.</p>

Theme	Stakeholders	Summary of issue	Response
		<ul style="list-style-type: none"> reliance on private vehicles from day 1 may result in entrenched travel behaviour which limits the success of a future rail link and exacerbates future traffic and transport impacts; and passengers may not have access to private vehicles and buses may not be suitable for travelling with luggage. 	
Rail access	Local councils Large land owners Peak bodies Residents Education institutions Aviation industry	<p>Need for greater clarity and commitment in the EIS on rail access</p> <p>Many submissions raised concerns about the lack of detail about a rail link and called on the Commonwealth and NSW governments to provide greater certainty about how and when a rail link would be established to the airport site. This includes providing detail on how passenger numbers or other metrics would trigger the development of a rail link, or whether development of a future rail link would be ensured through a suitable legal mechanism.</p>	<p>The development of a rail link to the airport site is outside the scope of the Stage 1 development and has not been assessed in the EIS. Stage 1 does not currently include a proposal for a detailed rail link because the road network upgrades under the Western Sydney Infrastructure Plan have been assessed as adequate to support anticipated airport demand for at least a decade after operations commence.</p> <p>The EIS provides a strategic-level assessment of a potential long term development and its associated traffic and transport demand, including consideration of a future rail link to the proposed airport.</p> <p>The development of rail access to the airport site would be undertaken separately to the Stage 1 development and would be subject to a separate planning and approval process. The development of a rail link would be subject to the outcomes of the Joint Scoping Study.</p> <p>Subject to the findings of the Joint Scoping Study, a final rail alignment will be determined in consultation with the NSW Government. Depending on the alignment and preferred timing to develop rail services, work may be required during the Stage 1 development to either commence construction or to future-proof the corridor. As any such work is currently unknown, it is outside the scope of the EIS and would be subject to a separate approval process.</p>

Theme	Stakeholders	Summary of issue	Response
Rail access	<p>NSW Government</p> <p>Local councils</p> <p>Large land owners</p> <p>Peak bodies</p> <p>Businesses</p> <p>Aviation groups</p>	<p>Existing planning and the Joint Scoping Study on rail</p> <p>Submissions called for greater levels of cooperation and coordination between all levels of government to optimise the planning and development of a rail link to the airport site.</p> <p>Some submissions noted that the Airport Plan includes the reservation of a rail corridor on the airport site and the EIS considers the impacts of onsite construction activities such as provision of a rail box. A number of submissions also noted that planning was underway for the provision of rail in Western Sydney, including the South West Rail Link extension and the M9 Orbital investigation. However, submissions stated that these existing activities need to be better coordinated with the airport development. Similarly, some submissions argued that the provision of rail to the airport site should take into account broader development objectives and wider network benefits, recognising that the proposed airport would not be the only user and beneficiary of a rail link.</p> <p>A number of submissions welcomed the Australian and NSW government Joint Scoping Study on rail needs for Western Sydney and the proposed airport. The NSW Government submission stated that key information about the proposed airport is being fed into the Scoping Study and that additional information on inter-airport passenger transfers would further assist this process.</p> <p>Some submissions stated that the outcomes of the Joint Scoping Study should be incorporated into the finalised EIS.</p> <p>Some submissions stated that the provision of rail to the proposed airport should avoid aspects of the delivery model used for the Sydney (Kingsford Smith) Airport rail link which resulted in ticket prices being too high and dampening overall utilisation of the rail link.</p>	<p>The Australian Government is working with the NSW Government on a Joint Scoping Study on rail needs for Western Sydney and the proposed airport (Joint Scoping Study).</p> <p>The Joint Scoping Study will assess the economic, population and commercial drivers for different rail connections, travel speeds and service types in the region in order to define the preferred need, timing and service options for rail investment to service Western Sydney and the proposed airport. The Joint Scoping Study will also assess what it would take for rail to be operational at the proposed airport when it opens, or if not, how soon afterwards.</p> <p>Access for rail across the airport site and for one or more stations in the terminal precinct will be preserved. The rail line would be predominantly underground through the airport site and be consistent with the aviation layout to avoid critical infrastructure while optimising ease of access for passengers.</p>

Theme	Stakeholders	Summary of issue	Response
Rail access	Local councils Large land owners Peak bodies Residents Members of Parliament and Senators Community groups Environmental groups Education institutions	<p>Proposed options for an airport rail link</p> <p>A number of submissions suggested possible options for rail link connections to the proposed airport including:</p> <ul style="list-style-type: none"> • extension of the South West Rail Link from Leppington to the airport site as a priority and then continuing on to the Western Line near St Marys; • establishment of a new line between Wetherill Park and the airport site, passing through Parramatta CBD and incorporating a rail link within the M12 corridor; • establishment of a north-south rail connection between urban centres in the South West and the North West and the airport site; • establishment of a new rail line between the airport site and major urban centres in the Sutherland Shire; • establishment of an express rail line between the airport site and the Sydney CBD, travelling via Parramatta or Liverpool, either as conventional heavy rail or as high-speed rail; and • expansion of the Sydney Metro network by extending the Northwest line (formerly known as the North West Rail Link) to the airport site, extending the Southwest line from Bankstown (potentially via Liverpool) to the airport site, or a combination of both. 	<p>The Australian Government is working with the NSW Government on a joint Scoping Study on rail needs for Western Sydney and the proposed airport (Joint Scoping Study).</p> <p>The Joint Scoping Study will assess the economic, population and commercial drivers for different rail connections, travel speeds and service types in the region in order to define the preferred need, timing and service options for rail investment to service Western Sydney and the proposed airport. The Joint Scoping Study will also assess what it would take for rail to be operational at the proposed airport when it opens, or if not, how soon afterwards. Potential funding sources will be explored including value capture as one option.</p>

Theme	Stakeholders	Summary of issue	Response
Public transport	Local councils Peak bodies Community groups Aviation groups	<p>Public transport access</p> <p>A number of submissions noted that a range of public transport links to the airport site as part of the Stage 1 development would result in benefits including:</p> <ul style="list-style-type: none"> • increasing ease of access and airport patronage; • providing local communities with greater opportunities for travel and employment; • helping to reduce traffic congestion from private vehicle use as well as associated impacts from noise, air quality, and risks and hazards; • encouraging the use of active transport (walking and cycling) across the region; • improving public transport for local communities; and • helping to distribute predicted social and economic benefits more fairly. <p>Submissions stated that buses in particular will be important if a rail link is not developed during the Stage 1 development. These submissions also noted that the EIS does not contain any detail about public transport access to the airport site or how public transport would be incorporated into the roads being developed under the Western Sydney Infrastructure Plan.</p> <p>Submissions identified a number of opportunities for public transport access to the airport site, complementing both the road network and the future rail link. The options include:</p> <ul style="list-style-type: none"> • provision of an east-west public transport link by incorporating dedicated bus lanes into the M12, Elizabeth Drive or Fifteenth Avenue, connecting the airport site with the Liverpool-Parramatta Rapid Bus Transit Way (T-way); and • establishment of new public transport connections to the South West Priority Growth Area and Campbelltown-Macarthur urban centre. 	<p>It is acknowledged that alternative transport links to the proposed airport may ease future congestion and potentially encourage the use of active transport modes. The future development of transport infrastructure, including public transport links and services, would be subject to planning undertaken by the Australian Government, NSW Government and various local governments in Western Sydney. As a major infrastructure project and substantial origin and destination of people movements, the proposed airport would necessarily be incorporated into this planning.</p>

Theme	Stakeholders	Summary of issue	Response
Public transport	NSW Government Local councils Peak bodies Community groups Aviation groups Businesses	<p>Public transport planning in the EIS and Airport Plan</p> <p>A number of submissions expressed support for the establishment of multi-modal transport connections to the proposed airport. Submissions highlighted the importance of incorporating effective public transport planning into the design of the proposed airport and stated that the final EIS and Airport Plan should include more detail about how public transport will be integrated into the concept design and Ground Transport Management Plan.</p> <p>A number of submissions argued that planning for bus services to the proposed airport should take a whole of Sydney region perspective, reflecting the premise that the proposed airport will be used by people from across the Sydney metropolitan area and beyond.</p> <p>Submissions outlined a number of features which should be incorporated into the Airport Plan or Ground Transport Management Plan, including:</p> <ul style="list-style-type: none"> • direct bus access at the terminal from all approach roads; • bus stand capacity on the airport site to support the bus network and include bus layover for terminating services; • provision of infrastructure for taxi services; • provision of infrastructure for non-metropolitan bus services such as tour buses, transfer buses, coaches; and • provision for a bus interchange to accommodate efficient bus arrivals and departures, parking of buses, and seamless connection to the terminal. <p>Some submissions stated that a comprehensive assessment of the transport needs of residents in Western Sydney should be undertaken in addition to the EIS. This assessment should take into account the needs of communities experiencing transport disadvantage and develop mitigation and management strategies to address public transport deficits prior to the construction of the Stage 1 development.</p>	<p>It is acknowledged that alternative transport links to the proposed airport may ease future congestion and potentially encourage the use of active transport modes. The future development of transport infrastructure, including public transport links and services, would be subject to planning undertaken by the Australian Government, NSW Government and various local governments in Western Sydney. As a major infrastructure project and substantial origin and destination of people movements, the proposed airport would necessarily be incorporated into this planning.</p>

Theme	Stakeholders	Summary of issue	Response
Onsite transport network	NSW Government Local councils Members of Parliament and Senators	<p>Management of onsite movement of people and vehicles</p> <p>The NSW Government submission noted the draft EIS's commitment to pedestrian, cycle or road networks for movements around the airport site. The submission stated that further details of active transport are anticipated in the Ground Transport Management Plan and that it could be enhanced by providing greater commitments for end of trip facilities at the airport site for cyclists and pedestrians.</p> <p>Some submissions noted that the Airport Plan should provide more guidance on how pedestrian movement on the airport site would be managed. In particular, it was noted that there should be a seamless transition from an onsite bus interchange to the terminal considering the passenger volumes forecasted and the modal split assumed.</p> <p>Some submissions noted that the draft EIS does not show any detailed internal layouts or arrangements for the management and movement of buses, taxis, hire cars and movement of pedestrians.</p> <p>Some submissions suggested that low-emission vehicles and transport systems could be incorporated into the onsite movement of people to reduce environmental impacts.</p>	<p>The revised draft Airport Plan provides an indicative concept design and Land Use Plan for the proposed airport. Given the conceptual nature of the design, detailed components such as end of trip facilities are not explicitly shown. Regardless of the conceptual nature of the design, the EIS included a number of commitments to frame future planning of the proposed airport.</p> <p>As stated in Section 15.6 (Volume 2a), a Ground Transport Operational Environmental Management Plan (OEMP) will be developed to guide further development of transport links at the airport site. One of the commitments of the Ground Transport OEMP is to ensure pedestrian linkages are provided between terminals and all transport areas. These transport areas would include any bus terminals.</p> <p>Prior to the construction of the proposed airport, the Airport Plan will be determined under Division 4A of the Airports Act and the proposed airport would be subject to further and detailed design. Detailed design would consider inclusion of end of trip facilities or other such features to integrate the proposed airport with other infrastructure in sufficiently advanced stages of planning.</p> <p>Utilisation of low emissions vehicles would also be considered during the detailed design and procurement stages, as stated in the air quality and greenhouse gas assessment in Chapter 12 (Volume 2a).</p>
Road network	Local councils NSW Government Community groups Environmental groups Residents Members of Parliament and Senators Large land owners Peak bodies Education institutions Aviation industry	<p>Impacts on Western Sydney roads</p> <p>Submissions noted that the proposed airport will have impacts on the road network in Western Sydney. A number of submissions argued that the existing road network is already congested and that the development of the proposed airport would exacerbate this issue.</p> <p>While submissions welcomed the implementation of the Western Sydney Infrastructure Plan, a number of submissions raised concerns that these upgrades would only maintain existing levels of service and that the cumulative impact of the proposed airport and urban development in the region would require further road network upgrades.</p> <p>It was highlighted that although impacts may be limited in Stage 1,</p>	<p>Stage 1 operations are predicted to result in approximately 21,562 vehicles entering the airport site and 21,556 vehicles leaving the airport site each day. With the introduction of the M12 Motorway, this additional traffic is not likely to affect the operation of the surrounding road network significantly, but is predicted to result in:</p> <ul style="list-style-type: none"> • an increase in congestion: <ul style="list-style-type: none"> ▪ on the M7 southbound, south of the M4; ▪ on sections of the M12 – noting that the M12 is still well within capacity ▪ on Elizabeth Drive, east and west of the M7 — noting that the Stage 1 development exacerbates existing congestion levels that already exist at these locations; and ▪ on The Northern Road, north of Elizabeth Drive.

Theme	Stakeholders	Summary of issue	Response
		<p>longer term impacts, particularly from cumulative impacts, would be significant. It was suggested that mitigation measures should be explored to address these impacts and that additional investment would be required in major roads around a number of local government areas in Western Sydney.</p> <p>Specific examples of roads which would require mitigation measures and/or additional investment included:</p> <ul style="list-style-type: none"> • the Parramatta Interchange; • roads in the Sydney Olympic Park Specialised Precinct; • the M5 Motorway; • the M4 Motorway; • the Great Western Highway; • The Northern Road (beyond existing upgrade plans); • Raby Road; • King Street and Devonshire Road in Rossmore; • Badgerys Creek Road and whether it can be kept open, realigned around the airport site or upgraded to a State road; • Elizabeth Drive, including any deviation necessary for the northern runway; • Fifteenth Avenue; • Mamre Road; • Luddenham Road; • Picton Road; • Appin Road; • Adams and Anton roads which are predicted to carry heavy vehicle loads; and • the airport perimeter road. 	<ul style="list-style-type: none"> • a small decrease in congestion on Mamre Road, northbound near Elizabeth Drive. <p>Significant road improvement works which are underway as part of the Western Sydney Infrastructure Plan are expected to provide sufficient capacity to cater for the forecast passenger and employee traffic demand associated with the proposed airport for the first decade of operations.</p> <p>The public transport, walking and cycling systems proposed by the NSW Government and local councils in the region would also have sufficient capacity to cater for the expected airport passenger and employee demand at the proposed airport.</p>



Theme	Stakeholders	Summary of issue	Response
Road network	Local councils NSW Government Peak bodies Aviation industry	<p>Management of onsite parking</p> <p>Submissions noted that the supply of car parking at the airport will be a key determinant of how airport users choose to access the airport site as well as a financial issue for the operator of the proposed airport.</p> <p>Some submissions raised concerns about the amount of parking spaces set aside in the draft Airport Plan. In particular, it was noted that the total number of spaces provided would be in excess of the predicted traffic movements and considered to be an oversupply. Submissions noted that this could further encourage the use of private vehicles, undermine the business case for early implementation of a rail link, and result in unnecessary environmental impacts through increased water runoff and impacts to water quality.</p> <p>Some submissions noted that new commuter methods such as Uber and the adoption of driverless cars may reduce the demand for car parking in the future.</p> <p>The NSW Government submissions suggested that onsite parking management options could be explored to ensure that offsite traffic demand is managed effectively. It was noted that this could include taxes or user charges on car parking that might contribute to funding provision of high quality public transport serving the proposed airport. The submissions suggested that the Australian and NSW governments explore these options jointly.</p>	<p>As stated in Section 15.6 (Volume 2a), a Ground Transport OEMP would be prepared as part of the detailed design of the proposed airport. The administration of car parking would be considered through the development of the plan.</p> <p>Commercial arrangements surrounding the development and operation of the proposed airport will be set out in contracts between the Australian Government, the ALC and other relevant parties.</p> <p>Charges for airport users are the responsibility of the ALC and are not considered in this EIS.</p>
Road network	NSW Government	<p>The Northern Road realignment</p> <p>Submissions contended that, should the proposed alignment of The Northern Road pass through land set aside for environmental conservation, the road corridor should not be included as biodiversity lands. The preferred design for the upgrade of The Northern Road should be integrated into the finalised EIS.</p>	<p>The proposed alignment of The Northern Road presented in the draft EIS has been updated and integrated into the finalised EIS. The updated indicative airport site layout, including The Northern Road alignment is presented in Chapter 5 (Volume 2a).</p>

Theme	Stakeholders	Summary of issue	Response
Road network	Local councils	<p>Commitment to deliver Western Sydney Infrastructure Plan</p> <p>Some submissions noted that the proposal for the Stage 1 development is subject to the Commonwealth EPBC Act rather than NSW state approvals. Submissions raised concerns that this would mean that there are no mechanisms to ensure that new roads and upgrades in the Western Sydney Infrastructure Plan would be delivered in the timeframe required for the proposed airport.</p> <p>Some submissions called for the establishment of a mechanism to ensure that the road upgrades and new infrastructure included in the Western Sydney Infrastructure Plan are delivered in the timeframe required for the proposed airport.</p>	<p>One of the key goals of the Western Sydney Infrastructure Plan – along with its component major transport infrastructure projects – is to capitalise on economic gains from the proposed airport. Work is already underway on projects under the Western Sydney Infrastructure Plan which demonstrates that providing transport linkages to the proposed airport is a key strategic objective of the Australian Government and NSW Government.</p>
Road network	NSW Government	<p>Airport road access – construction</p> <p>The NSW Government submission suggested that reconsideration be given to the preferred road access during airport construction. It was noted that Bringelly Road and The Northern Road are being upgraded, as part of the Western Sydney Infrastructure Plan, and may provide safer and more efficient access to and from the airport site for construction purposes compared to Elizabeth Drive.</p> <p>The submissions stated that if Elizabeth Drive was to remain as the preferred access road, consideration should be given to a comprehensive independent road safety audit to identify remedial measures.</p>	<p>As stated in Section 4.6 of the Traffic, Transport and Access assessment in Appendix J (Volume 4), the construction routes selected are indicative for the purpose of impact assessment only. Alternate or additional routes, including those suggested by the NSW Government may be planned by the contractors responsible for the construction of the proposed airport.</p> <p>These chosen routes and measures to mitigate and manage potential traffic impacts will be detailed in a Traffic and Access Construction Environmental Management Plan prior to construction.</p>

Theme	Stakeholders	Summary of issue	Response
Traffic, transport and access	Local councils	<p>Mitigation measure – road condition post construction</p> <p>Some submissions indicated that additional funding will be required to upgrade other roads local to the airport site that were not included in recently announced funding packages and that ongoing funding was needed to keep pace with the growth of the airport.</p> <p>Suggestions were provided that road safety audits and dilapidation surveys would be needed pre- and post-construction to ensure local roads were returned to a similar condition once construction was complete.</p>	<p>As outlined in Chapter 28 (Volume 2b) the Traffic and Access CEMP will collate measures to mitigate and manage potential traffic impacts, road condition and road safety issues generated by the use of the road network during construction.</p> <p>The CEMP would provide the overall plan and staging for managing traffic through and around each work site and would be prepared in accordance with the Roads and Maritime's <i>Road Design Guide</i>, the Roads and Maritime Services <i>Traffic Control at Work Sites</i> manual and AS 1742.3 <i>Manual of Uniform Traffic Control Devices – Traffic control for works on roads</i>, and any other relevant standard, guide or manual. The CEMP will be prepared in consultation with relevant stakeholders including Transport for NSW, Roads and Maritime Services and affected local councils. This process will ensure that construction traffic is managed in the most efficient way and minimises safety risks and disruption to other road users.</p>

Theme	Stakeholders	Summary of issue	Response
Road network	NSW Government Local councils Residents	<p>Airport road access – capacity of main access road</p> <p>A number of submissions raised concerns about the main airport access road during operation. It is noted that the NSW Government submission expressed support for the reservation of a 100 metre-wide corridor for the main access.</p> <p>Some submissions expressed concerns about the capacity of the main access road, both during Stage 1 operations and in the longer term. It was contended that, because traffic from some associated activities (e.g. food and retail delivery) as well as traffic from commercial development are not included in the traffic study, it is likely that the main access road would reach capacity well before the time predicted in the draft EIS. Submissions also raised concerns that the draft EIS does not address how these capacity issues would be managed and how air passengers would enter and leave the airport site once the main access road is at capacity.</p> <p>A number of submissions also questioned the methodology used to define when the main access road would be at capacity. Submissions suggested that local conditions of the main access road have not been taken into account. In particular, an airport access road is likely to have multiple decision points, merging and weaving effects, and passenger drop-off effects which may reduce the actual capacity of the main access road.</p> <p>Some submissions suggested that even though a second major access point was planned for The Northern Road it still seemed to suggest that the bulk of traffic would be directed to the main access road, leading to congestion around Elizabeth Drive and the planned M12 interchange.</p>	<p>The Traffic, Transport and Access assessment presented in Chapter 15 (Volume 2a) and Appendix J (Volume 4) was prepared in accordance with the Guidelines for the Western Sydney Airport EIS, utilising the STM3 model provided by Transport for NSW.</p> <p>The Land Use Plan presented in the EIS include commercial land use zones that could support third party developments. These developments – including consequential traffic – are not part of the proposed action and are therefore not considered in detail.</p> <p>The main access road via the proposed M12 Motorway is one of multiple access routes reflected in the conceptual design of the proposed airport. This main access route would primarily be utilised by passengers. Staff and freight may access the proposed airport via Elizabeth Drive, while a third secure access to commercial and operational support areas would also be provided via The Northern Road.</p> <p>As stated in Section 5.1.1 of Appendix J, additional access routes would be developed in parallel with commercial development as required.</p> <p>Further detailed assessment and design of proposed accesses would be a key aspect of the detailed design of the proposed airport. Any restrictive traffic issues would be resolved through the detailed design process.</p>

Theme	Stakeholders	Summary of issue	Response
Road network	NSW Government Local councils	<p>Airport road access – alternative access roads</p> <p>Submissions noted that assigning The Northern Road as a service and freight access point will reinforce The Northern Road's role as a key freight route.</p> <p>A number of submissions stated that specific access routes should be dedicated for public transport, given the importance of bus services during Stage 1 operations. The NSW Government submission stated that the main access road into the airport site should contain a dedicated bus corridor. Other submissions suggested that dedicated access points should be provided on the south and east of the airport site to allow for better connections with public transport from those parts of Western Sydney.</p> <p>Some submissions noted that the potential size of commercial development on the airport site is significant and that supplementary access points should be planned to better integrate these areas to the surrounding land uses and transport connections.</p> <p>Some submissions objected to the closure of Badgerys Creek Road and suggested that it should instead be realigned around the perimeter of the airport site to provide more opportunities for access points into the airport site.</p>	<p>As stated in Section 5.1.1 of the Traffic, Transport and Access assessment presented in Appendix J (Volume 4), the main access route to the proposed airport was assessed with two dedicated bus lanes, while additional access routes would be developed in parallel with commercial development as required.</p> <p>It is considered that the alignments of The Northern Road, Elizabeth Drive and the proposed M12 Motorway provide sufficient opportunities for access points to the airport site at this stage. Further detailed assessment and design of accesses would be a key aspect of the detailed design of the proposed airport.</p> <p>It is intended that access to a north-south route between The Northern Road and Elizabeth Drive is maintained subject to security and safety requirements being met. The specific configuration of this link will be determined as part of detailed design.</p>
Road network	NSW Government	<p>Cost benefit analysis and delivery of fuel pipeline</p> <p>The NSW Government submission indicated that an economic assessment should compare short-term fuel supply delivery by road and longer term supply through a dedicated pipeline. A pipeline alignment should be identified and protected in statutory instruments prior to commencement of operations, as encroachment will limit future options and may result in construction of a pipeline being unviable.</p>	<p>Fuel delivery for Stage 1 operations would initially be supplied by road tanker because the demand for fuel is not expected to be high enough to justify the construction of a dedicated fuel pipeline.</p> <p>A fuel supply pipeline is likely to be established in response to increasing demand beyond Stage 1 and will be a commercial decision between the ALC and the fuel industry. The NSW Government has commenced initial investigations to identify a potential fuel pipeline corridor, with a view to reserving the required land. The construction of a fuel pipeline will be subject to a separate assessment and approval process. This also includes obtaining permits providing the right to operate the pipeline.</p>

Theme	Stakeholders	Summary of issue	Response
Road network	Local councils Residents Community groups	<p>Fuel supply impacts on road network</p> <p>A number of submissions suggested that a dedicated fuel pipeline was required from the commencement of operations as its absence would result in unacceptable levels of heavy vehicles on the road network and would lead to increased traffic congestion, air quality impacts, and increased hazards and risks.</p> <p>Some submissions questioned the predicted number of heavy vehicles that would be required to deliver fuel to the airport site, suggesting that these numbers were too low. Submissions also raised concerns that fuel trucks would be utilising already congested roads and that, even if a rail link was established from the commencement of operations, it would not remove the need for heavy vehicles to use these roads.</p>	As stated in Section 6.6.2 of the Traffic, Transport and Access assessment presented in Appendix J (Volume 4), fuel deliveries for Stage 1 operations are estimated to be approximately 43 B-Doubles per day based on the expected airport fuel use. This traffic is equivalent to 10 passenger car units per hour, which is considered minimal in the context of the proposed development.
Freight	Community groups Residents	<p>Increased traffic congestion</p> <p>Some submissions raised concerns that heavy vehicles generated by freight activities at the proposed airport would exacerbate traffic congestions on roads and put further pressure on the road network in Western Sydney. It was noted that even if a rail link was included in the Stage 1 development a significant number of heavy vehicles would still need to use the road network to transport freight to the proposed airport.</p>	As stated in the Traffic, Transport and Access assessment presented in Appendix J (Volume 4), the road network in Western Sydney exhibits existing constraints that would be expected to become more pronounced over time without sufficient ongoing investment in transport infrastructure. A large number of planned transport infrastructure projects are expected to alleviate these existing and future constraints as identified in Table 5-2 of Appendix J (Volume 4) and reflected in planning by the Australian, NSW and local governments. It is expected that these and other future developments would increase the capacity of the road network at a strategic level to accommodate the proposed airport and the broader urbanisation of Western Sydney.
Freight	Local councils	<p>Discrepancy in freight modelling</p> <p>Some submissions noted a discrepancy between the freight trips tabulated in Table 6-10 and the freight trips described in section 7.4 of Appendix J (Surface Transport and Access) of the draft EIS. Table 6-10 indicates a total of 9 and 13 freight trips to/from the proposed airport in the 2-hour AM and PM peaks respectively. It was noted that section 7.4 describes a total of 3,966 freight trips to the Airport in the 2-hour AM peak and a total of 1,905 freight trips from the Airport in the 2-hour PM peak.</p>	The discrepancy is noted. The figures 3,966 and 1,905 relate to total traffic volumes as indicated in the submission. The EIS contains an updated Traffic, Transport and Access assessment and these figures have thus been updated. The revised assessment is presented in Chapter 15 (Volume 2a) and Appendix J (Volume 4).

Theme	Stakeholders	Summary of issue	Response
Freight	Residents	<p>Increased risk of accidents</p> <p>Submissions indicated concern for a higher likelihood of accidents on the road network due to increased freight movements. It was suggested that transporting freight by rail or fuel via a pipeline would minimise the number of freight vehicles utilising the road network alongside passenger vehicles.</p>	<p>Road user safety and risk of increased accidents was considered by both the traffic and transport assessment and the hazard and risk assessment. It is not currently possible to identify what traffic routes are likely to be used for fuel deliveries, although it is expected the majority of the trips would be by high capacity, arterial roads or motorways, and locally via the M7 and future M12 Motorway. The predicted number of truck movements during Stage 1 operations is not large relative to road capacity or existing heavy vehicle volumes.</p> <p>As outlined above, future assessment of traffic and transport impacts and accompanying consultation processes will provide more certainty and clarity around tangible management measures.</p> <p>A detailed Traffic and Access CEMP and a Ground Transport OEMP will be developed prior to construction and operation, respectively, to collate measures to mitigate and manage potential traffic impacts and road safety issues generated by the use of the road network for both construction and operation.</p> <p>The Traffic and Access CEMP, which will provide the overall plan and staging for managing traffic through and around each construction work site, will be prepared having regard to the Roads and Maritime's <i>Road Design Guide</i>, the Roads and Maritime Services <i>Traffic Control at Work Sites</i> manual and AS 1742.3 Manual of Uniform Traffic Control Devices – Traffic control for works on roads, and any other relevant standard, guide or manual. The draft CEMP will be reviewed by relevant stakeholders including Transport for NSW, Roads and Maritime Services and affected local councils.</p>

Theme	Stakeholders	Summary of issue	Response
Transport planning	Local councils Large land owners Peak bodies NSW Government	<p>Transport and urban planning</p> <p>A number of submissions noted that development of the proposed airport would lead to positive economic and social outcomes. However, it was highlighted that effective urban planning and integrated transport planning will be necessary to maximise these outcomes. In particular, all levels of government need to cooperate to ensure that existing and new urban centres in Western Sydney are appropriately zoned and connected (by public transport and road) to the Sydney CBD and other major economic centres in Sydney. Some submissions suggested that a special authority be developed to coordinate off-airport planning and transport infrastructure.</p> <p>Submissions also noted that the proposed airport's role as a major transport gateway will be crucial in facilitating urban growth and the establishment of transport connections in the region. However, some submissions raised concerns that the proposed airport could draw economic activity and infrastructure investment away from surrounding areas and careful planning was required to ensure the proposed airport is compatible with surrounding land use and urban development plans.</p> <p>Some submissions stated that transport infrastructure for the proposed airport should be planned and developed in a staged way. It was argued that this would allow for detailed planning to commence for the preservation of additional corridors and transport upgrades to cater for the full growth of the proposed airport's onsite commercial development, and the broader urban development in the region.</p> <p>Some submissions raised concerns that the proposed airport is not included in detail in a number of NSW Government planning documents such as the NSW Long Term Transport Master Plan, or that it could be better integrated into NSW Government plans for major transport infrastructure projects such as the Outer Sydney Orbital and the South West Rail Link. The NSW Government stated in its submission that it will continue to collaborate with the Australian Government to integrate the South West Rail Link Extension and the Outer Sydney Orbital with the proposed airport.</p>	<p>The Australian Government will continue to work closely with State government agencies and local councils to ensure regional and local land use planning and other major development schemes complement the future operation of the proposed airport and its infrastructure service needs.</p> <p>Future planning for the proposed airport and surrounding land uses will integrate with the following:</p> <ul style="list-style-type: none"> • Australian Government legislation and regulations; • National Airports Safeguarding Framework; • Protection of Operational Airspace Surfaces; • NSW Government legislation; • State Environmental Planning Policies; • Local Planning Policies; • Strategic documents including: <ul style="list-style-type: none"> ▪ A Plan for Growing Sydney (the Metropolitan Plan); ▪ South West Priority Growth Area; and ▪ Western Sydney Employment Area. • Infrastructure projects including: <ul style="list-style-type: none"> ▪ Western Sydney Infrastructure Plan; ▪ South West Rail Link Extension; ▪ Outer Sydney Orbital; and • Local government land use planning.

Theme	Stakeholders	Summary of issue	Response
Transport planning	NSW Government Local councils	<p>Establishment of road planning and funding arrangements</p> <p>Some submissions called for greater commitment to the funding of the road network to cater for traffic from the proposed airport. In particular, some submissions called for the establishment of special arrangements or mechanisms, involving all levels of government, to enable long term planning of road upgrades and to deliver long term funding of infrastructure for the proposed airport and Western Sydney.</p> <p>Some submissions suggested that the airport operator should be required to contribute to the funding of local infrastructure upgrades.</p> <p>The NSW Government submission suggested that the Australian and NSW governments should consider jointly investigating options for taxes or user charges that might apply to airport land, and the contribution that these charges or taxes might make to funding the provision of high quality public transport serving the airport.</p> <p>Some submissions questioned whether the M12 Motorway would be a toll road and whether that had been factored in to the traffic modelling.</p>	<p>The Australian Government will continue to work closely with State government agencies and local councils to ensure regional and local land use planning and other major development schemes complement the future operation of the proposed airport and its infrastructure needs are met.</p> <p>Commercial arrangements surrounding the development and operation of the proposed airport will be set out in contracts between the Australian Government, the ALC and other relevant parties.</p> <p>Charges for airport users would be the responsibility of the ALC and are not considered in this environmental impact assessment.</p>
Transport planning	Local councils Peak bodies Community groups Residents	<p>Cost and time to access the airport site</p> <p>A number of submissions raised concerns that the proposed airport is too far away to attract passengers as it will be too costly and takes too much time to access.</p> <p>Some submissions noted that a multi-modal transport network will be key in minimising the cost and time to access the airport site.</p> <p>Some submissions suggested that air passengers should be able to access the airport site within 45 minutes.</p>	<p>The proposed airport is a long term strategic project that aligns with the expected growth and development of Western Sydney.</p> <p>Efficient access to the proposed airport would be a key consideration in strategic, regional and local planning. Investment in transport infrastructure is a key element of planning for Western Sydney by the Australian, NSW and local governments. A key aspect of this ongoing planning is the extension of rail services, including provision of access to the airport site.</p>

Theme	Stakeholders	Summary of issue	Response
Transport planning	Peak bodies	<p>Planning for freight</p> <p>Some submissions highlighted the importance of considering the needs of freight services when undertaking urban and transport planning. It was noted that freight businesses report a disconnect between airport planning and the airport operator and freight operators and their needs.</p> <p>Submissions called for freight considerations to play a central role in airport planning, urban development and transport planning. The view was expressed that early consideration of freight needs can allow for buffers to be put in place around freight operations to protect sensitive developments and allow freight businesses to operate to their fullest extent.</p> <p>Some submissions highlighted research which suggests that new airport-related industries do not necessarily need to be situated on the airport site and may be better placed within 20-30 minutes from it.</p>	<p>As noted in Section 6.6 of the Traffic, Transport and Access assessment presented in Appendix J (Volume 4), freight traffic generation from airport consumables and removal of waste were not included in the traffic estimates. Freight traffic generation from air freight was included. It was determined that these other freight items could not be estimated with sufficient confidence to contribute to the assessment at this time.</p> <p>Prior to the construction of the proposed airport, the Airport Plan will be determined under Division 4A of the Airports Act and the proposed airport would be subject to further and detailed design. Further assessment – including consideration of freight – would be undertaken during this process.</p>

Theme	Stakeholders	Summary of issue	Response
Transport planning	Large land owners NSW Government	<p>Offsite impacts of associated transport infrastructure</p> <p>Some submissions raised concerns about the offsite impacts that would result from the development of associated infrastructure such as the realignment of The Northern Road, the potential realignment of Elizabeth Drive, as well as potential impacts associated with the Western Sydney Infrastructure Plan and future rail link. Submissions noted that these impacts may be particularly burdensome for users of Elizabeth Drive, particularly as they all need to occur prior to the commencement of operations of the Stage 1 development.</p> <p>Submissions stated that these developments should be outlined clearly and their impacts, particularly the cumulative impacts, should be subject to a greater level of assessment in the finalised EIS given their linkages to the proposed airport. It was also highlighted that the Australian and NSW governments need to further engage with landholders about the impacts of these developments.</p> <p>Some submissions also noted that, where possible, the relocation or establishment of utility infrastructure should be incorporated into transport corridors to reduce impacts and costs. The NSW Government submission noted that taking such an approach requires careful consideration as it may increase the cost of transport infrastructure in the future. The NSW Government stated in its submission that it will work to coordinate the relocation of utilities to ensure future road and rail projects have easement provisions for new utility locations.</p>	<p>The Northern Road upgrade and other major projects outlined in the Western Sydney Infrastructure Plan would be subject to separate assessment and approval under State and Commonwealth legislation as appropriate.</p> <p>The STM3 model utilised for the Traffic, Transport and Access assessment presented in Appendix J (Volume 4), includes a representation of current and future major transport infrastructure proposals. As such, the assessment of potential impacts during operation reflects the cumulative impacts of the proposed airport and other projects.</p> <p>The potential cumulative impacts of the construction of these and other projects in the region are assessed qualitatively in Chapter 27 (Volume 2a). The assessment identifies potential cumulative construction impacts – including traffic – as a key potential impact. As such, the EIS commits to the development of a Traffic and Access CEMP for implementation during construction that would seek to ensure coordination of measures with any concurrent road works projects.</p>

Theme	Stakeholders	Summary of issue	Response
Environmental management	Local councils NSW Government	<p>Traffic and Access Construction Environmental Management Plan</p> <p>A number of submissions noted that the draft EIS proposes to manage construction traffic impacts through the development of a construction traffic management plan. Submissions noted that this approach is consistent with industry standards and best practice and is fit for purpose in the EIS.</p> <p>The NSW Government submission stated that if Elizabeth Drive was to remain as the preferred access road during construction, consideration should be given to a comprehensive independent road safety audit to identify remedial measures.</p>	Support for the development of a Traffic and Access CEMP is acknowledged and, as noted above, has been committed to in this EIS. Further detailed assessment and design of access would be a key aspect of the detailed design of the proposed airport.
Environmental management	Local councils Large land owners	<p>Ground Transport Operational Environmental Management Plan</p> <p>A number of submissions noted that the draft EIS proposes to mitigate and manage measures to reduce Stage 1 traffic and transport impacts through a ground transport plan. Submissions noted that, in general, this approach could be considered in accordance with industry standards.</p> <p>Some submissions noted that requirements for a ground transport plan are embedded in the requirements for an airport plan under the Airports Act. Concerns were raised over the lack of enforceable timeframe for delivery of this plan and its lack of requirements for stakeholder consultation. Given the impacts associated with construction of associated transport infrastructure, as well as ongoing operational impacts from traffic, it was highlighted that ongoing stakeholder engagement was necessary.</p>	Support for the development of a ground transport plan is acknowledged. As stated in Chapter 28 (Volume 2b), a Ground Transport OEMP will be prepared prior to the operation of the proposed airport. The OEMP will be developed in consultation with relevant government agencies.

19 Biodiversity

Volume 2 (Stage 1 Development), Chapter 16 (Biodiversity) of the draft EIS reviewed the biodiversity values that may be potentially affected by the development of the proposed Western Sydney Airport (proposed airport).

The chapter drew on three assessments undertaken, which were included as Appendix K1 (Biodiversity), K2 (Offset strategy) and I (Bird and bat strike) (Volume 4).

19.1 About the submissions on this chapter



Table 19–1 Submissions related to biodiversity

Issue	Number of times the issue was raised	Percentage of total submissions
Biodiversity	847	17.0%

19.1.1 Origin of submissions

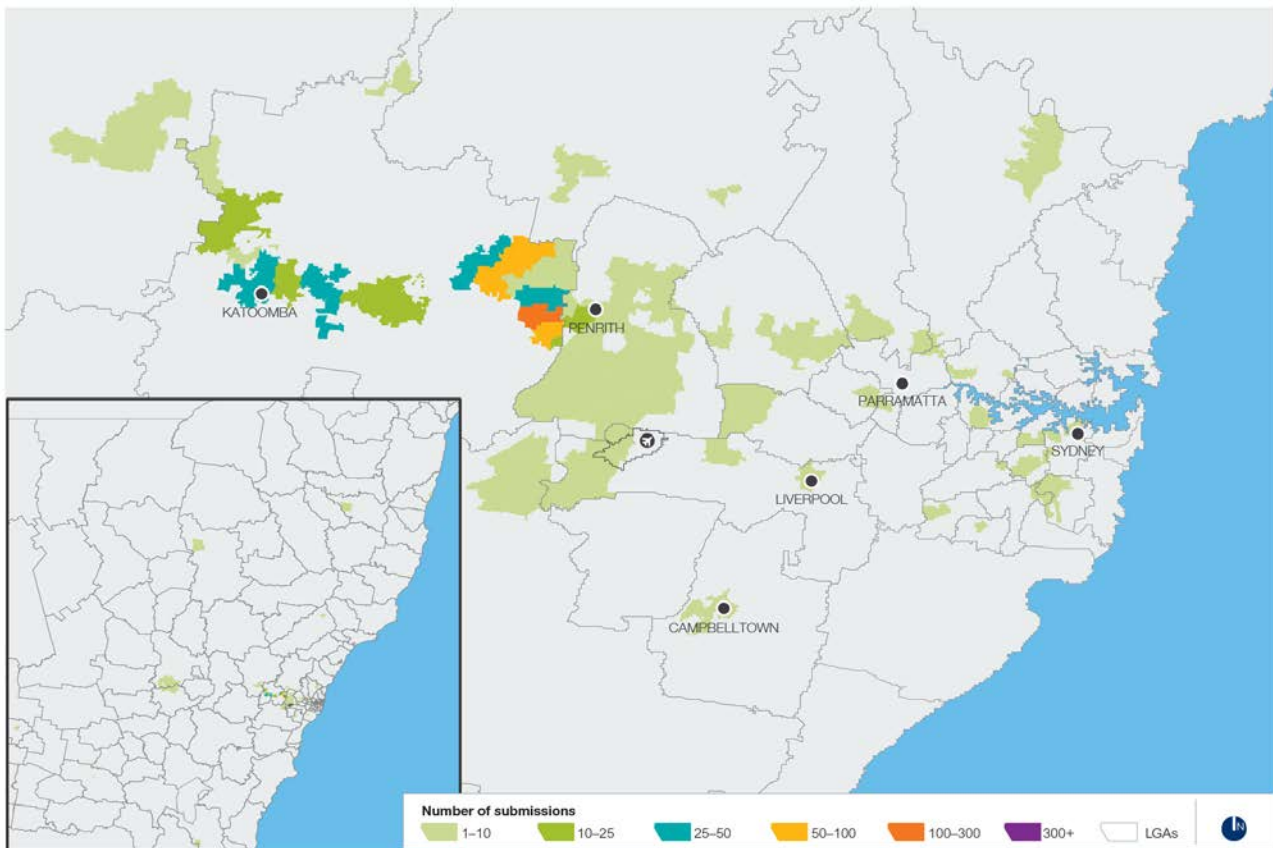


Figure 19–1 Map depicting origin of submissions in relation to Chapter 16 of the draft EIS

19.2 Summary and response

19.2.1 Overarching summary of submissions

Multiple submissions raised the impacts of bird and bat strike, decreased air quality and increased overflight noise and how they may impact on flora and fauna, particularly in areas within the Greater Blue Mountains World Heritage Area (GBMWA).

Some submissions questioned whether a more detailed biodiversity investigation and assessment programme should have been undertaken as part of the draft EIS and listed specific flora and fauna they believe may not have been considered. It was suggested that the bird and bat strike assessment should have been undertaken over a longer timeframe to verify the findings.

A number of submissions addressed the proposed biodiversity offsets package and suggested that additional offset measures would need to be considered, or questioned whether it was possible to offset the clearing of sensitive ecological communities and species such as the Cumberland Plain Woodland.

The key themes from the submissions are summarised under the following headings:

- scope of assessment;
- methodology of assessment;
- impacts on particular species;
- quantification of impacts to Cumberland Plain Woodland;
- bird and bat strike;
- lighting impacts;
- noise impacts;
- areas zoned for environmental conservation;
- invasive species;
- availability of biodiversity offsets for ecological communities; and
- quality and additionality of the proposed offset sites.

The submissions comments are summarised and addressed in section 19.2.3.


19.2.2 Overarching response to issues raised

Following publication of the draft EIS, the biodiversity assessment was updated to align with:

- completion of additional survey work including:
 - targeted surveys for *Marsdenia viridiflora* subsp. *viridiflora*;
 - rapid assessments during geotechnical investigations at the airport site;
 - rapid assessment of high intensity approach lighting areas; and
 - rapid assessment at selected downstream locations.
- adjustment of Stage 1 construction impact zone; and
- further development of the biodiversity offset strategy.

The Stage 1 construction impact zone has been adjusted to take into account refinement of the concept design, including improvements to the proposed water management system, as well as refinement of The Northern Road realignment corridor by the NSW Government. This adjustment has resulted in some changes to the area of clearing by species, habitat and ecological community. Overall, the adjustment of the Stage 1 construction impact zone would result in the clearing of 318.5 hectares of native vegetation compared to 280.8 hectares as presented in the draft EIS. The revisions to the assessment, including changes to clearing areas, do not result in a significant impact to additional species or ecological communities to those identified in the draft EIS.

The discussion of the biodiversity offsets package has been expanded to reflect further development of the strategy by the Department of Infrastructure and Regional Development in consultation with the Department of the Environment and Energy, the NSW Office of Environment and Heritage, and key environment and land management stakeholders in Western Sydney.



The revised assessment also includes further discussion on the potential impacts of the proposed airport on the following values in response to public submissions:

- threatened species, including the swift parrot;
- downstream environmental values; and
- groundwater dependant ecosystems.

The revised assessment is presented in Chapter 16 (Volume 2a) and Appendix K1 (Volume 4). The updated biodiversity offsets package is presented in Chapter 16 (Volume 2a) and Appendix K2 (Volume 4).

19.2.3 Issues and responses

Theme	Stakeholders	Summary of issue	Response
Scope of assessment	Environmental groups Local councils Residents	<p>Biodiversity Assessment</p> <p>Submissions raised issues regarding the scope of the biodiversity assessment, including:</p> <ul style="list-style-type: none"> • separate assessment of Stage 1 development and long term development; • lack of assessment of impacts of associated development and infrastructure, such as the broader Western Employment Area; • lack of assessment of impacts to groundwater dependent ecosystems; and • lack of assessment of traffic impacts on fauna during construction. 	<p>This EIS provides a detailed consideration of likely environmental impacts arising from the Stage 1 development as described in the revised draft Airport Plan. Although Stage 1 is the development proposed to be authorised in the revised draft Airport Plan under the Airports Act, a strategic-level assessment of the long term development was also undertaken. This is in recognition of the fact that approval for the Stage 1 development would facilitate further growth of the proposed airport and that there will be possible biodiversity impacts beyond the Stage 1 development. All stages of development subsequent to Stage 1 will require additional approvals in accordance with the Airports Act. It is noted that the assessment of the long term development includes assessments of significance for matters of national environmental significance under the EPBC Act.</p> <p>A detailed assessment of cumulative impacts is provided in Section 7 of the biodiversity assessment in Appendix K1 (Volume 4) and Chapter 27 (Volume 2a).</p> <p>An assessment of impacts on groundwater dependent ecosystems is provided in Section 5.1.9 (Volume 1) of the biodiversity assessment in Appendix K1 (Volume 4) and Section 16.4.2 in Chapter 16 (Volume 2a).</p> <p>Fauna injury and mortality during construction is discussed in Section 5.1.6 (Volume 1) of the biodiversity assessment in Appendix K1 (Volume 4) and Section 16.5.1 in Chapter 16 (Volume 2a).</p>
Methodology of assessment	Environmental groups Local councils Residents	<p>Biodiversity Assessment</p> <p>Submissions raised issues regarding the methodology of the biodiversity assessment, including:</p> <ul style="list-style-type: none"> • inadequate identification of land with restricted access; • limited field validation of biodiversity values at airport site, including lack of quantitative comparison of effort required and actual survey effort; • inadequate targeted flora searches, particularly for <i>Marsdenia viridiflora</i> subsp. <i>viridiflora</i>; and • whether the impacts are likely to be unknown, unpredictable or 	<p>Inadequate identification of land with restricted access:</p> <p>Access was available to a large proportion of the native vegetation patches at the airport site. This allowed a variety of different types of surveys to be conducted in the woodland and forest patches as shown in Figure 3 of the biodiversity assessment in Appendix K1 (Volume 4). Surveys were also conducted on agricultural land and at farms throughout the airport site as shown in the figure. A small number of sites were not assessed due to lack of permission, and some areas were not assessed due to lack of habitat (e.g. large cropped areas, quarries). An adequate survey coverage of the airport site is considered to have been completed for the assessment.</p>

Theme	Stakeholders	Summary of issue	Response
		irreversible.	<p>Limited field validation of biodiversity values at the airport site, including lack of quantitative comparison of effort required and actual survey effort:</p> <p>Field surveys for the EIS comprised one day in February (initial assessment), four afternoons and evenings of targeted frog surveys in March 2015, 18 days of flora and fauna surveys between February and May 2015, and two days of winter bird surveys in May and June 2015 (see Table 16-1 and Table 16-2 in Chapter 16 (Volume 2a) and Section 3.4.1 of the biodiversity assessment in Appendix K1 (Volume 4)). These surveys built on survey effort from previous investigations and existing knowledge of the airport site. Survey effort was determined based on a consideration of the nature of the airport site and habitat types present. An analysis of surveys conducted against survey guidelines is provided in Appendix B of the biodiversity assessment in Appendix K1 (Volume 4). In addition, surveys were conducted for the geotechnical investigations over seven days between April and May 2015 and four days in October 2015 and for the heritage investigation sites over one day in November 2015. As shown, detailed surveys were conducted over many days spread across various seasons.</p> <p>Inadequate targeted flora searches, particularly for <i>Marsdenia viridiflora</i></p> <p>Flora surveys were conducted over 19 days between February and May 2015, and included 43 plot-transects, targeted searches for threatened plants in areas of potentially suitable habitat and vegetation mapping. At all times, botanists were scanning vegetation for threatened species (see Table 16-1 of Chapter 16 (Volume 2a) and Section 3.4.1 of the biodiversity assessment in Appendix K1 (Volume 4)). In addition, further surveys were conducted as part of geotechnical investigations at the site which specifically included targeted searches for threatened plants.</p> <p>Submission reports of additional populations of <i>Marsdenia viridiflora</i> subsp. <i>viridiflora</i> at the airport site have been investigated. Around 50 additional stems of <i>Marsdenia viridiflora</i> subsp. <i>viridiflora</i> have been confirmed and included in the final Biodiversity Assessment and final Biodiversity Offset Package. The proposed pre-clearing surveys may detect additional stems, which would be included in the impact calculations in biodiversity offset delivery plan.</p> <p>Whether the impacts are likely to be unknown, unpredictable or irreversible</p> <p>The Stage 1 development will result in the permanent removal of vegetation and habitat for flora and fauna from the airport site. These impacts are permanent and irreversible. An assessment of indirect impacts on adjacent habitats was also undertaken. These impacts are less certain and must therefore be described qualitatively.</p>

Theme	Stakeholders	Summary of issue	Response
Impacts on particular species	Environmental groups Local councils Community groups Residents	<p>Species Assessment</p> <p>Submissions raised issues regarding the adequacy of the biodiversity assessment in identifying potential impacts on particular species, including:</p> <ul style="list-style-type: none"> • inadequate assessment of impacts on the Swift Parrot, particularly in consideration of yearly variations in activity in surveys, attraction of competitive threats such as Noisy Miner, and direct impacts to foraging habitat; • inadequate assessment of impacts on the Grey-headed Flying-fox, including underestimation of habitat impacts and associated biodiversity offsets; • inadequate assessment of direct impacts on <i>Pultenaea parviflora</i>, particularly in the identification of plants across the airport site, and underestimation of direct impacts to individual plants; • inadequate assessment of impacts on <i>Marsdenia viridiflora</i>, particularly in the identification of plants across the airport site; • lack of assessment of impacts on the: <ul style="list-style-type: none"> ▪ Dural Land Snail; ▪ Oriental Cuckoo; ▪ Black-face Monarch; ▪ Yellow Wagtail; and ▪ Satin Flycatcher; and • inadequate assessment of significance and consideration of recovery plans for the: <ul style="list-style-type: none"> ▪ Green and Golden Bell Frog; ▪ Australian Bittern; ▪ Australian Painted Snipe; and ▪ multiple migratory species deemed 'possible' to occur at the airport site. 	<p>Swift Parrot</p> <p>Potential impacts on the Swift Parrot are discussed in Section 8.2.3 (Volume 1) of the biodiversity assessment in Appendix K1 (Volume 4) and Section 16.6.2.3 in Chapter 16 (Volume 2a). This section notes that while there were few records of the species in the locality, it could occur on occasion. Vegetation patches provide foraging and stepping stone habitat for the species while moving through the area in winter. The presence of aggressive Noisy Miners is also discussed. Direct impacts identified comprised the clearing of 120.6 hectares of potential foraging habitat.</p> <p>Grey-headed Flying-fox</p> <p>Section 8.2.3 (Volume 1) of the biodiversity assessment in Appendix K1 (Volume 4) and Section 16.6.2.3 in Chapter 16 (Volume 2a) concludes that the proposed airport would have a significant impact on this species through the removal of 141.8 hectares of potential habitat for Stage 1 which represents 0.7 per cent of the potential foraging habitat for the Grey-headed Flying-fox within the locality, reduction in the availability of foraging resources for local camps, further fragmentation of foraging habitat within an already highly fragmented landscape; and impacts of cumulative and facilitated development in the locality following construction of the proposed airport. Biodiversity offsets for this species were calculated using the 'offset assessment guide' spreadsheet in accordance with the EPBC Act Environmental Offsets Policy as required by the EIS guidelines.</p> <p><i>Pultenaea parviflora</i> and <i>Marsdenia viridiflora</i></p> <p>Surveys were conducted across much of the airport site. Surveys initially focussed on areas where previous records were located, to identify the number of plants present. Surveys were then conducted throughout areas of potential habitat, and comprised 19 days of plant surveys between February and May 2015, including targeted threatened plant surveys, 43 plot-transects and vegetation mapping surveys (see Section 3.4.1 of the biodiversity assessment in Appendix K1 (Volume 4) and Section 16.2.3 in Chapter 16 (Volume 2a)). Plant species were also recorded opportunistically (i.e. where they were found in the course of other observations) during all surveys.</p> <p>As a result of surveys, a total of four individual <i>Pultenaea parviflora</i> plants were identified at the airport site. Section 4.5.2 of the biodiversity assessment in Appendix K1 (Volume 4) discusses reasons why fewer plants were recorded than were previously identified. Ninety-three stems of <i>Marsdenia viridiflora</i> subsp. <i>viridiflora</i> were identified as a result of the initial surveys.</p> <p>In addition, surveys were conducted for the geotechnical investigations across the airport site over seven days between April and May 2015 and over four days in</p>

Theme	Stakeholders	Summary of issue	Response
			<p>October 2015 and for the heritage investigation sites over one day in November 2015. These specifically included targeted searches for threatened plants in areas of potential habitat.</p> <p>Supplementary surveys in response to public submissions revealed around 50 additional stems of <i>Marsdenia viridiflora</i> subsp. <i>viridiflora</i>. These additional stems have been included in the final Biodiversity Assessment and final Biodiversity Offset Package.</p> <p>As such, sufficient surveys were conducted across the airport site to allow for identification of populations of these plants, and to assess direct impacts with an appropriate level of certainty to inform the approval of the EIS.</p> <p>It is recognised that individuals can potentially be missed over such a large study area. As outlined in the Biodiversity CEMP in Chapter 28 (Volume 2b), pre-clearing survey are proposed to ensure any additional threatened plants are included in the biodiversity offset delivery plan and managed appropriately on the airport site.</p> <p>Dural Land Snail</p> <p>According to the conservation advice for this species, it occurs in low densities along the northwest fringes of the Cumberland Plain on shale-sandstone transitional landscapes. It is known to occur as far south as Mulgoa. The airport site is located south-west of Mulgoa on the Cumberland Plain. No shale-sandstone transitional landscape is present at the airport site. This species was not identified as a species that may occur at the airport site in the Protected Matters Search, and was thus not assessed.</p> <p>Targeted searches for snails in leaf litter were conducted across the airport site. Empty snail shells collected during surveys were sent to the Australian Museum for identification. No Dural Land Snails were identified.</p> <p>Migratory birds (<i>Oriental Cuckoo, Black-faced Monarch, Yellow Wagtail, Satin Flycatcher</i>)</p> <p>As shown in Appendix 1 of the biodiversity assessment (Appendix K1 (Volume 4)) none of these species have been recorded within 10 km of the airport site. As described in Section 4.5.4 of the biodiversity assessment in Appendix K1 (Volume 4) and Section 16.3.3.5 in Chapter 16 (Volume 2a), the EPBC Act Significant Impact Guidelines for migratory species note that a significant impact on migratory species is based on impacts on 'important habitat' and impacts on an 'ecologically significant proportion of the population'. As none of these species were recorded during the bird surveys, or opportunistically during other surveys, and have not been recorded in the locality, it is highly unlikely that an ecologically significant proportion of the population occurs at the airport site or that the airport</p>

Theme	Stakeholders	Summary of issue	Response
			<p>site is important habitat for any of these species. As such, no specific assessment of impacts was conducted for these species. The general considerations of impacts that apply to other migratory terrestrial species such as the Rainbow Bee-eater and Rufous Fantail (which were recorded at the airport site) would apply to these species also.</p> <p>Green and Golden Bell Frog</p> <p>As described in Section 4.5.3 of the biodiversity assessment in Appendix K1 (Volume 4) and Section 16.3.3.4 in Chapter 16 (Volume 2a), the Green and Golden Bell Frog was considered to have a low likelihood of occurrence. Targeted surveys were conducted in accordance with the Commonwealth survey guidelines for this species. No individuals were recorded. As discussed in the biodiversity assessment, previous surveys by Frank Lempkert, a recognised expert on this species, also failed to detect any individuals or evidence of a local population at the airport site. In addition, previous surveys concluded that the species was likely to be extinct at the airport site. Given the lack of evidence of the species at the airport site for many years, and lack of nearby populations (only one record from 1999 at a very small dam near Mulgoa), no specific discussion of the recovery plan was considered necessary.</p> <p>Australian Bittern and Australian Painted Snipe</p> <p>There are no records of these species from the last 20 years in the locality of the airport site. As noted in Appendix A of the biodiversity assessment in Appendix K1 (Volume 4), while potential habitat is present, there are no local records and they were not recorded during recent or previous surveys. Based on this, potential for impacts on these species was considered to be low and thus no assessments of significance were prepared. There are no recovery plans for these species.</p> <p>Migratory birds</p> <p>There are no previous records of migratory wader species at the airport site. As described in Section 4.5.4 of the biodiversity assessment in Appendix K1 (Volume 4) and Section 16.3.3.5 in Chapter 16 (Volume 2a), the EPBC Act Significant Impact Guidelines for migratory species note that a significant impact on these species is based on impacts on 'important habitat' and impacts on an 'ecologically significant proportion of the population'. As none of these species were recorded during the bird surveys, or opportunistically during other surveys, it is highly unlikely that an ecologically significant proportion of the population occurs at the airport site or that the airport site is important habitat for any of these species. As such, no assessment of significance was deemed necessary for these species.</p>

Theme	Stakeholders	Summary of issue	Response
Quantification of impacts to Cumberland Plain Woodland	Environmental groups Local councils	<p>Cumberland Plain Woodland</p> <p>Submissions described a discrepancy in the total area of Cumberland Plain woodland described at the airport site – varying between 155.7 hectares stated in Section 16.3.2.6 and 372.4 hectares totalled from Table 16-4.</p>	<p>As listed in Table 15 and described in Section 4.5.1 of Appendix K1 (Volume 4), there are 104.9 hectares of Cumberland Plain Woodland as listed under the EPBC Act present at the airport site. Derived native grassland and moderate/good – poor condition vegetation at the airport site does not meet the condition criteria for a local occurrence of Cumberland Plain Woodland as defined under the EPBC Act and associated guidelines. This vegetation does not qualify because native tree species are not present with a minimum projected foliage cover of greater than 10 per cent. Patches with native tree cover greater than 10 per cent but that are isolated from other native vegetation and are less than 0.5 ha in area have also been excluded in accordance with the guidelines. Due to the presence of some smaller patches the total area of clearing that meets the definition of Cumberland Plain Woodland under the EPBC Act would be slightly less than the mapped total.</p> <p>The area of vegetation zone by conservation status under the EPBC Act and TSC Act is presented in Table 16-4 in Chapter 16 (Volume 2a). As stated in Section 16.6.2.2 of Chapter 16 (Volume 2a)), the Stage 1 development would remove about 104.9 hectares of Cumberland Plain Woodland under the EPBC Act and a further 46.4 hectares for the long term development.</p> <p>Apparent discrepancies may be a result of varied definitions of Cumberland Plain Woodland under the EPBC Act and TSC Act respectively. For example, one submission erroneously compares the total under the TSC Act with the total under the EPBC Act. Clearing totals have been updated in the EIS to reflect a revised construction impact zone.</p>

Theme	Stakeholders	Summary of issue	Response
Bird and bat strike	Community groups Residents Environmental groups Local councils	<p>Bird and Bat Strike</p> <p>Submissions raised issues regarding the potential impacts of bird and bat strike – with regard to the level of survey effort, the assessment of risk and the associated impacts to biodiversity.</p> <p>Submissions described the bird and bat strike assessment as requiring more consideration of the Blue Mountains and Warragamba Dam as areas of potential bird strike, particularly for migratory birds that may fly at heights of between 5,000 and 20,000 feet.</p> <p>Submissions also argued that the bird and bat strike assessment did not adequately consider the potential of bat strike from nearby camps and foraging areas.</p>	<p>The 'Preliminary Bird and Bat Strike Risk Assessment' undertaken by Avisure (Appendix I (Volume 4)). The assessment is appropriate for this EIS.</p> <p>The assessment acknowledges the preliminary nature of the survey and risk assessment undertaken and outlines a proposal for further work to confirm the findings of the assessment and refine the recommended mitigation measures.</p> <p>As outlined in Chapter 28 (Volume 2b), additional surveys are proposed to confirm the findings of the preliminary bird and bat strike study and to develop and implement planning, design and mitigation measures to reduce risk and associated impacts on biodiversity. Chapter 28 also includes other measures to manage the risk of bird and bat strike.</p> <p>As documented in the preliminary bird and bat strike risk assessment in Appendix I, Section 6.1.1 in the biodiversity assessment in Appendix K1 (Volume 4) and Section 16.5.1.1 in Chapter 16 (Volume 2a), bird and bat strikes occur at take-off and landing and most often occur within less than 5 km of airports. The Blue Mountains and Warragamba Dam are located outside a 5 km radius of the airport site. Species involved in bird and bat strike are generally those species typical of the habitats that occur in close proximity to the airport rather than migratory species moving at higher altitude across the landscape with 93 per cent of bird strikes occurring below 3,500 ft.</p> <p>Given the presence of proximate surrounding suitable habitat and the movements of birds and bats through the landscape there is a potential for birds to be struck on occasion. The Biodiversity CEMP, as outlined in Chapter 28 (Volume 2b), identifies that a range of specific management and mitigation measures has been made to minimise the risk of this occurring. Based on current statistics for airports throughout Australia, the relatively small numbers of fauna likely to be involved in bird and bat strikes over time is highly unlikely to be of a magnitude that would adversely affect the viability of populations of native fauna in the local area.</p> <p>The potential for bat strike associated with nearby camps and foraging areas for the Grey-headed Flying Fox is discussed in Section 6.1.1 of the biodiversity assessment in Appendix K1 (Volume 4) and Section 16.5.1.1 of Chapter 16 (Volume 2a).</p> <p>The assessment identifies the potential for occasional bat strike to occur as a result of movements between known roost camps and foraging habitats but concludes impacts are unlikely to be of a magnitude to substantially change the size of populations of local camps.</p>

Theme	Stakeholders	Summary of issue	Response
Lighting impacts	Environmental groups	<p>Lighting impacts</p> <p>Submissions raised issues regarding the adequacy of the assessment of potential lighting impacts on biodiversity, particularly:</p> <ul style="list-style-type: none"> • interference with timing of biological activities; • attraction of insect species and subsequent mortality; • attraction of bird species to insect species and subsequent mortality; and • disruption of nocturnal species and exposure to predators. 	<p>Impacts from light are discussed in Sections 5.1.11, 5.2.2 and 6.1.4 of Appendix K1 (Volume 4) and Sections 16.4.2 and 16.5.2 in Chapter 16 (Volume 2a). Impacts discussed include disturbance and displacement of nocturnal fauna, attraction of insects and resulting potential for aircraft strike. It is noted that the proposed airport is located in an area already subject to light impacts.</p>
Noise impacts	Environmental groups Local councils Community groups Residents	<p>Noise impacts on biodiversity</p> <p>Submissions raised issues regarding the adequacy of the assessment of noise impacts on biodiversity. Submissions particularly raised concerns of impacts from overflight noise on biodiversity, including the GBMWhA.</p> <p>Submissions cited a number of publications and approaches that may be used to assess potential noise impacts on wildlife including:</p> <ul style="list-style-type: none"> • the Environmental Assessment Guideline for Consideration of environmental impacts from noise (Western Australia Environmental Protection Authority 2014); • a framework for understanding noise impacts on wildlife, and urgent conservation priority (Francis and Barber); • noise pollution alters ecological services: enhanced pollination and disrupted seed dispersal (Francis et al.); and • the use of human impact guidelines as a surrogate for wildlife impacts as adopted in the Grand Canyon National Park draft EIS. 	<p>The biodiversity assessment in Appendix K1 (Volume 4) and Chapter 16 (Volume 2a) of the EIS includes consideration of noise impacts on fauna at the airport site, during construction and operation.</p> <p>Potential noise impacts on the GBMWhA are discussed in detail in the assessment of significance for the GBMWhA (Appendix D of the biodiversity assessment in Appendix K1 (Volume 4)).</p>



Theme	Stakeholders	Summary of issue	Response
Areas zoned for environmental conservation	Environmental groups Local councils Community groups NSW Government Members of Parliament and Senators	<p>Conservation zones</p> <p>Submissions raised concerns about the protection of areas zoned for environmental conservation on the airport site and the need for further information including:</p> <ul style="list-style-type: none"> • legal measures to protect areas zoned for conservation; • measures to manage areas zoned for environmental conservation; • preparation of a vegetation management plan prior to construction; and • consideration of impacts of The Northern Road realignment. <p>Submissions noted that the Environmental Conservation Zone around Badgerys Creek was presented inconsistently between the biodiversity assessment and other chapters of the draft EIS. It was recommended that the Environmental Conservation Zone presented in the biodiversity assessment be extended to include areas adjacent to The Northern Road, as presented in other chapters of the draft EIS.</p> <p>Submissions stated that the environmental conservation area to the north-west of the airport site was not adequate to protect Cumberland Plain Woodland. An extension of the conservation area at the north-west of the airport site was recommended to include a large patch of Cumberland plain woodland within the airport site. It was also stated that the potential transport corridor mapped in this area further reduced its value.</p> <p>Submissions identified confusion over how conservation areas will be protected. It is noted that the realigned The Northern Road would traverse an identified conservation area and this linked impact will need to be assessed in the final EIS.</p>	<p>The Environmental Conservation Zone will be established by the Land Use Plan in the Airport Plan. The revised draft Airport Plan sets the location of the Environmental Conservation Zone on the airport site, the objectives for the zone, and identifies the permissible uses that may occur in this zone. As outlined in Chapter 3 (Volume 1), the Airport Plan is a statutory document which would be determined under the Airports Act. The ALC would be required to comply with the obligations set out in the Airport Plan.</p> <p>As outlined in Chapter 28 (Volume 2b), the Environmental Conservation Zone and other retained vegetation at the airport site will be managed under the Biodiversity CEMP and the Biodiversity, Land and Safety OEMP. Developments beyond the scope of Stage 1 would be subject to further approval processes under the Airports Act. This would include developments outside of the Stage 1 construction impact zone which may affect the Environmental Conservation Zone or other retained vegetation.</p> <p>The Environmental Conservation Zone is not proposed as a formal biodiversity offset site. For this reason, the conservation area has not been included in the biodiversity offset for the proposed development. Biodiversity values will be managed and protected at offset sites where secure conservation covenants are more appropriate.</p> <p>It is recognised that the environmental conservation area to the north-west of the airport site may not be adequate to protect Cumberland Plain Woodland and that the proposed airport would result in a significant impact on this ecological community. The engineering, safety and logistics constraints to the airport concept design mean that it is not possible to conserve a greater area of Cumberland Plain Woodland at the airport site. This has been addressed in the biodiversity assessment in Appendices K1 and K2 (Volume 4) and in Chapter 16 (Volume 2a).</p> <p>As stated above, in this area of the airport site, the Environmental Conservation Zone will be located entirely to the west of the relocated The Northern Road. A detailed assessment of cumulative impacts is provided in Section 7 of the biodiversity assessment in Appendix K1 (Volume 4) and Chapter 27 (Volume 2a).</p> <p>The EIS takes into account the conservation area shown in the revised draft Airport Plan. The environmental conservation area will be located entirely to the west of the relocated The Northern Road. It is not practical to include a thin sliver of retained vegetation between The Northern Road and the Stage 1 runway in a conservation area.</p>

Theme	Stakeholders	Summary of issue	Response
Invasive species	Environmental groups	<p>Invasive species</p> <p>Submissions raised issues regarding the adequacy of the assessment of impacts of invasive species introduced via the airport including:</p> <ul style="list-style-type: none">• Red fire ants;• Zebra chip disease;• Browsing ants;• Asian honey bees;• Electric ants; and• Yellow crazy ants. <p>Submissions particularly raised concerns about the potential introduction of these species to the Greater Blue Mountains World Heritage Area.</p>	<p>The potential for the introduction of invasive pest species is discussed in Section 6.1.11 of the biodiversity assessment in Appendix K1 (Volume 4) and Section 16.5.2.6 in Chapter 16 (Volume 2a). All aircraft arriving in Australia from overseas are subject to Australian biosecurity requirements administered by the Australian Government. Further, the proposed airport and airlines using the proposed airport would be expected to comply with all Australian laws relating to biosecurity, similar to existing Australian airports already in operation.</p>

Theme	Stakeholders	Summary of issue	Response
Availability of biodiversity offsets for fauna	Environmental groups Local councils Community groups	<p>Biodiversity offsets</p> <p>Submissions raised issues about the delivery of the biodiversity offsets package, particularly with regard to the availability of appropriate sites to offset fauna impacts.</p> <p>Some submissions stated that directly impacted fauna would not necessarily be present at or suited to offset sites. Particular fauna included:</p> <ul style="list-style-type: none"> • Cumberland Plain Land Snail; • Grey-headed Flying-fox; • Little Eagle; • Little Lorikeet; • Scarlet Robin; • Varied Sittella; • Black Bittern; • Blue-billed Duck; • East Coast Freetail Bat; • Eastern False Pipistrelle; • Eastern Bentwing Bat; and • Swift Parrot. 	<p>As stated in the Biodiversity Offset Package presented in Appendix K2 (Volume 4), many of these species have been directly observed at the potential offset sites. Likely habitat for species of relevance to the airport site are present at the offset sites.</p> <p>A biodiversity offset delivery plan will be developed after the Airport Plan is determined by the Infrastructure Minister, to set out the specific actions to be taken to meet offset requirements for the Stage 1 development and will be guided by the framework established in the offset package. The delivery plan will include specific criteria for the identification and assessment of potential offset sites, including the requirement for targeted surveys for threatened species and their habitats of relevance to the airport site. The biodiversity offset delivery plan will include the results of this assessment at the final suite of offset sites.</p> <p>The supplementary assessments that are proposed in the preparation of the biodiversity offset delivery plan are expected to confirm the presence of relevant threatened species at the offset sites and/or the value of potential habitat.</p> <p>The Department of Infrastructure and Regional Development will be responsible for delivering the offset plan that will require approval from the Environment Minister or an SES officer in DoEE prior to the commencement of Main Construction Works for the Stage 1 development, ensuring that biodiversity offsets have been identified (and secure where possible) prior to substantial impacts occurring.</p>

Theme	Stakeholders	Summary of issue	Response
Availability of biodiversity offsets for flora	Environmental groups Local councils Community groups Members of Parliament and Senators	<p>Biodiversity offsets</p> <p>Submissions raised issues regarding the delivery of the biodiversity offsets package, particularly with regard to the availability of appropriate sites to offset flora impacts.</p> <p>Submissions pointed to a potential deficit in offset sites – also noting that the area of offset sites proposed in the draft EIS did not adequately compensate for overall impacts.</p> <p>Other submissions criticised a lack of offsets sites for <i>Marsdenia viridiflora subsp. viridiflora</i>.</p> <p>Submissions also criticised the identified potential offset sites as not meeting the required area and requested that the full area of impact be offset with sites found within the Cumberland Conservation corridor.</p>	<p>Appendix K2 (Volume 4) and Section 16.7 in Chapter 16 (Volume 2a) present the biodiversity offsets that had been identified at the time of publication. It is not unusual for a biodiversity offset package included in a EIS not to have identified all of the direct offsets required prior to finalisation, particularly for large or complex proposals such as the proposed airport. The EPBC Act Offsets Policy recognises this.</p> <p>The biodiversity offset package includes a commitment to fully offset the proposed airport's biodiversity impacts (see Section 6.4 of Appendix K2 (Volume 4) and Section 16.7 in Chapter 16 (Volume 2a)) and specifies the process and criteria for identifying suitable biodiversity offsets (see Section 6.2). A biodiversity offset delivery plan, which will identify the full quantum of specific offsets to be delivered for the Stage 1 development, will be completed prior to the commencement of Main Construction Works. This will ensure that offsets have been identified (and secured where possible) prior to substantial impacts occurring.</p> <p>The biodiversity offsets package recognises the shortfall in direct offsets for <i>Marsdenia viridiflora subsp. viridiflora</i> and outlines an approach for identifying and securing appropriate offsets. As part of this approach, a 100 hectare proposed BioBank site has been identified and included in the final biodiversity offset package. Surveys have revealed at least 74 stems of this species and further targeted surveys are likely to reveal more.</p> <p>Several submissions have also identified potential offset sites with known populations of the species and consultations have commenced with these parties with the aim of securing suitable sites as part of the biodiversity offsets delivery plan.</p> <p>The biodiversity offset delivery plan will include the conservation of offset sites within the Cumberland Conservation Corridor as a preferred option for addressing the proposal for additional biodiversity offsets.</p>
Availability of biodiversity offsets for ecological communities	NSW Government Environmental groups Land owners Members of Parliament and Senators	<p>Biodiversity offsets</p> <p>Submissions raised concerns about the quantity of biodiversity offsets required for Cumberland Plain Woodland and that it may be difficult to secure these offsets using the NSW BioBanking scheme due to the limited availability of suitable credits.</p> <p>Some submissions described a potential deficit in available offset</p>	<p>The biodiversity offset package presented in Appendix K2 (Volume 4) provides evidence that it is possible to identify and deliver biodiversity offset sites that could substantially meet the proposed airport's offsetting requirement. Since the time of publication of the draft EIS an additional 839 ha of known or proposed BioBank sites containing Cumberland Plain Woodland and related vegetation communities have been identified. Assessment of these sites has commenced</p>

Theme	Stakeholders	Summary of issue	Response
		<p>sites and BioBank credits for Cumberland Plain Woodland for the proposed airport and other projects in Western Sydney. This shortfall and competition between projects raised concerns that the cost of biodiversity offsets for major projects and developments could increase and make it difficult for other projects to progress.</p> <p>In the context of these issues the NSW Government submission highlighted that the final EIS should explore innovative solutions for the delivery of biodiversity offsets for Cumberland Plain Woodland.</p>	<p>and they are included as proposed or potential offset sites in the updated Appendix K2 (Volume 4).</p> <p>As outlined in Section 6 of the biodiversity offset package in Appendix K2 (Volume 4) and Section 16.7 in Chapter 16 (Volume 2a), due to the scale and nature of biodiversity offsets required for the proposed airport, it will not be possible to identify and secure all of the proposed biodiversity offsets as part of this final EIS. The Department of Infrastructure and Regional Development has also identified strategic offsetting opportunities which involve working with the NSW Government and local stakeholders to source and manage suitable offsets, but some of these opportunities cannot be realised immediately. The process of identifying and securing suitable offset areas will continue after the Airport Plan is determined by the Infrastructure Minister for the proposed airport and will comprise the following main stages:</p> <ul style="list-style-type: none"> • the biodiversity offset package (the package provided in this EIS), which outlines the framework and approach to the delivery of biodiversity offsets for the Stage 1 development, including an estimate of the quantum of offsets required, options to deliver these offsets, an estimate of the costs involved and the additional steps required to finalise their delivery. A staged approach will allow more efficient allocation of funding for offsets of the scale required for the proposed airport, by utilising local and NSW Government expertise in sourcing and managing offsets. • the biodiversity offset delivery plan which will set out the specific actions to be taken to meet the offset conditions for the Stage 1 development as set out in the Airport Plan. Development of the plan will be guided by the framework established in this biodiversity offset package. The delivery plan will include further details such as: <ul style="list-style-type: none"> ▪ the final quantum of impacts arising from the Stage 1 development, including refinements to impact calculations based on detailed design, pre-clearing surveys of the Stage 1 construction impact zone and any necessary modifications to vegetation and habitat mapping; ▪ identification of additional offset areas to address the shortfall in the offset areas for EPBC Act Cumberland Plain Woodland and biodiversity credits for impacts on plants, animals and their habitat; ▪ location details and fine scale mapping of individual offset sites;

Theme	Stakeholders	Summary of issue	Response
			<ul style="list-style-type: none"> ▪ current tenure arrangements, land uses, risk of loss of offsets and legal mechanisms proposed to avert the risk of loss at individual offset sites; ▪ confirmed presence of threatened biota and assessment of the extent and quality of habitat at individual offset sites and details of studies and surveys used to inform offset calculations; ▪ the final number and type of biodiversity credits to be purchased, or other action to be taken in relation to alternative offset mechanisms; ▪ a detailed description of the specific management actions that will be undertaken to improve the quality of the offset sites; and ▪ the overall cost of the proposed offset package. <ul style="list-style-type: none"> • the biodiversity offset delivery plan, to be developed and implemented by the Department of Infrastructure and Regional Development, will require approval from the Environment Minister or an SES officer in DoEE prior to the commencement of Main Construction Works for the Stage 1 development, ensuring that biodiversity offsets have been identified (and secured where possible) prior to substantial impacts occurring. <p>While conservation of offset sites through the NSW BioBanking Scheme is expected to form the primary component of the biodiversity offsets, a variety of other conservation actions will also be considered that would assist in meeting overall offset requirements. These other conservation mechanisms which could be used to deliver offsets, such as the Cumberland Conservation Corridor programme and proposed NSW Biodiversity Conservation Fund, among others (see Section 16.7 in Chapter 16 (Volume 2a)), may achieve greater strategic benefits for biodiversity conservation in the region.</p> <p>As a coordinated approach to consulting on the development of alternative conservation mechanisms, the Department of Infrastructure and Regional Development will establish an Experts Group including DoEE, other relevant NSW authorities, organisations and stakeholder groups.</p>

Theme	Stakeholders	Summary of issue	Response
Quality and additionality of proposed offset sites	Environmental groups Community groups Members of Parliament and Senators Local councils Residents	<p>Offset sites</p> <p>Submissions stated that selected offset sites may not be satisfactory due to:</p> <ul style="list-style-type: none"> potential sites identified in the draft EIS not being subject to binding BioBanking agreements; potential sites identified in the draft EIS providing limited connectivity and being subject to edge effects that may reduce their value; potential sites identified in the draft EIS being non-remnant, including potential sites identified at Ropes Creek and South Creek; potential sites identified in the draft EIS being public open space, including sites at Western Sydney Parklands, Ropes Creek and South Creek. Submissions stated that the use of potential sites that are already public open space – or sites otherwise prohibited from development due to flooding or zoning restrictions – did not present additionality; and questions about the effectiveness of the NSW BioBanking Scheme as a method for securing biodiversity offsets. 	<p>The proposed offset sites included in the biodiversity offsets package in the EIS:</p> <ul style="list-style-type: none"> are subject to binding BioBanking agreements or are in the process of being assessed for the purposes of a binding BioBanking agreement; contain large patches of vegetation in their own right and are connected to vegetation with good connectivity as part of Cumberland Plain Priority Conservation Lands (sites 1, 4, 8, 9 and 13); contain large patches of vegetation in their own right and are partially connected to Cumberland Plain Priority Conservation Lands (sites 3, 7, 10 and 14); or contain fragmented vegetation but will help improve connectivity in important riparian corridors (sites 5, 6, 11 and 12) as shown in Figure 5 of Appendix K2 (Volume 4). All of the sites except sites 2 and 10 include land within regional corridors identified in the NSW Office of Environment and Heritage's Cumberland subregion Biodiversity Investment Opportunities Map, which aims to achieve better biodiversity outcomes by directing biodiversity investment funding to the strategic locations of greatest benefit. Vegetation management and regeneration as part of the delivery of the biodiversity offsets will help to lessen the impact of edge effects and improve the value of these offset sites; include a mix of remnant and non-remnant vegetation. BioBanking plot-transect surveys have confirmed the presence of remnant vegetation with resources such as hollow-bearing trees within these sites. It should also be noted that much of the impact footprint at the airport site comprises non-remnant vegetation. Given the extent of historical vegetation clearing on the Cumberland Plain, biodiversity offset strategies and broader biodiversity conservation programs must include conservation of non-remnant vegetation and regeneration of cleared land; and include some public open space. Increases in biodiversity values would be achieved at these sites through a more secure conservation covenant, secure funding and more intensive management for conservation. These sites are not currently protected under conservation covenants. The application for BioBanking agreements will include consideration of additionality by the NSW Office of Environment and Heritage and discounting of credits if required. The EPBC Act offset assessment guide calculations that will be included in the biodiversity offset delivery plan will include site by site consideration of the 'averted risk of loss' component of the offset. This will include a lesser offset contribution from sites that are less likely to suffer development impacts due to flood risk or zoning. <p>BioBanking is the principal offset implementation policy in NSW and is endorsed by the NSW Government. As such, BioBanking is considered to be an appropriate and effective means of identifying, securing and protecting offset sites.</p>

20 Topography, geology and soils

Volume 2 (Stage 1 Development), Chapter 17 (Topography, geology and soils) of the draft EIS provided an analysis of the existing topography, geology and soils that would be affected by the development of the proposed airport.

20.1 About the submissions on this chapter



Table 20–1 Submissions related to traffic, transport and access

Issue	Number of times the issue was raised	Percentage of total submissions
Topography, geology and soils	218	4.4%

20.1.1 Origin of submissions

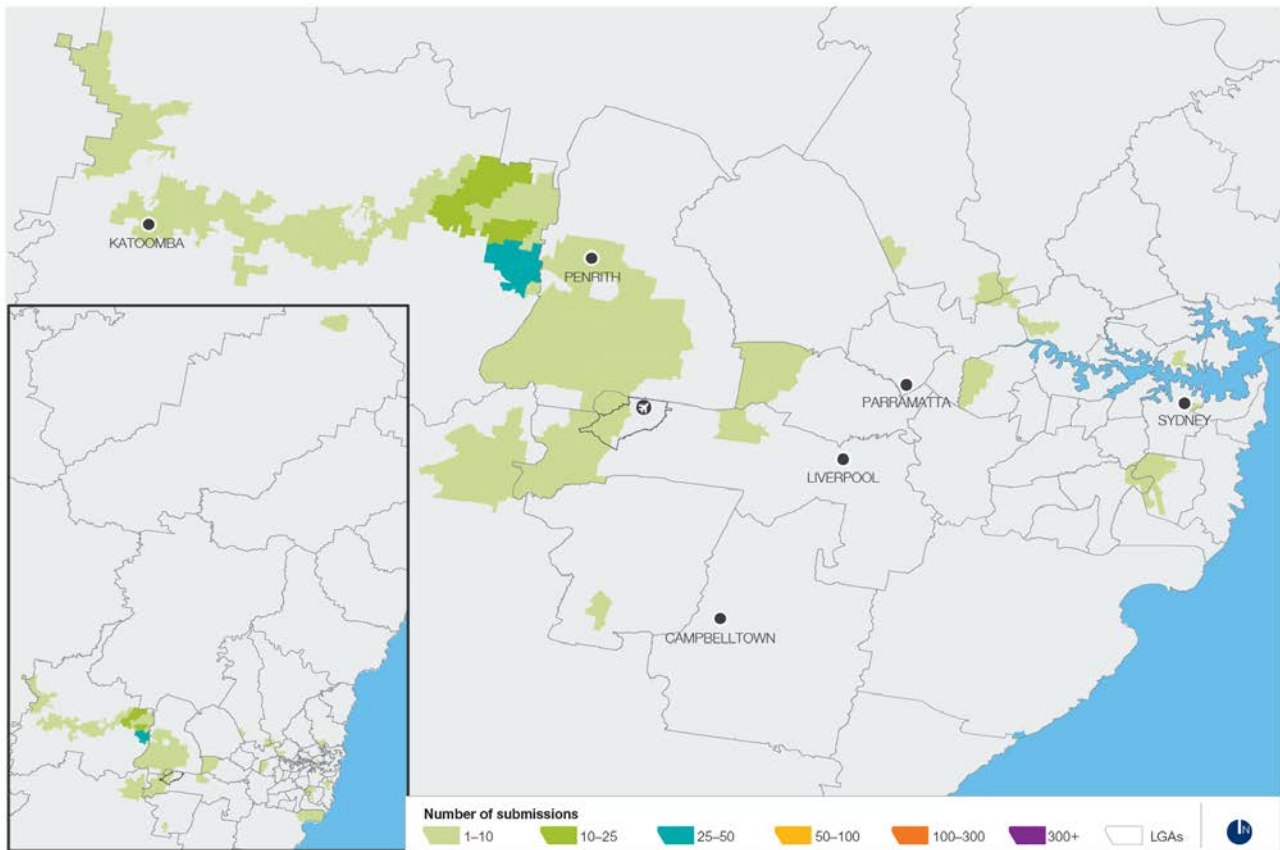


Figure 20–1 Map depicting origin of submissions in relation to Chapter 17 of the draft EIS

20.2 Summary and response

20.2.1 Overarching summary of submissions

Submissions received on the topography, geology and soils assessment of the proposed airport primarily concerned the potential for contamination at the airport site and the management of impacts. The submission comments are summarised and addressed in section 20.2.3.

20.2.2 Overarching response to issues raised

Following publication of the draft EIS, the topography, geology and soils assessment was updated to reflect additional geotechnical and land contamination investigations at the airport site. These additional investigations did not materially affect the overall findings of the assessment. The assessment was also updated to improve readability and reflect the finalisation of the EIS.

The revised assessment is presented in Chapter 17 of Volume 2a.

20.2.3 Issues and responses

Theme	Stakeholders	Summary of issue	Response
Topography	Residents	<p>Suitability of airport location and effects of topography</p> <p>Submissions stated that the topography of Western Sydney made Badgerys Creek an unsuitable location for an airport. In particular, submissions suggested that:</p> <ul style="list-style-type: none"> because air pollution can become trapped in the Sydney basin, operation of the proposed airport would exacerbate existing air pollution problems in Western Sydney; and the topography of the Blue Mountains would make some communities in that area more susceptible to aircraft overflight noise. 	<p>As highlighted in Section 2.6 (Volume 1), a number of studies, including the Joint Study, found that a new greenfield airport at Badgerys Creek is the most effective site to locate the proposed Western Sydney Airport. Importantly, one of the key factors that makes Badgerys Creek the preferred location for a greenfield airport is that the site has been protected from incompatible and noise-sensitive development through planning policy.</p> <p>The local ground level has been incorporated in all noise modelling conducted using the most accurate available calculation procedures which are incorporated into the INM noise model. Nevertheless, when aircraft are at a significant height, meteorology and to some extent, local topography will have an effect in the order of several decibels on noise levels heard on the ground. For this reason, the GBMWA analysis included analysis of both noise level from aircraft overflights together with the number of flights experienced per day and took account of the topography.</p>
Contamination assessment	Local councils	<p>SEPP 55</p> <p>Submissions stated that a detailed investigation under the State Environmental Planning Policy No 55 – Remediation of Land should be undertaken for the environmental impact statement.</p>	<p>A preliminary contamination investigation of the airport site was undertaken to inform the EIS. The results of the assessment were summarised in Chapter 17 (Volume 2a). The preparation of a preliminary investigation during the development application stage is consistent with the intent of the <i>State Environmental Planning Policy No 55—Remediation of Land</i>.</p> <p>As committed in Section 17.6 (Volume 2a), more detailed contamination work would be undertaken prior to site preparation works – including remediation if required to make land suitable for its intended purpose.</p> <p>This detailed contamination work commenced following the publication of the draft EIS, including a Phase 2 Contamination Assessment to support ongoing design and construction planning.</p> <p>Chapter 17 (Volume 2a) has been updated to include the results of this assessment. Consistent with the findings of the preliminary contamination investigation, no significant contamination issues have been identified at the airport site. Chapter 17 (Volume 2a) includes further recommendations to ensure appropriate handling and disposal of contaminated material at the site.</p>

Theme	Stakeholders	Summary of issue	Response
Environmental management	Residents	<p>Environmental management plan</p> <p>Some submissions stated that the EIS should contain more detail about the environmental management plan which will be designed to manage and mitigate impacts to topography, geology and soils.</p>	<p>Impacts on topography, geology and soils will be addressed through the Soil and Water CEMP and the Soil and Water OEMP, as outlined in Chapter 28 (Volume 2b).</p> <p>As noted earlier, following publication of the draft EIS, the environmental management framework was updated to provide clearer objectives for the environmental management plans, including those relating to topography, geology and soils. Mitigation and management measures to address topography, geology and soils impacts were also updated to provide further clarity to commitments and responsibilities.</p>

21 Surface water and groundwater

Volume 2 (Stage 1 Development), Chapter 18 (Surface water and groundwater) of the draft EIS provided an analysis of the surface water and groundwater systems potentially affected by the development of the proposed airport.

The chapter drew on three assessments undertaken, which were included as Appendix L1 (Surface water hydrology and geomorphology), L2 (Surface water quality) and L3 (Groundwater) (presented in Volume 4).

21.1 About the submissions on this chapter



Table 21–1 Submissions related to the surface water and groundwater

Issue	Number of times the issue was raised	Percentage of total submissions
Surface water and groundwater	16	0.3%

21.1.1 Origin of submissions

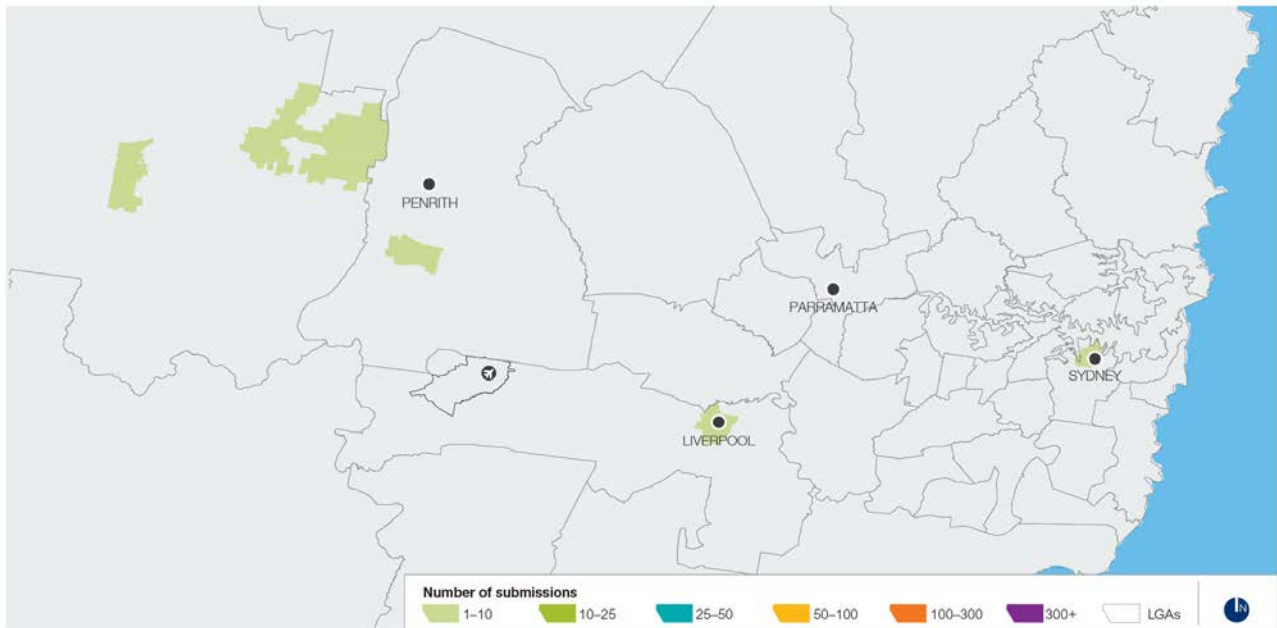


Figure 21–1 Map depicting origin of submissions in relation to Chapter 18 of the draft EIS

21.2 Summary and response

21.2.1 Overarching summary of submissions

Submissions expressed concern about the contamination of water storages located under aircraft flightpaths, in particular at Warragamba Dam. Feedback and responses related to this issue have been included under Chapter 7, Airspace Architecture and Operation (Volume 1).

Some submissions suggested that construction and operation of the proposed airport would impact negatively on surface water and groundwater in the area.

The key themes from the submissions are summarised under the following headings:

- assessment methodology;
- adequacy of assessment;
- scope of assessment;
- consultation;
- environmental values;
- impacts; and
- environmental management.

The submission comments are summarised and addressed in section 21.2.3.

21.2.2 Overarching response to issues raised

Following publication of the draft EIS, some minor adjustments were made to the indicative airport site layout. This included reconfiguration of the water management system with the enlargement and reconfiguration of detention ponds and channels and the addition of separate bio-retention ponds. Additionally, the surface water quality monitoring programme, which commenced in November 2015, continues to collect more data about water quality on and around the airport site.

To take account of these changes, the surface water hydrology and geomorphology assessment (Appendix L1 of Volume 4) and the surface water quality assessment (Appendix L2 of Volume 4) have been updated, including revised hydraulic and water quality modelling. The water management system has been designed to provide controlled release to the receiving waters in a way that mimics natural flows as closely as possible over a range of storm durations and magnitudes and to achieve pollutant reduction targets outlined in the Water Sensitive Urban Design (WSUD): Technical Guidelines for Western Sydney.

The updated surface water quality assessment also includes a more comprehensive comparison of water quality modelling results against relevant guidelines – namely neutral or beneficial approach, WSUD Guidelines and the Australian and New Zealand Guidelines for Fresh and Marine Water Quality (ANZECC guidelines). The revised assessment also includes interim water quality objectives under the ANZECC guidelines for the operation of the proposed airport and has outlined a proposal for a 24-month water quality monitoring programme which is to be completed prior to commencement of Main Construction Works (see Chapter 28 of Volume 2b). This will allow for the development of local standards for water quality under the Airports (Environment Protection) Regulation 1997 (AEPR).

21.2.3 Issues and responses

Theme	Stakeholders	Summary of issue	Response
Assessment methodology	NSW Government Local councils	<p>Water quality objectives</p> <p>Submissions questioned the application of water quality objectives in the water quality assessment in the draft EIS. The submissions requested that the final EIS include a clear statement of water quality objectives for the project including indicators and trigger levels for protection of environmental values.</p> <p>The submissions recommend an assessment of the significance of the identified impacts, including consideration of the relevant ambient water quality outcomes, based upon the water quality objectives:</p> <ul style="list-style-type: none"> • where the objectives for receiving waters are currently being met, that they will continue to be protected; and • where the objectives are not currently being met, activities will not prevent their achievement over time but rather contribute to their achievement. <p>A submission also recommended that the design of the drainage system would need to be revised, including revision of bio-retention basins, to meet guidelines.</p>	<p>Water quality objectives for the proposed airport will be regulated by the AEPR. Part 6 of the AEPR requires an Airport Lessee Company (ALC) to monitor pollution levels, including laboratory analysis accredited by the National Association of Testing Authorities. Schedule 2 of the AEPR sets out acceptable limits for water pollution, which are based on ANZECC Guidelines.</p> <p>As outlined in Chapter 18 (Volume 2a) and Chapter 28 (Volume 2b), due to the existing degradation of water bodies in and around the airport site, local standards for water quality will be developed for the proposed airport, consistent with Part 5 of the AEPR.</p> <p>The drainage system presented in the EIS is indicative and will be subject to detailed design along with other aspects of the Stage 1 development. This will allow for further refinement of the detention basins, bio-retention basins and other infrastructure to manage water quality outcomes.</p>

Theme	Stakeholders	Summary of issue	Response
Assessment methodology	NSW Government Community groups	<p>Further details on impacts</p> <p>Submissions raised concerns that the draft EIS does not provide sufficient detail on the nature of the water quality impacts from the proposed airport.</p> <p>The NSW Government stated that the final EIS should include information on the quality and quantity of all pollutants that may be introduced into the water cycle, by source and discharge point for both the construction and operation phases. In addition, the final EIS should describe the nature and degree of impact that any discharge(s) may have on the receiving environment, including consideration of all pollutants that pose a risk of non-trivial harm to human health and the environment.</p> <p>Some submissions stated that information about the source of pollutants would allow a better understanding of how pollutants can be preventatively managed, rather than having mitigation measures implemented in a reactive manner, such as through water quality treatment.</p>	<p>Modelling the impact of surface water runoff pollutants on the receiving water environment has been undertaken for suspended solids, nutrients (phosphorous and nitrogen) and gross pollutants. This is the current industry standard in Australia, which is partially attributed to the limitations of existing industry modelling software, as well as the inherent uncertainties and margins of error in the modelling of other pollutants. The modelling considers the effectiveness of the proposed water management system in meeting the objectives for the receiving waters in accordance with:</p> <ul style="list-style-type: none"> • existing or pre-development average pollutant loads for consideration of a neutral or beneficial effect (NORBE); • pollutant load retention targets in accordance with the Water Sensitive Urban Design (WSUD) Guidelines for Western Sydney; • pollutant concentrations in accordance with ANZECC Guidelines; and • pollutant concentrations in accordance with AEPR. <p>Consideration of the range of other potential pollutants generated at the airport site is included in Appendix L2 (Volume 4).</p> <p>Potential pollutants include suspended and dissolved solids, nutrients, gross pollutants, heavy metals, and total petroleum hydrocarbons (TPH).</p> <p>The source of these pollutants would typically be runoff from exposed ground during construction, runoff from paved areas during operation and, in the case of gross pollutants, litter discarded at the airport site. As stated in the EIS, heavy metals may also originate naturally from soils in the area, as indicated by water quality monitoring.</p> <p>As outlined in Chapter 28 (Volume 2b), the proposed water management system will include a range of measures for the capture and treatment of pollutants arising during airport operations. The detailed design will incorporate the installation of bunding, interceptor systems and oil water separators around fuel storage and refuelling areas to capture any spills or leakage that may occur to prevent the pollutants being transferred to the stormwater system.</p> <p>Stormwater from the airport site will initially enter the drainage system and receive further treatment within the drainage swales and bio-retention basins for the treatment of suspended solids, nutrients and heavy metals prior to being released to the receiving waters at the basin outlets.</p> <p>Other measures included in Chapter 28 that would manage and mitigate potential impacts of pollutants on the environment include the erosion and sediment control plan as described in the Soil and Water CEMP and the waste management plan described in Waste and Resources CEMP.</p>

Theme	Stakeholders	Summary of issue	Response
Adequacy of assessment	Local councils	<p>Consideration of pollutant loads</p> <p>Local councils stated that water quality has not been presented in terms of achieved pollutant load reduction or assessment against guideline pollutant reduction targets. Submissions raised concerns that the draft EIS does not consider the impact of increased pollutant loads on the receiving environment and instead determines that impacts are acceptable because there are general improvements in pollutant concentrations due to increased flow volumes.</p>	<p>Modelling the impact of surface water runoff pollutants on the receiving water environment has been undertaken to assess both pollutant loads and concentrations for suspended solids, nutrients (phosphorous and nitrogen) and gross pollutants on the receiving water environment. The assessment included modelling the effectiveness of the proposed water management system in meeting the objectives for the receiving waters in accordance with:</p> <ul style="list-style-type: none"> • existing or pre-development average pollutant loads for consideration of a neutral or beneficial effect (NORBE); • pollutant load retention targets in accordance with the Water Sensitive Urban Design (WSUD) Guidelines for Western Sydney; • pollutant concentrations in accordance with ANZECC guidelines; and • pollutant concentrations in accordance with the AEPR. <p>The Stage 1 development would result in increased loads of phosphorous and nitrogen, largely as a function of the increase in runoff volumes associated with the modified catchment areas and changes to land-use. Relative increases in phosphorous and nitrogen loads attributed to the proposed airport would be most pronounced at the airport site and would progressively decrease downstream of the airport site as receiving waterways receive flows from the wider catchment. The proposed drainage system would be effective at reducing loads of suspended solids in surface water in comparison to existing conditions.</p> <p>The assessment against the WSUD guidelines indicated that the proposed water management system was generally effective at meeting the percentage reduction targets for pollutant loads at five out of seven basin outlet locations and minor reconfiguration of remaining two basins would achieve full compliance.</p> <p>Pollutant concentrations were modelled to assess compliance in accordance with ANZECC guidelines and the AEPR. Interim site specific trigger levels have been developed based upon an ongoing receiving water monitoring programme. The modelled discharges for the Stage 1 development were found to satisfy the site specific water quality objectives at all modelled outlet locations for nitrogen, phosphorous and suspended solids. As outlined in Chapter 28 (Volume 2b), to take into account the existing water quality conditions at and around the airport site, local standards for water quality will be developed for the proposed airport, consistent with Part 5 of the AEPR.</p>

Theme	Stakeholders	Summary of issue	Response
Adequacy of assessment	Local councils Residents	<p>Flood impact assessment</p> <p>Submissions raised concerns that the proposed airport has the potential to increase flooding on the airport site and also further downstream. Submissions stated that the assessment impacts, and supporting information and assumptions, were not clearly presented in the draft EIS. These submissions stated that impacts should be assessed and addressed to ensure the pre-development flooding regime is maintained or improved.</p> <p>Submissions stated that the assessment of impacts at Duncans Creek was limited to an assessment of hydrologic impacts at the catchment scale, rather than hydraulic impacts on the creek and its tributaries. The submissions also stated that the flood impact assessment should consider the impacts of climate change.</p>	<p>Flood impacts are comprehensively assessed in Appendix L1 in Volume 4.</p> <p>Flood modelling for the airport site was undertaken using MIKE 21 software to assess the potential impacts to hydraulics and flooding associated with the proposed airport. The Stage 1 development includes a water management system with a series of detention basins which are designed to capture peak flows generated at the airport site and release stormwater to receiving waters to as closely as possible mimic natural flows over a range of storm durations and magnitudes.</p> <p>The implementation of the proposed drainage system has resulted in minor predicted impacts. These are presented graphically in flow duration curves and maps indicating the anticipated flood level changes for waterways surrounding the airport site. The predicted changes in peak flows at key locations surrounding the airport site are also tabulated in Chapter 18 (Volume 2a) for ease of interpretation.</p> <p>The assessment of the water management system in the draft EIS found that hydrological changes to Duncans Creek were limited. Downstream catchment areas were assessed to be primarily rural industry with few dwellings identified close to Duncans Creek that may be potentially impacted by the Stage 1 development.</p> <p>However, since the publication of the draft EIS the water management system has been reconfigured and, although the net catchment area draining to Duncans Creek decreased, there were localised sub-catchment increases introduced into the design with the potential to result in downstream impacts. Therefore, an assessment of Duncans Creek using a MIKE 21 flood model is included in the finalised EIS.</p> <p>The influence of climate change is considered in the assessment. Climate change predictions are considered as a future cumulative impact and the assessment includes an analysis of the potential for climate change to exacerbate the environmental impacts arising from the proposed airport, including the susceptibility of the airport site to flooding.</p>

Theme	Stakeholders	Summary of issue	Response
Adequacy of assessment	Local councils	<p>Geomorphology impacts</p> <p>Submissions questioned the focus of the assessment of erosion on a critical value of 100-200 N/m² for erosion of vegetated surfaces rather than a potentially lower value of around 5 N/m² for erosion of un-vegetated sand, silt and clay.</p> <p>The submissions also highlighted that changes to bed shear stress were predicted to be as high as 25 per cent or more in isolated locations versus the average 5 per cent stated in the assessment.</p>	<p>The assessment focusses on a critical value of 100-200 N/m² for erosion of vegetated surfaces because widespread exceedances of this value range would indicate the potential for widespread and systemic erosion along the watercourses. Additionally, the thresholds for erosion of un-vegetated surfaces of sand, silt and clay are considerably exceeded by the modelled flow events under existing conditions, particularly along the channels of watercourses where bounding materials are often un-vegetated. Hence, the typical minor changes in shear stress predicted under proposed conditions are therefore not expected to cause any measurable additional erosion along the bulk of the lengths of watercourses assessed.</p> <p>The EIS acknowledges that there are some localised areas where higher increases in shear stress are predicted based on the assessed project footprint. The primary measure to mitigate these localised increases would involve configuring the detention basins with the aim to mimic natural flows as closely as reasonably practicable.</p>
Adequacy of assessment	Local councils	<p>Surface water use</p> <p>Submissions stated that further consideration should be given to capture and reuse of stormwater at the airport site.</p> <p>Other submissions stated that the assessment of impacts to surface water did not consider the impacts of extraction of water for site preparation and construction.</p>	<p>It has been estimated that construction would require, on average, 1.36 ML of water per day during site preparation activities. Of this, about 8,600 litres (0.0086 megalitres) are expected to be required as potable drinking water for site workers.</p> <p>Water would be sourced through existing utilities accessible from the airport site, where possible, and supplemented by stormwater runoff captured in sediment dams or farm dams on the airport site. However, the use of surface water capture and reuse is unlikely to be sufficient to meet demand and alternate water sources would also be required. Any temporary water supply works would be carried out in accordance with relevant Australian Standards and other standards set by the Water Services Association of Australia.</p> <p>The airport site covers about 4 per cent of the overall South Creek catchment and the reuse of stormwater runoff during construction is not anticipated to impact overall levels of water take within the catchment. Construction of the proposed airport is anticipated to progressively increase runoff volumes associated with the modified catchment areas and changes to land use, which will offset any reduction in runoff associated with stormwater reuse.</p>

Theme	Stakeholders	Summary of issue	Response
Adequacy of assessment	NSW Government Local councils Residents	<p>Groundwater impacts</p> <p>Submissions questioned the adequacy of the groundwater impacts assessment. Particular issues raised included:</p> <ul style="list-style-type: none"> • inadequate characterisation and assessment of impacts to groundwater dependent ecosystems by groundwater source, including Cumberland Plain Woodland; • inadequate characterisation of connectivity of Bringelly Shale, weathered rock and alluvial aquifers supported by baseline time-series data; and • inadequate consideration of impacts to groundwater recharge in alluvial aquifers, citing more detailed discussion surrounding Bringelly Shale and weather rock aquifers. 	<p>The groundwater assessment presented in Appendix L3 (Volume 4) builds upon a range of groundwater assessments conducted in previous environmental assessments of the airport site. The existing environmental conditions in relation to groundwater have not changed significantly since the completion of these previous assessments and the EIS comprehensively assesses the key potential risks to groundwater associated with the construction and operation of the Stage 1 development.</p> <p>The EIS includes consideration of the potential impact on groundwater dependent ecosystems in the groundwater assessment (Appendix L3 (Volume 4)) as well as in the biodiversity assessment (Appendix K1 (Volume 4)). All native vegetation types at the airport site are considered to be groundwater dependent ecosystems. The majority of the sensitive vegetation that will be retained following the clearance for the Stage 1 development is located along the riparian corridors of Duncans, Oaky and Badgerys Creeks. This vegetation is expected to intersect alluvial deposits which historical data suggest has limited hydraulic connection to the shale aquifers potentially impacted by the establishment of the proposed airport. While there may be minor changes to groundwater flow within the shale aquifers, the overall groundwater fluctuation would be small and any drawdown impacts in areas of sensitive vegetation are expected to be minor.</p> <p>Groundwater in nested piezometers located within the riparian corridors suggests that there is some hydraulic disconnection between the isolated alluvial aquifers (i.e. different groundwater elevations) over which the vegetation is generally located and the more regional shale aquifer systems. There also appears to be a downward hydraulic head gradient, with the alluvial aquifer leaking to, rather than relying on, water from the shale aquifer system.</p> <p>The existing hydrogeological conditions at the airport site are described in detail in Section 3.4 of Appendix L3 (Volume 4) including aquifer hydraulic parameters, groundwater elevations, recharge conditions and groundwater quality. As outlined in Chapter 28 (Volume 2b)), ongoing monitoring of groundwater quality and elevation is included as part of the mitigation proposed within the EIS to allow identification and management of any impacts arising from the proposed airport.</p>

Theme	Stakeholders	Summary of issue	Response
Scope of assessment	NSW Government Community groups	<p>Assessment of hydrocarbons and heavy metals</p> <p>Submissions stated that a number of other potential pollutants generated by the proposed airport were not assessed in the draft EIS, including hydrocarbons and heavy metals.</p>	<p>Consideration of the range of other potential pollutants generated at the airport site is included in the surface water quality assessment (Appendix L2 (Volume 4)). Potential pollutants include suspended and dissolved solids, nutrients, gross pollutants, heavy metals, and total petroleum hydrocarbons (TPH).</p> <p>The proposed water management system will include a range of measures for the capture and treatment of pollutants arising during airport operations. Examples include the use of swales and bio-retention basins for the treatment of suspended solids, nutrients and heavy metals. The installation of bunding, interceptor systems and oil water separators around fuel storage and refuelling areas will minimise the potential for TPH to be discharged to receiving waters.</p>
Consultation	Local councils	<p>Local council involvement</p> <p>Some submissions requested that information be provided for review and input including flood maps and drainage system design.</p>	<p>The conceptual design of the water management system and flood mapping is included in the revised draft Airport Plan and the EIS. As outlined in the Soil and Water CEMP in Chapter 28 (Volume 2b), the water management system will be further developed to a final design prior to the commencement of Main Construction Works. The CEMP will be developed in consultation with relevant local councils.</p>
Environmental values	NSW Government	<p>Environmental values</p> <p>The submission suggests that the final EIS should more clearly articulate the environmental values (human environmental uses of receiving waters), the relevant indicators and associated trigger points for those environmental values, and how the environmental values may be impacted during construction and operation of the proposed airport.</p>	<p>As outlined in the surface water quality assessment (Appendix L2, Volume 4), South Creek and Duncans Creek sub-catchments lie in the north-east sector of the Hawkesbury-Nepean catchment. Endorsed environmental values for the Hawkesbury Nepean include aquatic ecosystem protection, recreational water use, raw drinking water, irrigation and general use. Water drawn from the catchment is used for irrigation for lucerne, fodder, pasture, turf, vegetables, orchards, cereals, flowers and stock watering purposes. Recreational facilities such as golf courses and sporting fields also draw water for irrigation and the downstream estuarine reaches of the Hawkesbury River support fishing, prawning and oyster industries and recreational boating.</p> <p>The airport site is not located within Sydney's drinking water catchment area with all sub-catchments draining to the Hawkesbury Nepean system downstream of Lake Burragorang.</p> <p>Interim site specific trigger levels have been developed based upon an ongoing receiving water monitoring programme. The Stage 1 development is anticipated to result in an improvement relative to existing conditions in discharge concentrations for nitrogen, phosphorous and suspended solids and satisfy site specific water quality objectives at all modelled outlet locations.</p>

Theme	Stakeholders	Summary of issue	Response
Impacts	Local councils	<p>Downstream impacts on Badgerys Creek</p> <p>Submissions raised concerns that threatened ecological communities have not been mapped outside of the airport site and that there is evidence of some remnant native vegetation on Badgerys Creek, 300 metres downstream of Elizabeth Drive. This reach of the creek would be reliant on occasional flooding and would be impacted under the current proposals. Submissions stated that such impacts need to be assessed to ensure there are no impacts and any mitigation and management measures identified.</p>	<p>All vegetation which is considered to have potential to be highly or moderately dependent upon groundwater is presented in Figure 5 in Appendix L3 of Volume 4.</p> <p>All native vegetation types at the airport are considered to be groundwater dependent ecosystems. Sensitive vegetation will be retained along the riparian corridors of Duncans, Oaky and Badgerys Creeks. This vegetation continues downstream from Elizabeth Drive and is expected to intersect alluvial deposits which historical data suggest has limited hydraulic connection to the shale aquifers potentially impacted by the establishment of the proposed airport. While there may be minor changes to groundwater flow within the shale aquifers, the overall groundwater fluctuation would be small and any drawdown impacts in areas of sensitive vegetation are expected to be minor.</p> <p>Thompsons Creek and South Creek located in the catchment downstream from the airport site have been identified as reliant on the surface expression of groundwater. However, no creeks within or immediately adjoining the airport site are listed as being reliant on the surface expression of groundwater (i.e. groundwater inflow). This information is supported by water quality data for electrical conductivity which suggest that groundwater inflow is a minor component of creek flow.</p> <p>The proposed detention basins have been designed to capture peak flows generated at the airport site and release stormwater to receiving waters to as closely as possible mimic natural flows over a range of storm durations and magnitudes. There is therefore anticipated to be minimal changes to the flooding regime within the riparian corridor downstream from the airport site.</p> <p>Mitigation and monitoring measures have been recommended to address the potential emergent impacts associated with groundwater that might arise during the construction and development stages of the proposed airport and are detailed in Chapter 18 (Volume 2a) and Chapter 28 (Volume 2b).</p>

Theme	Stakeholders	Summary of issue	Response
Impacts	Major landowners Local councils Residents	<p>Water quality on adjoining properties</p> <p>A number of submissions raised concerns about the contamination of surface water due to the construction and operation of the proposed airport. Impacts to water quality on adjoining properties were raised in particular.</p> <p>Submissions also requested consideration of impacts of other industrial development on or near the airport site and the impacts of these facilitated developments on water quality.</p>	<p>The key waterways draining from the airport site include Badgerys Creek, Oaky Creek, Cosgroves Creek and Duncans Creek. Potential water quality impacts are assessed in terms of both pollutant loads and concentrations and considered on a local and regional scale. The impact of runoff from the airport site to adjoining properties within the catchment has therefore been considered.</p> <p>All future development on the airport site beyond Stage 1 will be subject to future assessment and regulatory processes. This will include consideration of the potential impact of the future development on water quality and hydrology within the catchment.</p>
Impacts	NSW Government Residents	<p>Treatment and discharge of water</p> <p>A submission stated that the discharge of saline groundwater from the proposed airport should be prevented.</p> <p>Submissions raised concerns that the potential impacts of the operation of an onsite wastewater treatment plant have not been assessed, including any wet weather discharges of treated wastewater when irrigation cannot be undertaken.</p>	<p>Groundwater seepage from cuttings and deeper excavations for building basements or the establishment of a rail corridor will require management either through treatment to align with surface water discharge parameters or disposal to an appropriate licenced facility. Appendix L3 in Volume 4 presents a range of management options to reduce the seepage volumes and for treatment of groundwater prior to discharge. Groundwater would need to be treated to achieve the relevant standards set out in, or separately determined for the airport site under, the AEPR.</p> <p>It is recognised that the operations of the onsite wastewater treatment system have the potential to impact receiving waters through an increased potential for surface water runoff and infiltration. The risks would be limited by the high quality of reclaimed water anticipated from the proposed treatment system and the design and operation of the scheme in accordance with the risk framework and management principles contained in the National Guidelines on Water Recycling (EPHC, 2006) and the Environment guidelines: Use of effluent by irrigation (DEC, 2004). The airport site has a broad range of available irrigation areas to accommodate the anticipated irrigation flows.</p>
Impacts	Local councils	<p>Clarity of figures</p> <p>Local councils stated that many of the figures in Chapter 18 of the draft EIS were not easy to understand and omitted information to aid ease of understanding.</p>	<p>Chapter 18 (Volume 2a) presents technical data including maps demonstrating flood extent and depths for waterways surrounding the airport site and a conceptual hydrogeological model. The size of the catchment areas limits the scale of mapping that can be presented and the detail is required to demonstrate the variability in flood impacts for different areas of the catchment.</p>

Theme	Stakeholders	Summary of issue	Response
Environmental management	Local councils	<p>Clarity of mitigation measures</p> <p>Submissions criticised the clarity of mitigation measures in the draft EIS and stated that mitigation should be provided to address:</p> <ul style="list-style-type: none"> • localised increases in flood depths; • localised increases in shear stress and erosion; and • increased pollutant loads. <p>Submissions also noted that management of potential water quality impacts should include a failsafe system in operation at all times.</p>	<p>Chapter 28 (Volume 2b) has been revised since the draft EIS to provide more detail and clarity on mitigation and management measures.</p> <p>The principal mitigation measure with regards to water quality is the continued development of the water management system through the detailed design of the proposed airport. This includes a series of grassed swales to convey runoff from the developed areas within the airport site, and a series of bio-retention and flood detention basins to manage quality and quantity prior to discharge to the receiving waters. Low flows are diverted to the bio-retention system for water quality treatment, while the higher flows are designed to bypass the system and discharge directly into the flood detention basins. The flood detention basins provide controlled release to the receiving waters in a way that mimics natural flows as closely as possible over a range of storm durations and magnitudes. The installation of bunding, interceptor systems and oil water separators around fuel storage and refuelling areas will minimise the potential for total petroleum hydrocarbons to be discharged to receiving waters</p>

Theme	Stakeholders	Summary of issue	Response
Environmental management	NSW Government Local councils Residents	<p>Groundwater mitigation and management</p> <p>Submissions requested further information regarding mitigation and management of potential groundwater impacts. Particular matters included:</p> <ul style="list-style-type: none"> • baseline monitoring to develop a stronger understanding of connectivity of Bringelly Shale, weathered rock and alluvial aquifers; • baseline monitoring to develop a more detailed characterisation of weather rock aquifer including composition, thickness, distribution and saturation; • review of potential impacts to groundwater in light of baseline data; • consideration of a groundwater recharge scheme to mitigate potential impacts to groundwater levels and groundwater dependent ecosystems, if needed; • ongoing groundwater monitoring geared toward analyses relevant to irrigation to detect any inflows and water quality impacts; • ongoing monitoring of base flow in creeks and groundwater dependent ecosystems; and • treatment of captured groundwater inflow prior to reuse or release. 	<p>The groundwater assessment (Appendix L3 (Volume 4)) finds that the overall risk to groundwater resources from groundwater drawdown and groundwater quality from the Stage 1 development is predicted to be minor. The EIS outlines a number of mitigation measures which would further limit these impacts. These include:</p> <ul style="list-style-type: none"> • continual monitoring of groundwater seepage and appropriate corrective actions where necessary; • implementation of measures to reduce the risk of accidents and spill which may contaminate groundwater; and • the capture and treatment of groundwater seepage prior to reuse or release. <p>A comprehensive groundwater monitoring programme has also been proposed in Chapter 28 (Volume 2b). The programme would include baseline monitoring for determining existing conditions on which the emergence of impacts could be identified. This will allow for the early identification of any potential changes to groundwater levels or groundwater quality that would have potential to impact upon sensitive receptors, including groundwater dependent ecosystems.</p>

Theme	Stakeholders	Summary of issue	Response
Environmental management	NSW Government Community groups	<p>Mitigation measures</p> <p>Submissions stated that the EIS should more clearly demonstrate that measures have been put in place to ensure water quality standards are met. The NSW Government submission stated that the proposed airport should not exacerbate or prevent the future improvement of the current condition of South Creek or the main stem of the Hawkesbury Nepean.</p>	<p>It is recognised that water quality in the South Creek catchment is generally poor, with elevated nutrient levels in particular impacting upon the environmental values of the receiving waters. The water management system includes a series of bio-retention basins developed with an aim of satisfying pollution reduction targets in the Western Sydney Urban Design Guidelines (WSUD Guidelines). The WSUD Guidelines specify pollutant reduction targets as a practical way of treating urban stormwater quality, with targets of 80 per cent of suspended solids, 45 per cent of total phosphorus, and 45 per cent of total nitrogen to be retained on the airport site. The civil design of the bio-retention basins has additional buffer areas available to provide flexibility to increase the level of treatment in the future.</p> <p>While the Stage 1 development will generally result in improvements in pollutant concentrations locally and regionally, the improvements would not be sufficient to meet the default ANZECC guideline objectives as a result of the degraded nature of the existing catchment. Nevertheless, it is noted that the proposed airport does not preclude the opportunity to make further improvements in downstream water quality in South Creek in the future, to work towards satisfying the NSW Water Quality Objectives.</p> <p>As outlined in Chapter 28 (Volume 2b), due to the existing degradation of water bodies in and around the airport site, local standards for water quality will be developed for the proposed airport, consistent with Part 5 of the AEPR.</p>
Environmental management	Community groups	<p>NSW Regulations</p> <p>A submission asked whether an Environment Protection Licence would be issued by the NSW Environment Protection Authority to monitor the likely water pollutants produced on the site.</p>	<p>The airport will operate in accordance with a Commonwealth regulatory process defined by the Airports Act and associated regulations such as the AEPR. An Environment Protection Licence from the NSW Environment Protection Authority will not be required for the proposed development.</p>

Theme	Stakeholders	Summary of issue	Response
Environmental management	NSW Government	<p>Hawkesbury-Nepean River and South Creek – Elevated nutrient loads</p> <p>The NSW Government commented that elevated nutrient loads are a significant issue for the Hawkesbury-Nepean River and in particular for South Creek. The submission noted the findings from the draft EIS that the concentrations of nutrients will generally decrease in response to Stage 1 of the development and that there will be an increase in the annual load of nutrients to receiving waters.</p> <p>The NSW Government suggested that the EIS should demonstrate more clearly that all measures have been put in place to ensure that the proposal does not exacerbate the current condition of South Creek or the main stem of the Hawkesbury Nepean or prevent improvement in the future through other catchment actions.</p>	<p>As outlined in Chapter 28 (Volume 2b), water quality of catchments near airports is regulated by the AEPR which sets enforceable water quality criteria based on the ANZECC Guidelines.</p> <p>To take into account existing water quality issues, particularly in the South Creek catchment, it is proposed that local standards would be developed for the airport site under Part 5 of the AEPR. As outlined in Chapter 28, the development of local standards may be proposed by an ALC and would be approved by the Infrastructure Minister following a period of consultation undertaken by the ALC with relevant authorities, stakeholders and the broader public. This would include consultation with the NSW Government on existing water quality issues in the region.</p> <p>Because the AEPR does not provide any technical guidance on how a local standard should be derived it is proposed that the development local standards would be guided by the ANZECC (2000) process for developing site specific trigger levels, including the collection of 24 months of water quality data. The data collection process is currently underway.</p>
Environmental management	NSW Government	<p>Further groundwater monitoring and assessment</p> <p>Submissions stated that the assessment of the construction and operation of Western Sydney Airport on groundwater was limited and suggested that further monitoring and assessment be undertaken. Identification and estimation of the quality and quantity of all pollutants that may be introduced into the water cycle is needed, by source and discharge point for both the construction and operation phase. This would need to describe the nature and degree of impact that any discharge(s) may have on the receiving environment, including consideration of all pollutants that pose a risk of non-trivial harm to human health and the environment.</p>	<p>The Groundwater Assessment (Appendix L3 (Volume 4)) in the EIS finds that the overall risk to groundwater resources from groundwater drawdown and groundwater quality from the Stage 1 development is predicted to be minor. The EIS outlines a number of mitigation measures which would further limit these impacts. These include:</p> <ul style="list-style-type: none"> • continual monitoring of groundwater seepage and appropriate corrective actions where necessary; • implementation of measures to reduce the risk of accidents and spill which may contaminate groundwater; and • the capture and treatment of groundwater seepage prior to reuse or release. <p>A comprehensive groundwater monitoring programme has also been proposed as outlined in the Soil and Water CEMP in Chapter 28 (Volume 2b). The programme would include baseline monitoring for determining existing conditions on which the emergence of impacts could be identified. This will allow for the early identification of any potential changes to groundwater levels or groundwater quality that would have potential to impact upon sensitive receptors, including groundwater dependent ecosystems.</p>

Theme	Stakeholders	Summary of issue	Response
Environmental management	Local councils	<p>Management of surface water and groundwater impacts</p> <p>Submissions stated that appropriate mitigation measures must be implemented during construction and operation of the airport as per the recommendations in the draft EIS.</p>	<p>Mitigation measures for surface water and groundwater impacts associated with the Stage 1 development are outlined in the Soil and Water CEMP and Soil and Water OEMP in Chapter 28 (Volume 2b). In particular, the CEMP and OEMP will require the ALC to comply with the surface water and groundwater mitigations measures and provide a process for ongoing monitoring and reporting, consistent with existing water quality obligations established under the AEPR.</p> <p>As outlined in Chapter 28, due to the existing degradation of water bodies in and around the airport site, local standards for water quality will be developed for the proposed airport, consistent with Part 5 of the AEPR.</p>



22 Aboriginal heritage

Volume 2 (Stage 1 Development), Chapter 19 (Aboriginal heritage) of the draft EIS provided a review of the Aboriginal cultural heritage values that may be potentially affected by the development of the proposed airport.

The chapter drew on an assessment which was included as Appendix M1 (Aboriginal cultural heritage).

22.1 About the submissions on this chapter



Table 22–1 Submissions related to Aboriginal heritage

Issue	Number of times the issue was raised	Percentage of total submissions
Aboriginal heritage	141	2.8%

22.1.1 Origin of submissions

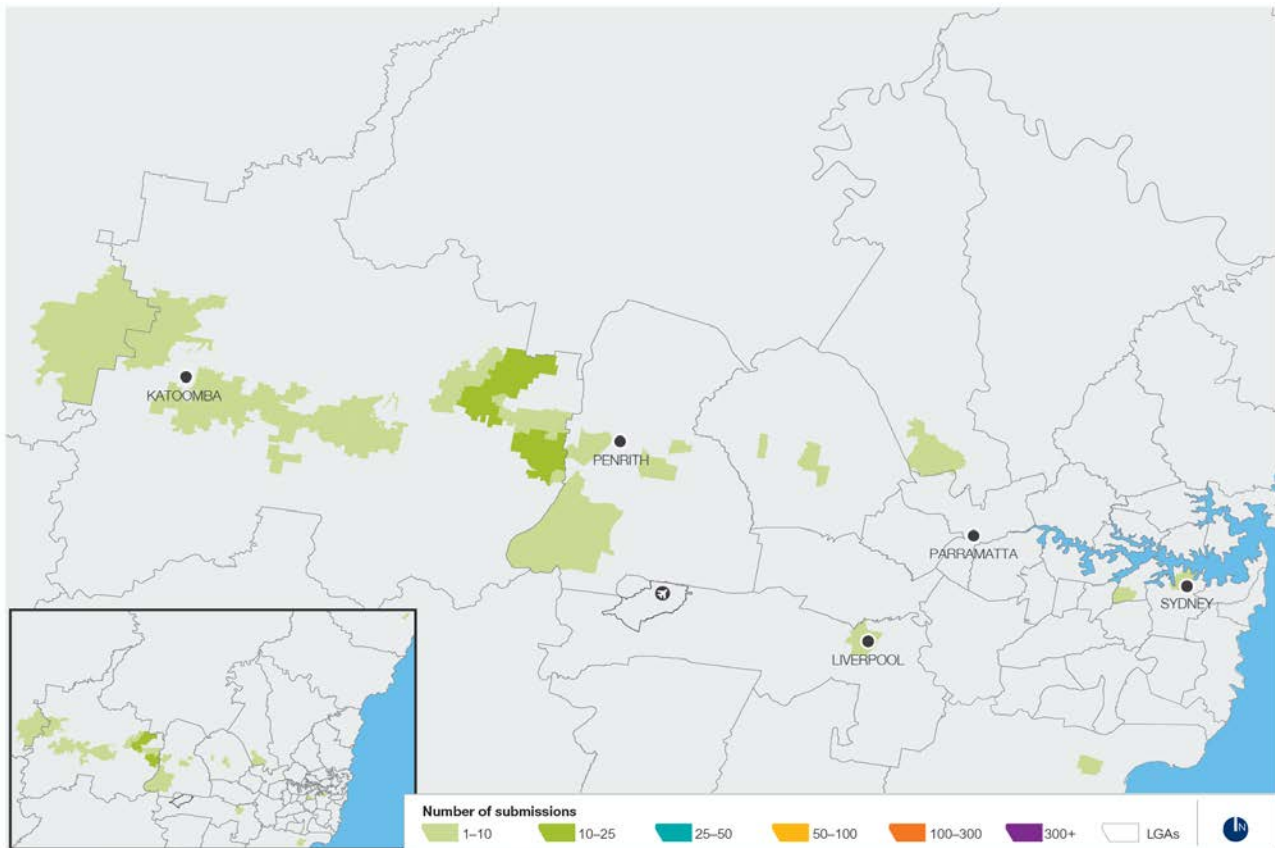


Figure 22–1 Map depicting origin of submissions in relation to Chapter 19 of the draft EIS

22.2 Summary and response

22.2.1 Overarching summary of submissions

Submissions stated that the airport development and future stimulated development in Western Sydney would result in a loss of Aboriginal sites and impacts to traditional owner beliefs and practices that cannot be mitigated. The submissions also indicated a more extensive survey was required and that more emphasis was needed on the attitudes and perspectives of the traditional owners and their cultural values.

The key themes from the submissions are summarised under the following headings:

- adequacy of assessment;
- impacts to heritage items;
- adequacy of consultation;
- cumulative impact; and
- mitigation measures.

The submission comments are summarised and in Section 22.2.3.

22.2.2 Overarching response to issues raised

Following publication of the draft EIS, the Aboriginal heritage assessment was updated to reflect further development of the Airport Plan and indicative airport site layout – particularly the adjustment of the Stage 1 construction impact zone to better reflect construction activities.

The adjustment of the construction impact zone did not significantly alter the findings of the Aboriginal heritage assessment. The assessment found the adjusted construction impact zone airport would affect at least 39 Aboriginal sites – as described in the draft EIS.

The revised assessment also found that construction would impact 514 hectares of archeologically sensitive landform compared to 501 hectares as presented in the draft EIS.

The revised assessment includes further detail on key mitigation and management measures to control potential impacts to Aboriginal heritage – namely a topsoil management procedure that will apply to areas of the construction impact zone with a predicted high artefact density and the potential establishment of a ‘keeping place’ for the long-term storage of certain salvaged material.

The revised assessment is presented in Chapter 19 and Appendix M1 of the finalised EIS.

22.2.3 Issues and responses

Theme	Stakeholders	Summary of issue	Response
Adequacy of assessment	Heritage groups Local Councils NSW Government Blue Mountains stakeholders Residents	<p>Heritage assessment</p> <p>Some submissions raised concerns regarding the overall adequacy of the Aboriginal heritage assessment, while other submissions, including the NSW Government submission, considered the assessment to be thorough and adequate.</p> <p>Specific issues raised included:</p> <ul style="list-style-type: none"> the failure to assess the Aboriginal cultural landscape of the site; perceived inadequacy of the evaluation of cultural values, which was considered to be too short and to not adequately consider the Burra Charter; lack of consideration of the larger cultural landscape, including no attempt to discuss cultural material in a basin-wide context; concern that the assessment was undertaken with a predetermined outcome that the airport is approved. <p>It was suggested that a longer assessment timeframe would allow for a more comprehensive assessment that could be considered adequate.</p>	<p>The Aboriginal heritage assessment was undertaken in accordance with the Guidelines for the content of a draft environmental impact statement – Western Sydney Airport and the EPBC Act. The assessment also took account of the following:</p> <ul style="list-style-type: none"> the Commonwealth Heritage management principles; Australian ICOMOS Charter for the conservation of places of cultural significance (Burra Charter of Australia); Ask First: a guide to respecting Indigenous heritage places and values (Australian Heritage Commission 2002); and Aboriginal cultural heritage consultation requirements for proponents (NSW Office of Environment & Heritage 2010). <p>As such, the framework for the Aboriginal heritage assessment is considered adequate for the purpose of the EIS.</p> <p>Section 19.3 (Volume 2a) describes the landscape and cultural context of the airport site having regard to historical records and previous archaeological surveys and assessments. It also summarises the outcomes of stakeholder consultation undertaken for the EIS and recognises that the airport site is a place of Aboriginal cultural significance and continuing cultural connection. Section 8.3 and 9, Appendix M1 (Volume 4) addresses the significance of the airport site and its landscape values within the broader Cumberland Plain and assesses the cumulative impacts of the proposed airport development. The management of cumulative impacts on cultural heritage values is addressed by the provision for long-term curation of salvaged material and opportunities for the long term commemoration and interpretation of Aboriginal cultural values.</p> <p>In relation to the assessment timeframe, it was determined that further systematic surface survey was not a high priority given the coverage already achieved in previous assessments. Emphasis was placed instead on the conduct of test excavation. The scope of the testing programme was considered to provide an adequate coverage of topographic and archaeological variables. The EIS commits to significant additional field actions including archaeological survey and salvage programmes for surface artefacts and subsurface deposits.</p>

Theme	Stakeholders	Summary of issue	Response
Adequacy of assessment	Heritage groups	<p>Reliance on previous assessments</p> <p>Submissions commented that the reliance on previous assessments was not appropriate as these were flawed and inadequate.</p> <p>Specifically:</p> <ul style="list-style-type: none"> surveys for the 1997-1999 EIS only covered about five per cent of the total study area; and the Auditor's report on the 1997-99 EIS found flaws and therefore the EIS findings should not be used. 	<p>The EIS assessment includes a review of previous investigations. Summaries of the findings and key criticisms of those studies can be found in Sections 4.4 and 5.5 of Appendix M1 (Volume 4).</p> <p>The data and findings from previous studies were considered in the context of identified limitations associated with the earlier methodologies used. The studies were not applied as 'benchmarks' for the current analysis. Data on surface survey and site recordings were used from the 1997 EIS survey. All significance assessments of previous recordings were redrafted for the current assessment.</p> <p>The criticisms of the 1997 EIS focused on the absence of test excavations, limitations in modelling, and an insufficient emphasis on intangible values. These have been addressed in the current assessment. This is evident in the investment of a third of the field programme to the identification of intangible values, and the focus on test excavation rather than the conduct of further surface survey for the EIS.</p>
Adequacy of assessment	Heritage groups	<p>Adequacy of modelling</p> <p>Submissions raised a number of issues regarding the modelling undertaken for the assessment including:</p> <ul style="list-style-type: none"> the archaeological modelling for the Cumberland Plain is lacking in ethnographic analogy and could be improved by reference to anthropological studies and ethnographic analogy; and the predictive modelling would benefit from the application of processual archaeological theory. 	<p>The predictive modelling developed for the EIS assessment was employed to answer basic questions about the nature, character and distribution of the surviving archaeological resource. The resulting inputs allowed for the mapping of high, moderate and low incidence subsurface artefact distribution across the airport site. In addition, relationships between technological richness (or diversity) relative to artefact incidence and topographic context were also discerned. These provided a basis for predicting archaeological significance relative to landscape variables.</p> <p>The application of ethnographic analogy and processual theory to this analysis would have provided an additional layer of archaeological interpretation to the assessment; however, this was not necessary to fulfil the primary objectives of the assessment.</p> <p>The benefit of sampling a representative sample of differing artefact distributions for analysis is recognised in the management strategies proposed by the EIS. The aim of the future salvage programme is to recover and analyse a representative sample of surface and subsurface archaeological material, and a requirement to recover archaeological material from all landform types based on a systematic and representative sampling matrix.</p>

Theme	Stakeholders	Summary of issue	Response
Adequacy of assessment	Heritage groups Blue Mountains stakeholders	<p>Limitations of fieldwork</p> <p>Submissions raised concerns about the limitations of the fieldwork programme, specifically:</p> <ul style="list-style-type: none"> • limited new sites found; • representative testing was not adequate for such a large site; • rushed process; and • stakeholder concerns around limited scope were not adequately addressed. 	<p>The EIS field methodology sought to identify both the tangible and intangible cultural heritage values of the airport site from cultural and archaeological sources. As a consequence, one week was devoted to onsite liaison with stakeholders, and two weeks to archaeological test excavation. These priorities were based on gap analysis studies and a review of previous work.</p> <p>The location of the test excavations was based on an initial pre-selection process which involved the identification of representative examples of different landforms with varying levels of predicted archaeological sensitivity, and where historical land surface disturbance was relatively low. The resulting 38 pre-selected locations were then further reduced following field assessments with stakeholders, with the aim of selecting the best and most effective test locations. The fact that 25 of the preselected locations remain untested is not a measure of the achieved scope of the field programme. It instead demonstrates that 34 per cent (13 of 38) of the pre-selected locations were found to be effective test locations following onsite evaluation and stakeholder inputs.</p> <p>The EIS field programme allowed for multiple test pits to be conducted at each test location and tested both large and small-scale topographic variables, spread across the full extent of the airport site. The sample achieved was considered to be representative of the active variables identified in the modelling.</p> <p>The archaeological field programme was focussed on achieving a representative sample. Representative sampling provides the opportunity to extrapolate results across untested portions of the airport site with similar topography and thus to make predictions of the likely total surviving archaeological record. It was considered that the investigation of a well targeted and representative subsurface sample would provide a more effective baseline of information, than the results of a comprehensive 100 per cent surface survey, which would itself have been biased by low visibility rates and inconsistent exposure variables.</p>

Theme	Stakeholders	Summary of issue	Response
Adequacy of assessment	Heritage groups	<p>Predictive model</p> <p>Submissions expressed concern that the field programme did not adequately test the predictive model because test excavations were conducted at locations where archaeological material was expected to be found.</p>	<p>The predictive model developed for the EIS assessment was based partly on the results of previous subsurface archaeological investigations conducted elsewhere across the Cumberland Plain. This body of data has established a number of trends in the incidence of subsurface artefacts, including landforms where the incidence has a high likelihood of being very low or below the detection threshold of the test area. Excluding proximity to stone procurement sites, these landforms typically comprise slopes with a moderate to high gradient, low lying and poorly drained ground, and contexts which are significantly distant from reliable fresh water sources. Moderately graded (or steeper) slopes were not systematically tested as part of the EIS test excavation; however, this was considered appropriate given the priorities of the investigation and the established corpus of evidence which already supports predicted zones of low or very low artefact incidence. The remaining large scale landform types were subject to testing, many of which were associated with predictions of low artefact incidences. In addition, smaller scale landform variables were opportunistically tested across each chosen test location. These included: distance from, and the order of the closest water source; location within or outside of previously postulated threshold zones, such as the 100 m riparian zone; micro-topography; and ridge/crest order.</p> <p>In the case of the current EIS assessment, it was necessary to gain sufficient data on areas of moderate and high archaeological potential to characterise the high value surviving resource, and to identify the scope and focus for any required salvage programme. It is considered that the proportion of the programme allocated to testing the 'null hypothesis' (that is, areas assumed to have low to very low artefact incidences) was appropriate within the parameters of the study.</p>

Theme	Stakeholders	Summary of issue	Response
Adequacy of assessment	Heritage groups Community groups	<p>Significance assessment</p> <p>Submissions commented that the significance assessment was high against all nine of the Commonwealth Heritage criteria and, as such, proposed measures need to consider further scope for conservation apart from the riparian corridor. Submissions also stated that possible information that would contribute to Australia's cultural history (Criterion c) is not addressed.</p>	<p>The Commonwealth Heritage criteria are specified in the EPBC Act and were developed for the purpose of determining Commonwealth Heritage value and eligibility for registration on the Commonwealth Heritage List. This is a schedule of places owned or controlled by the Commonwealth, which the Environment Minister considers to have 'Commonwealth Heritage value'. Guidelines prepared by the Australian Heritage Council for Commonwealth agencies on the identification of Commonwealth Heritage values, state that 'the threshold for inclusion on the Commonwealth Heritage List is local heritage significance' (AHC 2010).</p> <p>It follows from the application of this local threshold value, that significance according to one or more of the Commonwealth Heritage criteria need not necessarily infer a level of significance that would strongly support <i>in situ</i> conservation, such as a state or national level of significance. It is noted that the two individual sites with a significant level of assessed rarity (Criterion b) — the possible Aboriginal scarred tree (B40) and the grinding grooves (B120) — would both be managed <i>in situ</i> in the proposed context of the airport development.</p> <p>Criterion c relates to significance derived from a potential to yield information that would contribute to an understanding of Australia's cultural history. The EIS includes a suite of mitigation measures designed to address this potential by the recovery of information and objects through the conduct of a surface and subsurface salvage programme, the analysis and curation of all finds, and the recording of oral history (see mitigation measures in Chapter 28, Volume 2b).</p>
Adequacy of assessment	Heritage groups	<p>Broader regional Aboriginal heritage context</p> <p>Submissions expressed concern that archaeological excavations undertaken on nearby land, including that bordering the airport site, were not considered. As such, it was contended that the assessment did not adequately consider the broader regional Aboriginal heritage context.</p>	<p>Section 19.3, Chapter 19 (Volume 2a) addresses the significance of the airport site and its landscape values in within the context of the Cumberland Plain under the criteria concerned with representativeness (Criteria b and d). The cumulative impacts of the airport development are assessed in Sections 9.2.3 and 9.3.3 of Appendix M1, Volume 4. These submission observations are broadly consistent with the EIS findings.</p>

Theme	Stakeholders	Summary of issue	Response
Adequacy of assessment	Heritage groups	<p>Timing of survey programme</p> <p>Submissions contended that the site survey programme should have been delayed until the geoarchaeological and additional geotechnical investigations were completed.</p>	<p>The geoarchaeological overview conducted for this assessment (refer Appendix 6 of Appendix M1, Volume 4) found that the available data had limited application for the conduct of the archaeological test excavation programme. It was therefore considered most appropriate to expend the available resources on the conduct of the cultural values and test excavation programmes, and defer any consideration of potential geoarchaeological inquiry to future investigations. As part of the proposed selective archaeological salvage programme to be conducted prior to, and as necessary during, Stage 1 construction works, consideration will be given to the feasibility of integrating relevant and existing geotechnical data into determining the location and scope of study.</p>
Adequacy of assessment	Heritage groups	<p>Alternate anthropological study of cultural values</p> <p>Submissions state that a more appropriate anthropological study of cultural values should have been conducted which was designed and implemented by a qualified anthropologist.</p>	<p>The engagement of an anthropologist was not considered necessary to fulfil the objectives of the assessment. It is recognised that there is considerable concern within the Aboriginal community regarding who can speak for country and how this can be verified. However, the NSW OEH Aboriginal consultation protocol, which was used as a guide for the EIS consultation programme, does not allow for the discrimination of stakeholder registrations on the basis of perceived tribal or area affiliations.</p>

Theme	Stakeholders	Summary of issue	Response
Impacts to heritage items	Heritage groups Local Council Blue Mountains stakeholders	<p>Noise and pollution impacts</p> <p>Submissions raised concerns regarding noise and pollution impacts to Aboriginal heritage, cultural beliefs and practices within the Greater Blue Mountains World Heritage Area (GBMWH) as a result of aircraft overflights. Submissions stated that increased air traffic would:</p> <ul style="list-style-type: none"> • affect the audibility of bird calls; • affect cultural heritage values in Darug and Gundungurra country, including communicating with living and spiritual beings; • distress ancestral spirits and thus the health and wellbeing of the community; • impact cultural and educational activities; • affect biota and waterways from fuel dumping and increase the risk of more frequent mega fires; and • impact world heritage values. 	<p>Based on preliminary airspace design by Airservices Australia, almost all aircraft approaching or departing the proposed airport would be at an altitude in excess of 5,600 feet above sea level when passing over the GBMWH. No flights would be expected to occur below 6,500 feet (approximately 1.8 kilometres) above local ground level in the vicinity of sensitive areas selected for analysis in Chapter 26 (Volume 2a). At these altitudes, aircraft are likely to be difficult to discern from ground level and are not visually obtrusive. Indicative flight tracks at altitudes of less than 5,000 feet are limited to Warragamba and the eastern boundary of the Blue Mountains National Park, which would experience 50 to 100 flights per day under Stage 1 operations.</p> <p>Generally, across the GBMWH, minimal incursion of noise levels in excess of 55 dBA would occur. Between 50 and 60 dBA is equivalent to normal conversational noise (see Section 26.5.2.1, Chapter 26 (Volume 2a)). Echo Point at Katoomba is not predicted to experience noise levels above 50 dBA, and the majority of other sensitive areas are predicted to only be impacted by noise levels at or above 55 dBA during the infrequent operation of the Boeing 747.</p> <p>While noise would increase above background levels, fauna are likely to become habituated to any elevation in noise levels in the long term, particularly as aircraft would not be flying at low altitudes over the GBMWH. Operation of aircraft at the proposed airport is highly unlikely to permanently alter foraging or breeding behaviour of any fauna species (see Section 26.5.2.1 (Volume 2a)).</p> <p>Emergency fuel jettisoning is very unlikely to have any impact on the GBMWH and its biota due to the rarity of these events. The inability of many aircraft to perform fuel dumps, the rapid vaporisation and wide dispersion of jettisoned fuel and the strict guidelines on fuel dumping altitudes and locations. In 2014 there were only 10 instances of civilian aircraft jettisoning fuel in Australia, representing approximately 0.001 per cent of all aircraft movements in Australia.</p>

Theme	Stakeholders	Summary of issue	Response
Impacts to heritage items	Local Council Heritage groups	<p>Significant sites</p> <p>Submissions noted that all identified archaeological sites are significant and require acknowledgement, conservation and/or mitigation measures.</p>	<p>The EIS commits to a range of measures that are considered appropriate to mitigate and manage the potential impacts of the proposed airport on Aboriginal heritage (see Chapter 28 (Volume 2b)).</p> <p>Although the nature of the proposed airport largely limits scope for <i>in situ</i> conservation, an Environmental Conservation Zone at the airport site would be managed with a principal objective being the conservation of Aboriginal heritage. This would provide for the <i>in situ</i> conservation of some of the more highly valued examples of Aboriginal heritage at the airport site – being a possible scarred tree and grinding grooves close to Badgerys Creek.</p> <p>Where construction impact excludes the possibility of <i>in situ</i> conservation, the EIS commits to the conduct of a range of management actions. These include:</p> <ul style="list-style-type: none"> • development of a protocol for the onsite and culturally appropriate management of topsoil containing relatively high densities of artefacts; • conduct of a salvage programme with the aim of recovering and analysing a representative sample of surface and subsurface archaeological material; • commemoration and interpretation of local Aboriginal cultural heritage values such as through displays, art, and the naming and dedication of spaces; and • appropriate archiving, long term storage and repatriation of salvaged Aboriginal heritage material.

Theme	Stakeholders	Summary of issue	Response
Adequacy of consultation	Local Council NSW Government Heritage groups Community groups Blue Mountains stakeholders	<p>Consultation with stakeholders</p> <p>Submissions raised concerns about the adequacy of consultation with Aboriginal parties. Specific issues raised included:</p> <ul style="list-style-type: none"> • lack of engagement with Aboriginal communities—specifically with local Darug and Gundungurra traditional owners; • too many stakeholders with no traditional connection to the Cumberland Plain were involved; • no attempt was made to ensure stakeholders were in a position to speak for country; • the consultation did not follow the OEH guidelines; • limited engagement with Aboriginal communities in the Penrith Local Government Area; and • lack of engagement with Aboriginal communities from all areas including under indicative flight paths. <p>Submissions recommended ongoing consultation with Aboriginal parties.</p>	<p>Engagement with Aboriginal stakeholders has been undertaken with due consideration to the relevant Commonwealth and NSW guidelines including <i>Ask First: a guide to respecting Indigenous heritage places and values</i> (Australian Heritage Commission 2002) and <i>Aboriginal cultural heritage consultation requirements for proponents</i> (NSW Office of Environment & Heritage (OEH) 2010). The NSW OEH protocol for Aboriginal consultation was used as a guide for the conduct of the EIS consultation programme because it was consistent with Australian Government principles and guidelines, outlined current best practice within NSW, fulfilled State government expectations and provided a clear procedural structure.</p> <p>Although the protocol was designed to provide a process in which Aboriginal stakeholders with knowledge specific to country could be identified and heard, its implementation is inclusive in nature and lacks any process for the exclusion or discrimination of individuals or organisations which apply for stakeholder registration. This has the effect that the breadth of consultation is not limited by any particular faction, or affiliation. It also means that the consultant is not placed in a position where potentially contrasting claims to speak for country require resolution. A consequence of the inclusive and non-discriminate nature of the OEH protocol is that stakeholders who speak from a direct connection with a place, may believe that their opinion or authority is devalued, or not properly acknowledged, due to the opinion of others whose connection they do not recognise.</p> <p>The EIS assessment also involved a field programme in which stakeholders were provided an opportunity to inspect the proposed development areas over five days and to communicate relevant information on cultural and intangible cultural values. This was in addition to stakeholder participation in a subsequent ten-day test excavation programme. Information provided and issues raised by stakeholders during this phase are reported in Section 7.1 of Appendix M1 (Volume 4).</p> <p>Consultation was undertaken with all Aboriginal parties who registered an interest in the project including representatives of the Darug and Gundungurra people.</p> <p>Consultation activities included meetings to discuss the assessment methodology and issues raised by stakeholders, as well as the provision of assessments based on traditional knowledge and direct participation in field surveys and test excavations.</p> <p>This process of consultation with Aboriginal parties is explained further in Chapter 19 (Volume 2a) and Appendix M1 of the EIS. As committed in Section 19.7, Chapter 19 (Volume 2a), consultation with Aboriginal parties will continue through the design and construction of the proposed airport.</p>

Theme	Stakeholders	Summary of issue	Response
Cumulative impact	Heritage groups NSW Government Community groups	<p>Airport as a catalyst for cumulative impact</p> <p>Submissions noted that the cumulative impact of the proposed airport on the archaeological and cultural values of the Badgerys Creek area is significant and that the airport would add to the cumulative impact on these values by bringing forth further development.</p>	<p>Section 19.3, Chapter 19 (Volume 2a) addresses the significance of the airport site and its landscape values within the context of the Cumberland Plain under the criteria concerned with representativeness (Criteria b and d). The cumulative impacts of the airport development are assessed in Sections 9.2.3 and 9.3.3 of Appendix M1, Volume 4. These submission observations are broadly consistent with the EIS findings.</p> <p>The potential impact of the airport development on the site's landscape values and its cumulative impacts would be addressed by a number of measures outlined in the EIS. Mitigation Measures detailed in Chapter 28 (Volume 2b) ensure that salvage actions are directed at all landscape variability across the site, including the generation of representative samples and full survey coverage. Cumulative impacts are addressed by the provision for long term curation of salvaged material and opportunities for the long term commemoration and interpretation of Aboriginal cultural values.</p>
Mitigation measures	Local councils	<p>Support for mitigation measures</p> <p>Submissions expressed support for the proposed mitigation measures and requested that councils and local Aboriginal groups be consulted on management plans before their finalisation.</p>	<p>The proposed measures and strategies for mitigating impacts on Aboriginal heritage values will be contained in an Aboriginal Cultural Heritage Construction Environmental Management Plan. This plan will be developed in consultation with Aboriginal stakeholders and relevant government agencies. The plan will include both short and long term strategies, and address actions required prior to, during and after construction.</p> <p>The mitigation measures, detailed in Chapter 28 (Volume 2b), include the conduct of continued Aboriginal consultation — the nature and frequency of which would be specified by an Aboriginal stakeholder consultation plan — which would be conducted throughout the design and construction phases of the airport. This would be paired with the provision to Aboriginal stakeholders of opportunities to participate in field actions involving the mitigation and management of Aboriginal cultural values.</p>

Theme	Stakeholders	Summary of issue	Response
Mitigation measures	Heritage groups	<p>Conditions of proposed mitigation measures</p> <p>One submission stated that the proposed management measures are acceptable provided that:</p> <ul style="list-style-type: none"> the land where cultural material is to be reburied or placed is easily accessible to Aboriginal people; and information boards are placed throughout the airport so that visitors are made aware that the land is significant to Aboriginal people. 	<p>The EIS mitigation measures for Aboriginal Heritage have the objective of establishing two forms of long term curation for recovered Aboriginal cultural material from the airport site (see Chapter 28 (Volume 2b)). These comprise: an area, or areas, for the onsite reposition or reburial of items; and a possible 'keeping place' for the long term, above-ground storage and curation of materials. The location and degree of required access by Aboriginal people to the onsite area or areas would be the subject of further consultation with Aboriginal stakeholders. Continued Aboriginal stakeholder access to materials within a 'keeping place' facility is anticipated to be an integral function of such a facility and would be the subject of further consultation with Aboriginal stakeholders.</p> <p>The EIS specifies a mitigation measure that the Aboriginal cultural heritage values of the airport site should be commemorated and interpreted as part of the airport development and its infrastructure. This measure is purposefully non-prescriptive regarding the means that this should be achieved so that all current and future options can be reasonably considered. The measure does, however, itemise a number of options including the dedication of various spaces and places for the placement of art and interpretive elements. The category of 'interpretive elements' is certainly understood to include the delivery of information in text and image form. This could be in the form of information boards but may also employ alternative media.</p>
Mitigation measures	Heritage groups Local councils	<p>Need for more site surveys</p> <p>Submissions stated that further and more comprehensive site survey activities and subsurface excavation should be conducted after thorough and culturally appropriate additional community consultation.</p>	<p>The mitigation measures in the EIS include the conduct of continued Aboriginal consultation, the nature and frequency of which would be specified by an Aboriginal stakeholder consultation and engagement plan, and which would be conducted throughout the design and construction phases of the airport (see Chapter 28 (Volume 2b)). This would be paired with the provision to Aboriginal stakeholders of opportunities to participate in field actions involving the mitigation and management of Aboriginal cultural values.</p> <p>The mitigation measures in the EIS also include the conduct of further and more comprehensive surface archaeological survey and excavation as part of the EIS mitigation measures. The conduct of these strategies would form the core actions of a salvage programme.</p>
Mitigation measures	Heritage groups Local councils	<p>In situ conservation</p> <p>Submissions expressed support for <i>in situ</i> conservation, particularly of the grinding grooves and scarred tree.</p>	<p>The sites of the grinding grooves and possible scarred tree will be conserved <i>in situ</i> within the proposed Environmental Conservation Zone. Six of the management strategies included as mitigation measures in the EIS relate directly or indirectly to the management of these sites and would establish a future regime for their care, conservation and interpretation (see Chapter 28 (Volume 2b)).</p>

Theme	Stakeholders	Summary of issue	Response
Mitigation measures	NSW Government	<p>Management of Aboriginal heritage impacts</p> <p>It was recommended that mitigation and management measures include:</p> <ul style="list-style-type: none"> • <i>in situ</i> conservation of at least two Aboriginal heritage sites • conservation of a representative sample of an archaeological landscape, if possible; and • use of the Aboriginal Sites Decision Support Tool in rating potential offset sites. 	<p>As committed in the draft EIS, the Environmental Conservation Zone at the airport site will be managed. Conservation of Aboriginal heritage will be a principal objective. This would provide for the <i>in situ</i> conservation of some of the more highly valued examples of Aboriginal heritage at the airport site – being a scarred tree and grinding grooves near Badgerys Creek.</p> <p>Thirteen previously recorded Aboriginal sites, and portions of three others, would be conserved <i>in situ</i> within proposed Environmental Conservation Zone.</p> <p>The nature of the proposed airport development and the boundaries of the airport site mean that the proposed measure of conserving a representative sample of an archaeological landscape cannot be achieved within the confines of the site.</p> <p>There is potential for Aboriginal cultural heritage values to be conserved on properties identified for the in perpetuity protection of biodiversity offsets. Where practicable, any future evaluation of potential offset properties would incorporate the Aboriginal Sites Decision Support Tool as an aid in evaluating both representativeness and the predicted archaeological resource.</p>
Mitigation measures	Heritage groups	<p>Cultural Heritage Management Plan</p> <p>Submissions stated that the remaining sites of Aboriginal cultural heritage need to be managed through a cultural heritage management plan that requires extensive consultation.</p>	<p>The management of all Aboriginal sites that remain onsite following initial construction impacts, and then subsequent long term development, would be the subject of an Aboriginal Cultural Heritage Construction Environmental Management Plan (CEMP). The mitigation measures in the EIS specifically deal with sites within the Environmental Conservation Zone. Chapter 28 (Volume 2b) also details mitigation measures that relate to overall planning for all mitigation and management actions across construction stages. The measures specify that the development and periodic revision of the Aboriginal Cultural Heritage CEMP should be done in consultation with Aboriginal stakeholders.</p>

Theme	Stakeholders	Summary of issue	Response
Mitigation measures	Heritage groups Community groups	<p>Artefact salvage programme</p> <p>Submissions stated that the proposed artefact salvage programme would be inadequate if limited to a representative sample, given the large size of the airport site.</p>	<p>Mitigation measures in the EIS include the conduct of further targeted archaeological surface survey of that portion of the Stage 1 construction impact zone not previously subject to surface survey (see Chapter 28 (Volume 2b)). The aims of the programme include, but are not limited to, the recovery and analysis of a representative sample of surface and subsurface archaeological material from the areas contained in the Stage 1 construction impact zone. In addition to the representative sample, a further aim is to recover additional archaeological material from areas with assessed relatively higher archaeological value. The objective of this measure is to provide a large enough artefact population for statistical analysis and from which robust results can be derived. This will ensure that comprehensive surface archaeological survey of all directly impacted areas will be completed prior to construction, and that an opportunity will be provided to salvage all known surface artefacts.</p> <p>The conduct of an archaeological salvage and excavation programme across the Stage 1 construction impact zone would provide a further and substantial opportunity to recover archaeological and cultural items from the project area, and to learn about the area's Aboriginal occupation and history.</p>
Mitigation measures	Heritage groups	<p>Protocol for managing and tracking topsoil</p> <p>Submissions considered that the proposed protocol for managing and tracking topsoil from areas of predicted high archaeological artefact density would be impracticable.</p>	<p>While the volumes of soil to be excavated and moved during airport construction would be very large, it is envisaged that the material which would be subject to the protocol would constitute a small minority of this volume. This is because most of the material would consist of topsoil (which is likely to be stockpiled for future spreading in any case), and be limited to contexts where there was a known or predicted relatively high incidence of subsurface artefacts.</p> <p>Given that the resources made available for pre-construction salvage programmes are always limited, and that archaeological programmes of salvage are always sample-based, it is a usual expectation in broad area developments that a substantial proportion of the archaeological resource will still be present within impact zones after salvage completion. Except in exceptional cases of 100 per cent salvage (which, when feasible, are mostly limited to small development areas), it is proposed that the conduct of a protocol for the onsite construction management of soil containing a relatively high density of artefacts would provide a useful and additional strategy for reducing impact to Aboriginal heritage values (see Chapter 28 (Volume 2b)). This mitigation measure has been defined specifically to address concerns expressed by many Aboriginal stakeholders that the cultural values associated with artefacts which remain in construction areas have, in the past, typically been ignored in the conduct of post-salvage construction practices.</p>

23 European heritage

Volume 2 (Stage 1 Development), Chapter 20 (European heritage) of the draft EIS provided a review of the European heritage values in localities potentially affected by the development of the proposed Western Sydney Airport.

The chapter drew on an assessment, which was included as Appendix M2 (European and other heritage).

23.1 About the submissions on this chapter



Table 23–1 Submissions related to European heritage

Issue	Number of times the issue was raised	Percentage of total submissions
European heritage	37	0.7%

23.1.1 Origin of submissions

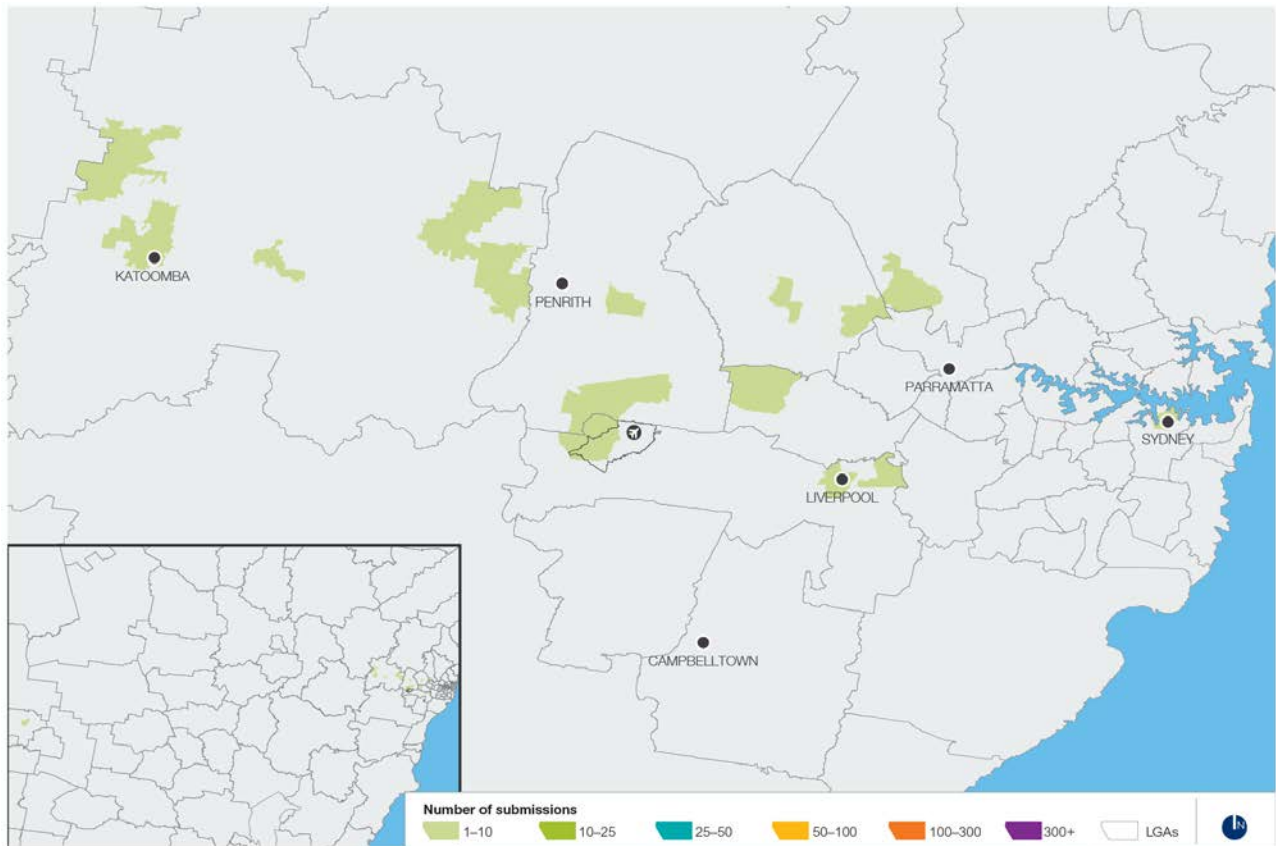


Figure 23–1 Map depicting origin of submissions in relation to Chapter 20 of the draft EIS

23.2 Summary and response

23.2.1 Overarching summary of submissions

The submissions that addressed European heritage generally contended that inadequate new research and survey was conducted for the draft EIS.

A submission also indicated that the heritage values of the area had been lost following acquisition by the Commonwealth Government.

The key themes from the submissions are summarised under the following headings:

- adequacy of assessment;
- cemetery relocations;
- management of impacts; and
- impacts on offsite heritage places.

The submission comments are summarised and addressed in section 23.2.3.

23.2.2 Overarching response to issues raised

Following publication of the draft EIS, the European heritage assessment was updated to reflect the adjustment of the Stage 1 construction impact zone to better reflect construction activities. The adjustment of the construction impact zone did not significantly alter the findings of the European heritage assessment.

The European heritage assessment was also updated to assess the high intensity approach lighting zones which affect part of McGarvie Smith University Farm outside the airport site.

The revised assessment is presented in Chapter 20 (Volume 2a) and Appendix M2 (Volume 4).

23.2.3 Issues and responses

Theme	Stakeholders	Summary of issue	Response
Adequacy of assessment	Residents	<p>Local European history</p> <p>Submissions raised concerns regarding the overall adequacy of the European heritage assessment. The need for more research into early colonial history and heritage in the Badgerys Creek, Luddenham and Bringelly area was highlighted. Other submissions stated that the European heritage assessment was adequate and thorough, building upon earlier studies of the airport site and surrounds.</p>	<p>The European heritage assessment was undertaken in accordance with the relevant legislation and guidelines including:</p> <ul style="list-style-type: none"> • Guidelines for the content of the draft EIS; • EPBC Act and associated heritage management principles; and • Commonwealth and State heritage significance criteria. <p>A European and Other Heritage Construction Environmental Management Plan (CEMP) will be prepared prior to Main Construction Works. Some proposed measures, while recorded in the CEMP, are expected to be implemented before the plan is approved as structures may be demolished and/or removed as part of Preparatory Activities. The CEMP will detail specific measures to mitigate and manage impacts on heritage values, including requirements for further archaeological investigations, archival recording and other actions that will contribute to the collective knowledge and retention of the area's historic heritage. The preparation of an oral history will also be considered as a means of preserving the history of the site.</p>
Adequacy of assessment	Residents	<p>Location of local heritage sites</p> <p>Submissions queried the location information provided in the draft EIS for the vertical slab dairy (SA21) and Lawson's Inn (SA8).</p>	<p>Subdivision plans of the western and central portion of Luddenham Estate show an inn, known as John Lawson's Thistle Inn, on the western side of The Northern Road which is the eastern side of the current alignment of The Northern Road. The Inn was abandoned in the 1930s, and is likely to have been demolished thereafter.</p> <p>During the twentieth century the alignment of The Northern Road was changed. It is assumed that the location of Lawson's Inn, on the southern side of the (original) road alignment, was misinterpreted at the time of recording in the State Heritage Inventory, and this location error has been repeated ever since.</p> <p>Any archaeological deposits relating to the Inn would be located between the two alignments, which is now occupied by a plantation of Christmas trees.</p> <p>As identified above, the Inn is outside of the airport site. The southern alignment of Eaton Road (old alignment of The Northern Road) is the project area boundary.</p>

Theme	Stakeholders	Summary of issue	Response
Adequacy of assessment	Community group	<p>Heritage impacts on Bankstown and Camden Airports</p> <p>One submission expressed concerns that impacts on the heritage values of Bankstown and Camden airports have not been addressed adequately in the EIS. The submission stated that a serious curtailment of their operations would place in doubt the future of the airports and their heritage recognition and long term conservation.</p>	<p>Preliminary analysis by Airservices Australia indicates that the Stage 1 development of the proposed airport could be implemented without significant impact or change to current operations at Bankstown Airport. However, operations in the existing Bankstown and Camden flying training areas are expected to be affected by the new Western Sydney Airport control zone and adjacent controlled airspace. The proposed future airspace design will assess in detail how impacts on existing flying training areas can be managed and whether any changes to flight paths serving Bankstown Airport will be required in the longer term to enable the proposed Western Sydney Airport to meet expected demand. This process will include extensive consultations with airport operators and users. See Section 7.8, Chapter 7 (Volume 1) for further information about the future airspace and flight path design process.</p>
Management of impacts	Community group Residents	<p>Retain local heritage items</p> <p>Submissions questioned whether recommendations to retain or relocate the Badgerys Creek Public School, Gardiner Road farm complex and Vicary's Winery heritage places would be carried out. Submissions stated that moveable heritage items should be retained in the Luddenham area and preserved under best practice models.</p>	<p>As stated in Chapter 20 (Volume 2a), all buildings or structures associated with identified European heritage sites are proposed to be removed prior to Main Construction Works for the Stage 1 development. The feasibility of relocating specific heritage structures to offsite locations, including within the local area, will be investigated in the European and Other Heritage CEMP.</p> <p>Mitigation measures that will apply to the three heritage places mentioned include archival recording, staged demolition and the preparation of an inventory of moveable heritage items. The objective of these measures is to gain additional information about identified heritage items and to ensure that any new information is appropriately recorded and archived for future reference and research.</p>

Theme	Stakeholders	Summary of issue	Response
Management of impacts	Blue Mountains stakeholders Local Councils Residents	<p>Impacts on offsite heritage places</p> <p>Submissions expressed concerns about the potential impacts of aircraft noise on the ambience and amenity of offsite heritage places. The successful provision of noise attenuation to heritage buildings, such as Horsley Homestead in Horsley Park, was anticipated to be difficult and expensive. Penrith City Council contended that any noise attenuation works to heritage buildings in Luddenham would need heritage approvals including the supply of Statement of Heritage Impact reports.</p>	<p>The European heritage assessment found that impacts on offsite European heritage items are not expected to be significant and would not require implementation of management and mitigation measures.</p> <p>The difficulties of attenuating aircraft noise in heritage buildings are acknowledged. Based on the noise exposure contours modelled for the EIS, Horsley Homestead is not predicted to be impacted by aircraft operations to the extent that would warrant noise insulation measures based on previous programmes implemented at other Australian airports such as Sydney (Kingsford Smith) Airport and Adelaide Airport. The process and eligibility criteria for any noise attenuation works associated with aircraft overflight noise will be announced as part of the future airspace and flight path design process, which will be completed before the commencement of operations. Should any noise attenuation works be proposed for heritage buildings, they would be undertaken following detailed investigation and advice from a suitably qualified heritage architect.</p>
Management of impacts	Local Council	<p>European heritage management measures</p> <p>One submission expressed general support for the proposed European heritage management measures and provided recommendations and suggestions about specific measures.</p>	<p>Council's comments and recommendations on these matters will be taken into account in preparing the European and Other Heritage CEMP. Further consultations with Council are anticipated in developing the plan.</p>
Cemetery relocations	Residents Local Council	<p>Relocation of graves</p> <p>Submissions sought clarification of the consultation involved in the relocation of graves and confirmation of the cemeteries that would need to be moved at the airport site. Concern was expressed that any WW1 and WW2 soldiers are given a military funeral on re-interment.</p> <p>The submission from Liverpool City Council stated that the graves, together with their headstones and other grave furniture, should be relocated to a clearly defined and separate area of an existing cemetery. The submission suggested that heirloom plantings on the airport site could be used at the site for relocated graves. Council also recommended a detailed photographic inventory of all grave sites be made prior to any relocation.</p>	<p>The cemeteries that would be impacted by the airport's construction are those at St John's Anglican Church and Badgerys Creek Uniting Church. As indicated in Section 20.6, Chapter 20 (Volume 2a), cemeteries will be relocated in accordance with a Cemeteries Relocation Management Plan. The plan will involve identification of living relatives, executors, church groups or other relevant contacts, including the Department of Veterans' Affairs. These stakeholders will be consulted (where appropriate) regarding the exhumation process and the reburial site.</p> <p>Council's views are noted and will be considered in preparing and implementing the Cemeteries Relocation Management Plan</p>

24 Planning and land use

Volume 2 (Stage 1 Development), Chapter 21 (Planning and land use) of the draft EIS assessed the planning and land use impacts of Stage 1 of the Western Sydney Airport proposal.

The chapter drew on an assessment undertaken, which was included as Appendix N (Planning and land use).

24.1 About the submissions on this chapter



Table 24–1 Submissions related to planning and land use

Issue	Number of times the issue was raised	Percentage of total submissions
Planning and land use	114	2.3%

24.1.1 Origin of submissions

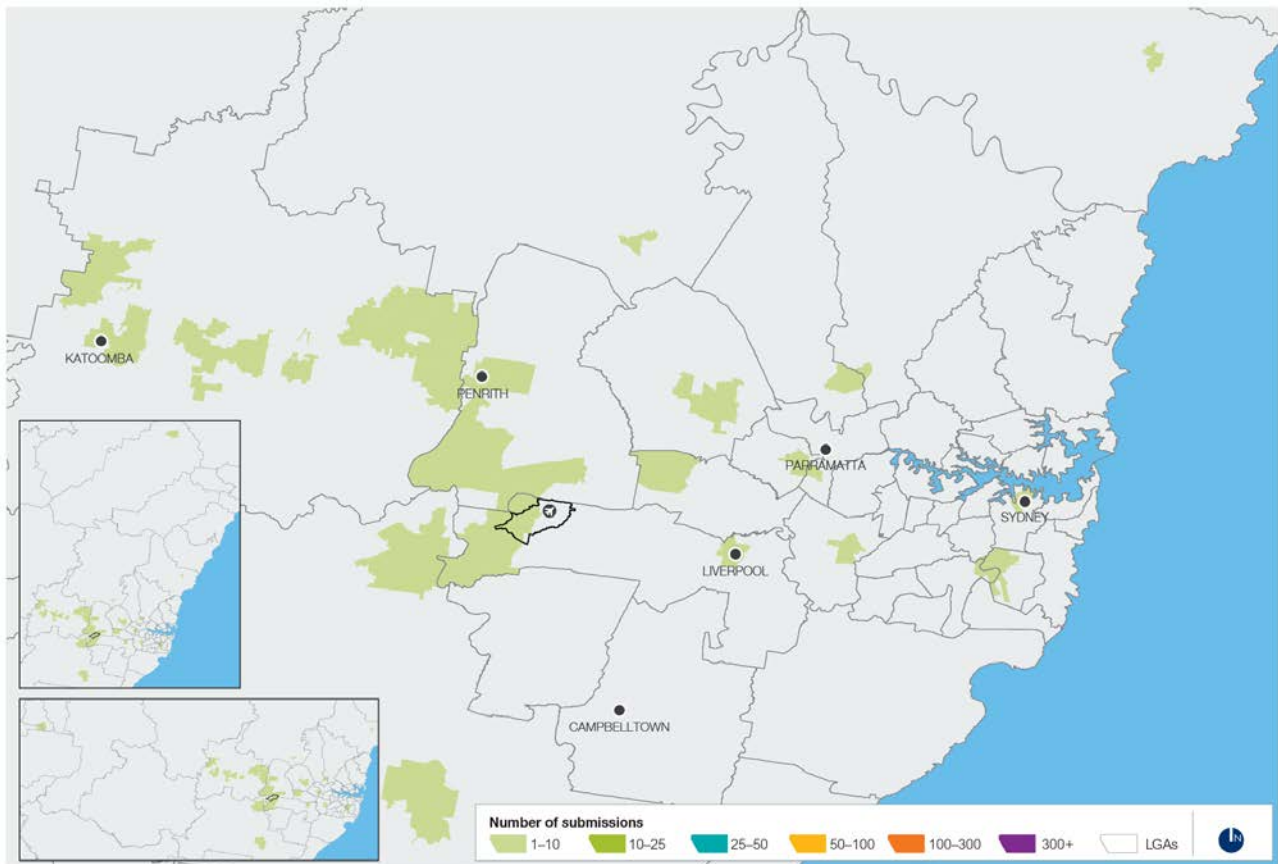


Figure 24–1 Map depicting origin of submissions in relation to Chapter 21 of the draft EIS

24.2 Summary and response

24.2.1 Overarching summary of submissions

Submissions discussed the need for a detailed master plan that looked at the relationship of the airport site with surrounding land uses, including potential impacts on surrounding landowners.

The key themes from the submissions are summarised under the following headings:

- airport master plan;
- coordinated planning and investment;
- future planning instruments;
- airport planning controls; and
- impacts on adjacent properties.

The submission comments are summarised and addressed in section 24.2.3.

24.2.2 Overarching response to issues raised

Following publication of the draft EIS, the planning and land use assessment was updated to reflect changes to planning initiatives such as the Western Sydney Employment Area, Western Sydney Priority Growth Area, South West Priority Growth Area, *A Plan for Growing Sydney* and the Greater Macarthur Priority Growth Area. The updated assessment also includes explanation of the acquisition of land for high intensity approach lighting zones, which will be carried out as ancillary developments under section 96L of the Airports Act. The revised assessment is presented in Chapter 21 (Volume 2a) and Appendix N (Volume 4).

24.2.3 Issues and responses

Theme	Stakeholders	Summary of issue	Response
Airport master plan	Local council	<p>Airport master plan</p> <p>A local council submission recommended that the Minister for the Environment should condition the airport to require a detailed master plan that considers:</p> <ul style="list-style-type: none"> • integrating the proposed airport with surrounding land uses; • creating a hub for employment, commerce and innovation; • future use and expansion of the proposed airport; • future development of the surrounding area; • potential urban heat island effects; and • sustainability measures including: <ul style="list-style-type: none"> ▪ environmental design ▪ selection of materials ▪ energy and water harvesting. 	<p>The proposed airport will be subject to the planning framework in the <i>Airports Act 1996</i>.</p> <p>Under the Airports Act, the Airport Lessee Company (ALC) will be required to prepare a master plan that is renewed every five years to provide a 20-year strategic vision for the airport that addresses future land uses, types of permitted development and noise and environmental impacts.</p> <p>Master plans include an environment strategy which sets out the ALC's objectives and proposed approach for managing environmental issues. It is the basis on which the Commonwealth measures the environmental performance of airports and the document by which airport tenants determine their environmental responsibilities.</p> <p>A master plan must also address the likely effect of proposed on-airport developments on the local and regional economy, and community. This includes an analysis of how proposed developments fit within the planning schemes for commercial and retail development in the area that is adjacent to the airport.</p> <p>For the proposed Western Sydney Airport, the ALC will be required to submit for approval a full master plan within five years of an airport lease being granted, or in such a longer period as approved by the Infrastructure Minister. Part 2 of the Airport Plan will provide the planning framework for the airport until the first master plan is in place.</p> <p>In addition, the Environmental Management Framework in Chapter 28 (Volume 2b) provides for the preparation of a Sustainability Plan by the ALC within six months of the grant of an airport lease, and provides for a range of sustainability measures to address the construction and operation of the proposed airport.</p>



Theme	Stakeholders	Summary of issue	Response
Coordinated planning and investment	Local councils Major land owners	<p>Infrastructure connections</p> <p>Submissions raised concern about the lack of a mechanism to ensure the delivery of infrastructure connections to the airport that would be complementary to the development of the Western Sydney Airport and the surrounding region.</p> <p>This included supporting infrastructure for the NSW Government's strategic plans for higher density development in key centres.</p> <p>Submissions also raised the need for:</p> <ul style="list-style-type: none"> • coordinated planning of the airport and other infrastructure including the Outer Sydney Orbital corridor, M12 Motorway and various rail connections; • planning of supporting infrastructure and services for the airport in a manner that is complementary to the development potential of surrounding land; and • a commitment at all levels of government to future investment for supporting infrastructure in Western Sydney including roads and public transport – and mechanisms to ensure that these infrastructure works are delivered on time. 	<p>The Australian and NSW governments are collaborating on major infrastructure planning for the development of the Western Sydney Airport and surrounding land uses.</p> <p>This planning includes the 10-year, \$3.6 billion Western Sydney Infrastructure Plan, a joint Australian and NSW government investment in major road infrastructure which will provide transport capacity in Western Sydney ahead of future traffic demand.</p> <p>In addition, since the release of the draft EIS, the Australian and NSW governments have commenced a Joint Scoping Study on the rail needs for Western Sydney, including the proposed airport. The study will consider the best options for future rail links, including decisions about timing and rail service options, both directly to the airport site and within the Western Sydney Region.</p>

Theme	Stakeholders	Summary of issue	Response
Coordinated planning and investment	Local councils Neighbouring properties Community groups Aviation industry Blue Mountains stakeholders Major adjacent landowners Peak body groups	<p>Rail connections</p> <p>Submissions raised issues regarding the provision of a rail connection for the Stage 1 development. It was suggested that the railway should link with other destinations and infrastructure including:</p> <ul style="list-style-type: none"> • Sydney CBD; • Parramatta CBD; • Sydney Airport; • South West Rail Link; • Main Western Rail Line; and • various new or extended metro and heavy rail connections connecting with other regional destinations including Liverpool, Leppington, Macarthur and Rouse Hill. <p>Other issues in submissions relating to a rail connection to the airport included:</p> <ul style="list-style-type: none"> • the provision of a rail connection would provide planning certainty and catalyse the benefits of expected population and employment growth; • if a rail connection is not provided for Stage 1 of the proposed airport then a rail corridor should be reserved; • land use scenarios were not presented in the EIS of the effect of fast rail in decentralising growth from Sydney to existing regional centres; and • fares should be structured to encourage use by airport users and staff. 	<p>Since the release of the draft EIS, the Australian and NSW governments have commenced a Joint Scoping Study on the rail needs for Western Sydney, including the proposed airport. The study will consider the best options for future rail links, including decisions about timing and rail service options, both directly to the airport site and within the Western Sydney Region.</p> <p>The Joint Scoping Study will also address the question of what it would take to have rail on the airport site by the time the airport is operational.</p> <p>Chapter 21 (Volume 2a) has been updated to include a description of the Joint Scoping Study.</p>

Theme	Stakeholders	Summary of issue	Response
Coordinated planning and investment	Local councils	<p>Fuel supply</p> <p>Submissions raised issues regarding the need and design of fuel supply to the airport. Particular sources and alignments raised in submissions included:</p> <ul style="list-style-type: none"> • pipeline to Clyde fuel terminal; • pipeline to Banksmeadow fuel terminal; • pipeline to RAAF Base Richmond; and • reliance on fuel trucks in the long term. <p>Submissions sought clarification on these fuel sources and alignments.</p>	<p>Fuel for the Stage 1 development would initially be supplied by road tanker because the demand for fuel is not expected to be high enough to justify the construction of a dedicated fuel delivery pipeline.</p> <p>A fuel supply pipeline is likely to be established in response to increasing demand beyond Stage 1 and will be a commercial decision between the ALC and the fuel industry. The NSW Government has commenced initial investigations to identify a potential fuel pipeline corridor, with a view to reserving the required land. The reservation of a corridor and subsequent construction is outside the scope of this EIS. Construction of a fuel pipeline will be subject to a separate assessment and approval process. This also includes obtaining permits providing the right to operate the pipeline.</p>
Coordinated planning and investment	<p>NSW Government</p> <p>Local councils</p> <p>Neighbouring properties</p> <p>Major adjacent landowners</p> <p>Aviation industry</p>	<p>Coordinated planning and investment</p> <p>Submissions commented on the need for a mechanism to deliver integrated planning outcomes for the airport and the surrounding region.</p> <p>Submissions recommended the following actions to ensure coordinated planning outcomes:</p> <ul style="list-style-type: none"> • cooperation between the Australian Government, NSW Government and local governments in amending planning instruments and legislation; • instatement of a planning authority for development surrounding the airport site that integrates the Australian Government, NSW Government and local governments, while seeking input from the private sector and relevant landholders; • cooperative development of a land use strategy and master plan for development surrounding the airport site by the Australian Government and NSW Government – including a strategy for the delivery of supporting services such as water and sewerage; • ongoing modelling of the long term relationship of the proposed airport with the surrounding region, including urban and transport plans, and other airports. 	<p>The development of the proposed airport would change the existing character of Badgerys Creek and surrounding land uses. The potential for this change has been integrated into Commonwealth, NSW and local government strategic planning for the area over several decades.</p> <p>The Australian Government will continue to work closely with State government agencies and local councils to ensure regional and local land use planning and other major development schemes complement the future operation of the proposed airport and that its infrastructure service needs are met.</p> <p>The Airport Plan Land Use Plan was prepared with consideration of the following:</p> <ul style="list-style-type: none"> • Australian Government legislation and regulation; • National Airports Safeguarding Framework (NASF); • Protection of Operational Airspace Surfaces; • NSW Government legislation; • State Environmental Planning Policies; • Local Planning Policies; • Strategic documents including: <ul style="list-style-type: none"> ▪ A Plan for Growing Sydney (the Metropolitan Plan); ▪ South West Priority Growth Area; and ▪ Western Sydney Employment Area. • Infrastructure projects including: <ul style="list-style-type: none"> ▪ Western Sydney Infrastructure Plan;

Theme	Stakeholders	Summary of issue	Response
			<ul style="list-style-type: none"> ▪ South West Rail Link Extension; ▪ Outer Sydney Orbital; and • Local government land use planning. <p>For the Western Sydney Airport, the ALC will be required to submit for approval a master plan within five years of an airport lease being granted, or in such a longer period as approved by the Infrastructure Minister. An airport master plan is a 20-year strategic vision for the airport site that is renewed every five years. A master plan must consider the airport's proposed development on the local and regional economy and community. This includes an analysis of how the airport fits within the planning schemes for commercial and retail development in the area. The ALC must invite public comments on the draft master plan before it is submitted for approval by the Infrastructure Minister.</p>
Coordinated planning and investment	Aviation industry Peak body groups	<p>Freight connections</p> <p>Submissions raised issues regarding the provision of freight connections to the airport.</p> <p>Submissions stated that planning should be undertaken into:</p> <ul style="list-style-type: none"> • freight connections to and from the airport; • freight connections to freight generation points in surrounding employment areas and to support agricultural airfreight export opportunities; • identifying the demand for compatible freight land use zones and the road access to these; and • protecting freight connections and freight generation points from urban encroachment. <p>Submissions also stressed the importance of aligning airport planning with the access needs of domestic and international freight services including the proposed airport's relationship with the proposed Moorebank intermodal terminal.</p>	<p>A significant amount of road improvement works is proposed as part of the Western Sydney Infrastructure Plan, in addition to those identified in the Western Sydney Employment Area and South West Priority Growth Area. These upgraded roads are expected to provide sufficient capacity to cater for the passenger, employee and freight traffic likely to be generated by the proposed airport.</p> <p>Consideration of domestic and international freight connections to and from the airport and sources and volumes of freight is included in the revised draft Airport Plan and indicative site layout for the proposed airport.</p>

Theme	Stakeholders	Summary of issue	Response
Coordinated planning and investment	NSW Government Local councils Neighbouring properties Major adjacent landowners	<p>Commercial uses on the airport site</p> <p>Submissions raised issues regarding the effect of proposed commercial uses at the airport site on surrounding commercial areas and regional centres. It was noted that the commercial land available on the airport site would be a competing commercial centre and recommended that an economic impact assessment be undertaken to quantify the potential impacts of these commercial uses.</p> <p>Submissions suggested that commercial areas of the airport site instead be used for aviation related land uses, while other commercial uses such as offices and retail are reserved for employment lands outside the airport site. It was also proposed that planning controls be implemented to restrict the type and scale of retail, commercial and industrial land uses.</p>	<p>An economic analysis is included in Appendix P3 (Volume 4). The analysis provides an assessment of economic and employment impacts of the project for the construction and operation of the Stage 1 development as well as operations of the proposed airport in the long term (2063). In particular, the operational land use impact assessment considers how the proposed airport could potentially deliver jobs to Western Sydney in the form of direct employment, onsite business park employment and offsite employment due to flow-on impacts.</p> <p>As discussed in Chapter 24 (Volume 2a), Stage 1 operations are expected to generate approximately \$77 million in value-add for Western Sydney and result in economic benefits for business in regions surrounding the airport site. In 2031, the proposed airport could generate an additional \$27 million in profits for businesses in Western Sydney and \$42 million in increased profits for businesses in the rest of Sydney.</p> <p>The economic assessment in the EIS is based on the indicative proposed land uses in the revised draft Airport Plan. Proposed land uses will be developed further in the future through the airport master plan process. The ALC will be required to submit for approval a master plan within five years of an airport lease being granted, or in such a longer period as approved by the Infrastructure Minister. The master plan process, which will include consultation with surrounding landholders, the NSW Government and local governments to ensure commercial development is aligned with airport planning and has due regard to the potential for any conflict with proposed land uses within employment lands outside the airport site.</p> <p>The Stage 1 development does not propose any specific commercial development on the airport site. Any such development would be subject to separate approval requirements under the Airports Act.</p>

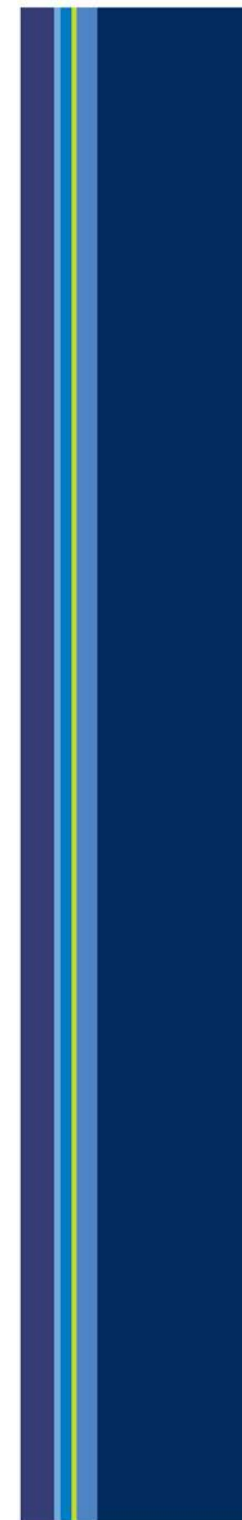
Theme	Stakeholders	Summary of issue	Response
Coordinated planning and investment	Council Peak body groups	<p>Business park</p> <p>Submissions noted the impacts of a business park on the airport site and the surrounding region.</p> <p>Specific issues raised included:</p> <ul style="list-style-type: none"> the traffic generated by business park employment should not have been excluded from the traffic assessment; the relationship between the business park and its range of land uses (hotels, bulky goods and manufacturing) to the type of future land use zones and demand within the local area and region should be examined; the business park planning should be done in conjunction with the NSW Government to ensure integrated planning outcomes; and the Airport Plan should identify the scope of services, business colocation and retail opportunities available. <p>Submissions also noted that the business park would be consistent with existing airport legislation and contribute to transparency of the environmental assessment process in identifying both positive and negative impacts of the proposed development.</p>	<p>Future development of the business park would be subject to the relevant approval requirements in the Airports Act. Traffic generation, land use interfaces and other impacts of any future business park proposal would be considered prior to determination of any request for approval. Relevant local councils and NSW Government agencies would be consulted as necessary.</p> <p>In addition, the ALC will be required to submit for approval a master plan within five years of an airport lease being granted, or in such a longer period as approved by the Infrastructure Minister. The master plan process will include consultation with surrounding landholders, the NSW Government and local governments to ensure commercial development is aligned with airport planning and has due regard to the potential for any conflict with proposed land uses within employment lands outside the airport site.</p>

Theme	Stakeholders	Summary of issue	Response
Coordinated planning and investment	Local councils Major adjacent landowners	<p>Development around the airport site</p> <p>Submissions stated that the proposed airport would create pressure to rezone land surrounding the airport site and that a single access point to the airport would limit the impact and viability of the surrounding area.</p> <p>A submission recommended a land use strategy should be developed to take into account the surrounding land uses around the airport site and to identify that the transition of rural land to urban land should be desirable to the east, north and north-west of the proposed airport. It was noted that land to the west of the airport should be investigated as it is constrained by aircraft noise; but until planning is complete it would be difficult to support rezoning of rural lands west of the proposed airport.</p> <p>Submissions from adjacent landholders requested future consultation to ensure commercial development of their land is aligned with airport planning.</p>	<p>Land uses surrounding the airport site have commenced transition from rural to employment generating land uses under the provisions of <i>State Environmental Planning Policy (Western Sydney Employment Area) 2009</i>. It is expected that future strategic land use planning by the NSW Government (including the Greater Sydney Commission) and local councils will continue to manage land use change in the area, under the provisions of Parts 3 and 3B of the NSW <i>Environmental Planning and Assessment Act 1979</i> (the EP&A Act), and that any future changes to land use controls in the area will require community and stakeholder consultation under the EP&A Act.</p>
Coordinated planning and investment	Local councils Major adjacent landowners	<p>Planning controls – Growth Centres</p> <p>Submissions raised the lack of clarity and discussion between the proposed airport and the surrounding South West and North West Growth Centres. It was recommended that the NSW Government centres hierarchy be re-examined to take into account the proposed airport development.</p>	<p>Land use planning for Western Sydney has had regard to the impacts of a future airport at this location for the last few decades. Land use planning for the North West and South West Priority Growth Areas reflects this.</p> <p>The current regional plan for the Sydney region — A Plan for Growing Sydney — is administered by the Greater Sydney Commission. The plan, which includes the South West and North West Priority Growth Areas, takes account of the proposed airport.</p> <p>It is expected that future strategic land use planning by the NSW Government (including the Greater Sydney Commission) and local councils will continue to manage land use change in the area, under the provisions of Parts 3 and 3B of the NSW <i>Environmental Planning and Assessment Act 1979</i> (the EP&A Act), and that any future changes to land use controls in the area will require community and stakeholder consultation under the EP&A Act.</p>

Theme	Stakeholders	Summary of issue	Response
Future planning instruments	Aviation industry NSW Government Local councils Neighbouring properties	<p>Planning controls</p> <p>Submissions raised issues regarding the application of future planning instruments. Particular planning instruments identified included:</p> <ul style="list-style-type: none"> • Australian Standard 2021; • Australian Noise Exposure Forecast; • enforcement of the Obstacle Limitation Surface; • wind assessment of buildings; • National Airports Safeguarding Framework; • Procedures for Air Navigation Services – Aircraft Operations; • Precision Approach Path Indicator; • development of instruments to prevent incompatible development; and • strategic building height approval for the Sydney basin coordinated by the Australian Government to provide certainty for surrounding developments. <p>It was stated that the lack of clarity regarding the application of future planning instruments did not provide an understanding of the full extent of land use and planning restrictions, including comparison with existing planning controls established from the 1985 EIS.</p> <p>Acquisition, compensation and economic offsets from the Australian Government were requested to account for any further restrictions on development.</p> <p>Submissions requested early and regular consultation with other planning authorities to facilitate timely update of other planning instruments – including provision of relevant data such as OLS, PANS-OPS and Australian Noise Exposure Forecasts (ANEFs).</p>	<p>Part 12 of the Airports Act and the AEPR provide the framework for the protection of airspace around airports.</p> <p>The Airports Act defines any activity resulting in an intrusion into an airport's protected airspace to be a 'controlled activity', and requires that controlled activities cannot be carried out without approval. The Regulations provide for the Department or the airport operator to approve applications to carry out controlled activities, and to impose conditions on an approval.</p> <p>The development of the proposed airport would change the existing character of Badgerys Creek and surrounding land uses. The potential for this change has been integrated into Commonwealth, NSW and local government strategic planning for the area over several decades. This includes the implementation of planning controls around the airport site based on the noise exposure contours prepared for the Second Sydney Airport Site Selection Programme EIS in 1985.</p> <p>Future detailed planning around the airport site is expected to have regard to the outcomes of the detailed airspace and flight path design process, including the preparation of a long term ANEF for the proposed airport. This process will include a further referral under the EPBC Act and extensive community consultation (see Section 7.8, (Volume 1)).</p> <p>The Australian Government will continue to work closely with State government agencies and local councils to ensure regional and local land use planning and other major development schemes complement the future operation of the proposed airport and its infrastructure service needs are met.</p>

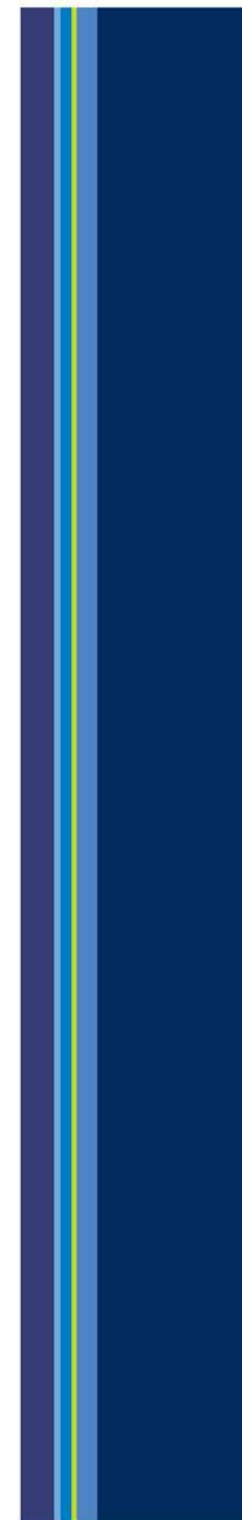
Theme	Stakeholders	Summary of issue	Response
Future planning instruments	Peak body groups Local councils	<p>Noise planning controls</p> <p>Submissions raised issues regarding the application of planning standards, policies and guidelines in regards to aircraft noise. Particular standards, policies and guidelines which were identified included:</p> <ul style="list-style-type: none"> • Australian Standard 2021; and • Australian Noise Exposure Concept (ANEC) contours. <p>Submissions stated that the EIS did not adequately explain the process of developing planning controls under the Australian Standard 2021, and the application of ANEC contours with existing NSW planning controls.</p> <p>Submissions also supported continuing use of AS 2021 and ANEC contours for the purposes of land use planning.</p> <p>It was recommended that the long term ANEC contours be used for land use planning and an evaluation of land use planning impacts due to ANEC contours be developed down to impacts onto individual dwellings.</p>	<p>Australian Standard 2021 <i>Acoustics – Aircraft Noise Intrusion – Building Siting and Construction</i> provides a framework for aircraft noise exposure around airports based on the Australian Noise Exposure Forecast (ANEF) system and is widely referred to in guiding strategic land use planning in the vicinity of airports. The National Airports Safeguarding Framework (NASF) includes guidelines relating to managing the impacts of aircraft noise.</p> <p>Chapter 3 (Volume 1) and Chapter 21 (Volume 2a) describe the existing and proposed land use arrangements in the vicinity of the airport site. Future detailed planning around the airport site is expected to have regard to the outcomes of the detailed airspace and flight path design process, including the preparation of a long term ANEF for the proposed airport. This process will include a further referral under the EPBC Act and extensive community consultation (see Section 7.8, (Volume 1)).</p> <p>The Australian Government will continue to work closely with State government agencies and local councils to ensure regional and local land use planning and other major development schemes complement the future operation of the proposed airport.</p>

Theme	Stakeholders	Summary of issue	Response
Future planning instruments	Local councils Neighbouring properties	<p>Long term coordinated strategic planning</p> <p>Submissions noted that the draft EIS should have been bolder in its assumptions of the long term development of Sydney not just limiting itself to known developments. It was also noted that although the Airport Plan identifies alignment with State and local government plans there is little information on how this would be achieved.</p> <p>Submissions sought more discussion on the long term strategic planning initiatives within the region and the impact these future land uses may have on the airport.</p> <p>Submissions recommended that strategic planning be carried out in consultation with NSW Government and local governments to:</p> <ul style="list-style-type: none"> • leverage economic outcomes; • coordinate planning of commercial areas at the airport with commercial areas in other economic centres in Western Sydney, the Sydney CBD and Global Economic Corridor; and • coordinate planning of the airport and other major development schemes including the South West Growth Centre Structure Plan, Broader Western Sydney Employment Area Structure Plan and Western Sydney Infrastructure Plan. 	<p>The current regional plan for the Sydney region — <i>A Plan for Growing Sydney</i> — includes the South West and North West Growth Centres and addresses the interaction between these strategic planning initiatives and the proposed airport.</p> <p>The Australian Government will continue to work closely with State government agencies and local councils to ensure regional and local land use planning and other major development schemes complement the future operation of the proposed airport.</p>



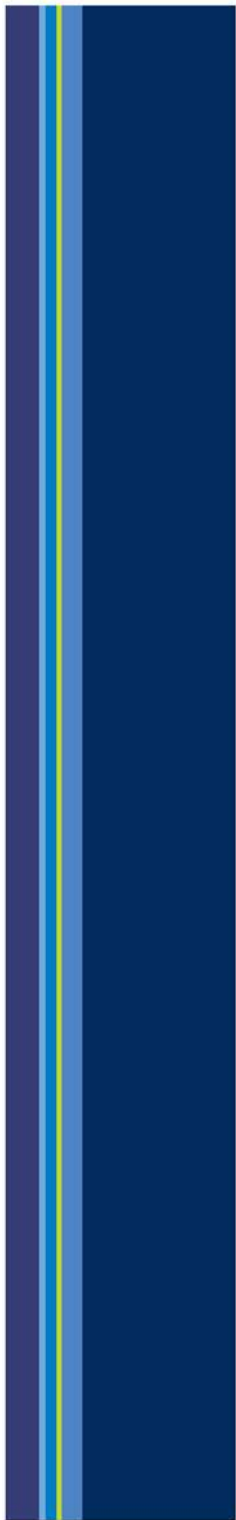
Theme	Stakeholders	Summary of issue	Response
Future planning instruments	Local councils Neighbouring properties Community groups Aviation industry Major adjacent landowners	<p>Scope of future planning instruments</p> <p>Submissions raised issues regarding the scope of future planning instruments with regard to the Stage 1 development and the long term development.</p> <p>Submissions were concerned about the impacts of identified public safety zones, ILS and critical glide slope areas on adjacent land uses. It was recommended that early regular consultation be undertaken to ensure land use planning conflicts are identified and resolved with stakeholder views taken into account.</p> <p>Some submissions stated that planning instruments should be enforced based on the Stage 1 development. Submissions also contended that the planning instruments should only be enforced for the long term development once a major development plan is approved, given its prospective nature.</p> <p>Other submissions stated that planning instruments should be enforced based on the long term development to prevent incompatible development in the short term.</p>	<p>The Australian Government will continue to work closely with State government agencies and local councils to ensure regional and local land use planning and other major development schemes complement the future operation of the proposed airport.</p> <p>Future land use planning instruments will continue to adapt to the changing land use requirements, as airport operations scale up and land uses change from rural to urban.</p>
Airport planning controls	Peak body groups Local Councils Aviation Group Freight industry ANO	<p>National Airports Safeguarding Framework</p> <p>Some submissions supported the National Airports Safeguarding Framework (NASF), while others expressed concern about its possible use in determining land use planning controls in areas around the airport site.</p> <p>Issues raised on the NASF included:</p> <ul style="list-style-type: none"> the potential for land use planning controls to impact greater areas than under existing planning controls through the adoption of the N noise metrics (e.g. N60s and N70s) in statutory planning controls; the need for the EIS to explain the extended impacts of adopting greater land use planning controls; that the draft EIS did not mention that NASF would influence land use planning; and that the NASF was not agreed to by all governments. <p>NASF was noted to be important for:</p> <ul style="list-style-type: none"> ensuring building structures would not create building wind 	<p>The NASF is a national guidance framework to assist planning around airports and is the responsibility of each jurisdiction to implement as appropriate. NASF was agreed to by all governments through the Standing Council of Transport and Infrastructure of the Council of Australian Governments (COAG) in 2012.</p> <p>It contains six guidelines including on managing the risk of intrusions into airspace, managing the risk of building generated windshear and turbulence, and managing wildlife strikes (see Section 21.5.2 (Volume 2a)).</p> <p>Specific recommendations to address bird and bat strike are discussed in detail in Section 14.6 (Volume 2a). A detailed technical study on bird and bat strike is contained in Appendix I (Volume 4).</p> <p>NASF supports the continued use of the ANEF System and the AS 2021 for land use planning purposes but acknowledges that a complementary suite of noise metrics (e.g. N60s and N70s) would better inform strategic planning and community engagement. The land use planning management measures identified in the EIS are consistent with this use of the NASF and AS 2021.</p>

Theme	Stakeholders	Summary of issue	Response
Airport planning controls	Peak body groups	<p>shear or turbulence close to the airport;</p> <ul style="list-style-type: none"> • providing protection from off airport development and residential encroachment; • preventing future restrictions on the operation and growth of the proposed Western Sydney Airport; • improving community amenity by minimising noise sensitive developments; • underpinning strategic land use planning decisions to ensure both runways are protected; • the implementation of public safety zones; and • managing airspace intrusions into the protected airspace of the airport. <p>A submission stated that the draft EIS did not provide enough information on actions to manage bird and bat strike land uses in the surrounding airport, which is a NASF guideline.</p> <p>Some submissions considered that aircraft noise impacts are ultimately an unavoidable consequence of aircraft operations in urban environments and a balance would need to be achieved between community amenity and infrastructure development.</p> <p>Mitigation measures</p> <p>Submissions did not support the creation of a consultation forum for the noise management plan. The forum was construed as a new and unjustified national planning body.</p>	<p>The Australian Government expects all Federally-leased airports to establish a Community Aviation Advisory Group (CACG) to ensure appropriate community engagement on matters relating to airport planning and operations. These are permanent bodies that enable concerns to be raised and taken into account by an ALC. The CACG is not an arbitration or decision making body.</p> <p>Once appointed, the ALC of the proposed airport will be expected to establish a CACG prior to the commencement of operations. In the meantime, the Department of Infrastructure and Regional Development will lead a detailed airspace and flight path design process for the proposed airport. The Department intends to establish a community and stakeholder reference group to facilitate community and other input into the planning, design and assessment of airspace concepts prior to implementation of a final design. Similar to the purpose of CACGs, this reference group will not be a decision making body, but will play a critical role in bringing community and stakeholder views and concerns to the attention of the expert steering group overseeing the airspace and flight path design process.</p>



Theme	Stakeholders	Summary of issue	Response
Impacts on adjacent properties	Residents	<p>Planning controls</p> <p>Submissions stated that there is a need for strict planning controls around the proposed site to maximise the use of available land and associated economic benefits. Suggestions from community members included considerations for long term planning efforts such as underground high voltage powerlines, shopping precincts, and business parks.</p>	<p>The Australian Government will continue to work closely with State government agencies and local councils to ensure regional and local land use planning and other major development schemes complement the future operation of the proposed airport. This will include consideration of the need for future easements for utility requirements.</p>
Impacts on adjacent properties	Residents	<p>Changing nature of the region</p> <p>Submissions from adjacent landholders expressed concerns about the proposed development spilling over onto their land holdings.</p>	<p>The airport site covers about 1,780 hectares of Commonwealth owned land at Badgerys Creek and construction of the Stage 1 development impacts about 1,150 hectares within this site. It is anticipated that one or more easements would be acquired by the Commonwealth for operational and safety reasons. If future needs require, any additional land would be acquired under the <i>Lands Acquisition Act 1989</i>, which contains a framework for acquisition of land including compensation arrangements.</p> <p>Formal consultation would be undertaken with landholders affected by additional acquisitions and or development restrictions.</p>
Impacts on adjacent properties	Major adjacent landowners	<p>Sydney Science Park</p> <p>A submission noted the planned rezoning of Sydney Science Park to B4 and B7 under the <i>Penrith Local Environmental Plan 2010</i> in mid-2016 to accommodate planned land uses under the <i>Sydney Science Park Master Plan</i> was not reflected in Figure 15–1 of the draft EIS.</p>	<p>The purpose of Figure 15-1 in Chapter 15 (Volume 2a) of the draft EIS was to present current zoning under the relevant local environmental plans.</p> <p>The planning proposal for Sydney Science Park at 565-609 Luddenham Road – including the proposed rezoning of the subject land to RE1 Public Recreation, B4 Mixed Use and B7 Business Park – is noted in Section 24.4.4 of Chapter 24 (Volume 2a).</p> <p>At the time of preparation of the final EIS, the subject land remained zoned as RU2 Rural Landscape as shown in the Penrith Local Environmental Plan 2010, the Penrith City Council Planning Information website and the NSW Planning & Environment Planning Viewer.</p> <p>It is acknowledged that Penrith City Council resolved to endorse the Sydney Science Park planning proposal in March 2016 and submitted the proposal to the Greater Sydney Commission in August 2016. However, until such time as Penrith City Council and the Greater Sydney Commission amend the Penrith Local Environmental Plan 2010, the zoning presented in the draft and final EIS remains accurate.</p>

Theme	Stakeholders	Summary of issue	Response
Impacts on adjacent properties	NSW Government Major adjacent landowners	<p>Land acquisition</p> <p>Submissions raised issues regarding the potential acquisition of properties and easements adjacent or close to the airport site. Submissions from some landholders noted that formal consultation had not taken place with regard to potential acquisition of adjoining land and requested that this consultation take place.</p> <p>Submissions stated that consultation would be required to explain the need for acquisition or development restrictions, and potentially align the development with the intentions of the adjoining landholders including identification of opportunities for complementary development.</p> <p>Submissions stated that consultation was required about the following matters:</p> <ul style="list-style-type: none"> • allowance for ready access and control of infrastructure corridors by the NSW Government, including the future rail corridor traversing the airport site; • avoidance or limitation of acquisition on Lot 102 on DP 812653 through relocation of the proposed drainage basin or acquisition of an easement; • clarification on the potential for the acquisition of Lot 11 DP1092165 to obstruct neighbouring agricultural land uses; • clarification of the need to extend Lot 11 DP1092165 to accommodate for the high intensity approach lighting system; and • clarification of the need part of Lot 101 DP848215 and future tenure arrangements. 	<p>Acquisition of any additional land outside of the airport site would be undertaken in accordance with the <i>Lands Acquisition Act 1989</i>, which contains a framework for acquisition of land including compensation arrangements.</p> <p>Formal consultation would be undertaken with landholders affected by additional acquisitions or development restrictions.</p> <p>Particular matters raised regarding affected parcels of land and access provisions would be discussed directly with affected landholders.</p>



25 Landscape and visual amenity

Volume 2 (Stage 1 Development), Chapter 22 (Landscape and visual amenity) of the draft EIS reviewed the visual and landscape values for the airport site and surrounding locality. It also considered the visibility of the proposed airport from key vantage points in the surrounding locality and the potential impacts on the visual and landscape character of the area.

The chapter drew on an assessment undertaken, which was included as Appendix O (Landscape character and visual). In particular, this assessment considered the visual and landscape impacts associated with aircraft overflight, lighting from the airport site, and the visibility of buildings at the airport site.

25.1 About the submissions on this chapter



Table 25–1 Submissions related to landscape and visual amenity

Issue	Number of times the issue was raised	Percentage of total submissions
Landscape and visual amenity	170	3.4%

25.1.1 Origin of submissions

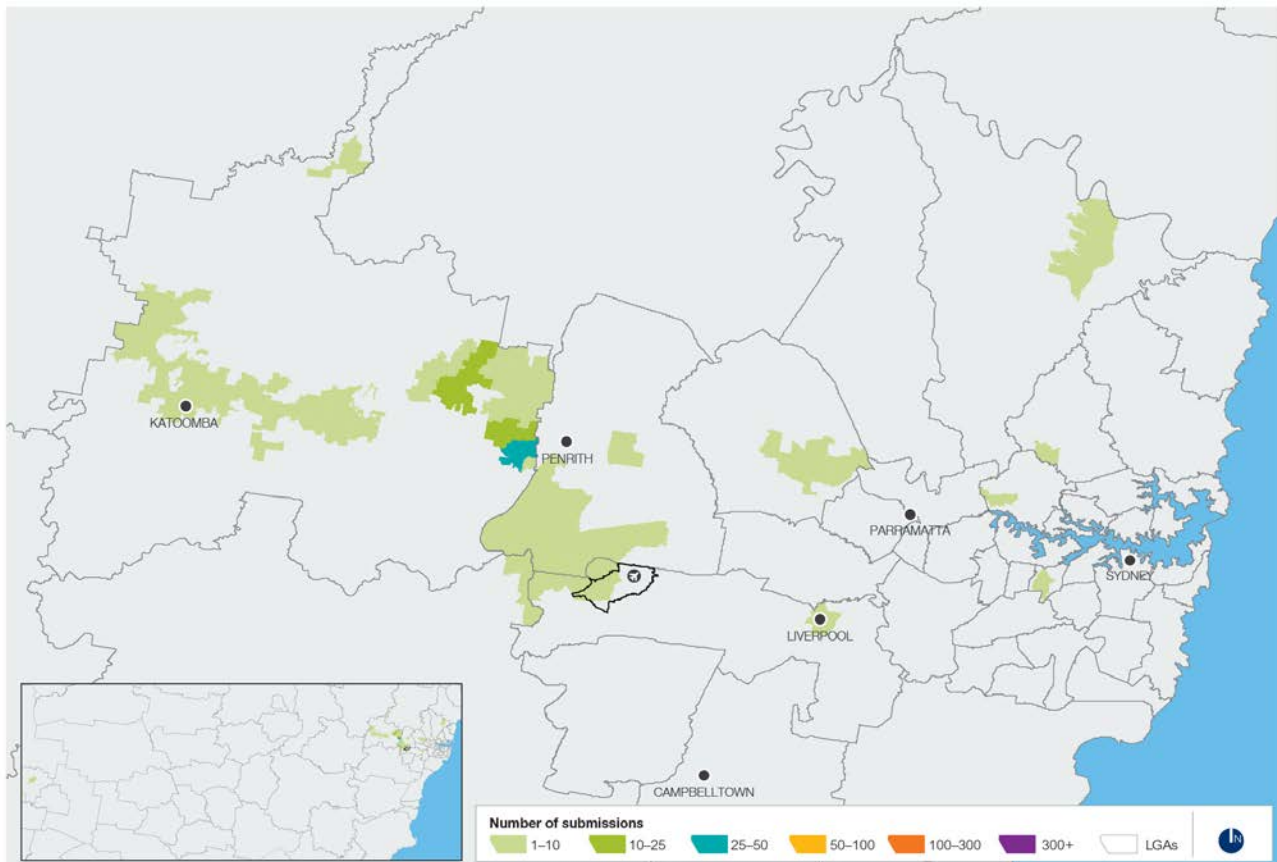



Figure 25–1 Map depicting origin of submissions in relation to Chapter 22 of the draft EIS

25.2 Summary and response

25.2.1 Overarching summary of submissions

Submissions on the draft EIS mainly addressed issues relating to the assessment methodology, the findings and potential impacts on the landscape and visual amenity.

A number of submissions raised the potential impacts that may arise from the construction and operation of the proposed airport on the natural landscape and visual amenity for communities within the area around the airport site and the Blue Mountains. Submissions suggested that the final EIS include more information on the potential landscape and visual impacts, including lighting, sky glow and aircraft light effects on the night sky over the Blue Mountains.



The key themes from the submissions are summarised under the following headings:

- methodology and assessment;
- overflights;
- landscape changes;
- lighting impacts; and
- environmental management.

The submission comments are summarised and addressed in section 25.2.3.

25.2.2 Overarching response to issues raised

Following publication of the draft EIS, the landscape and visual amenity assessment was updated to improve readability and reflect any changes to the finalised EIS. The revised assessment is presented in Chapter 22 of Volume 2a and Appendix O of Volume 4.

25.2.3 Issues and responses

Theme	Stakeholders	Summary of issue	Response
Methodology and assessment	Environmental groups	<p>Definition of visual catchment</p> <p>Submissions raised issues regarding the definition of the visual catchment within 10 kilometres of the airport site. Submissions stated that areas outside of this visual catchment would be affected, including elevated areas in:</p> <ul style="list-style-type: none"> • Silverdale; • Werombi; • Theresa Park; • St Marys; and • the Blue Mountains. 	<p>The landscape and visual amenity assessment described impacts from a representative selection of viewpoints. This approach is consistent with industry standards and guidance, including NSW Roads and Maritime Services <i>Practice Note – Guideline for Landscape Character and Visual Impact Assessment</i>, and Landscape Institute and Institute of Environmental Management and Assessment <i>Guidelines for Landscape Visual Impact Assessment</i>.</p> <p>As shown in Figure 22-2 (Chapter 22 (Volume 2a)), an area of theoretical visibility was generated. As listed in Table 22-1 (Chapter 22 (Volume 2a)), viewpoints were selected to represent the range of potential impacts that could occur. Viewpoints were selected based on duration of view, importance of the receptor location and number of potential viewers. Viewpoints were selected at a range of distances from the airport site up to about 14 kilometres.</p> <p>The subsequent assessment of impacts at the identified viewpoints is considered representative of the range of impacts that would potentially be experienced within areas of theoretical visibility.</p>



Theme	Stakeholders	Summary of issue	Response
Methodology and assessment	Environmental groups	<p>Impact classifications</p> <p>Submissions raised issues regarding the application of impact classifications at representative viewpoints. Submissions stated that the impact ratings underrepresented the level of impact that would be experienced at a number of locations, including:</p> <ul style="list-style-type: none"> • Luddenham village, Luddenham; • Badgerys Creek Road, Bringelly; • Silverdale Road, Silverdale; and • Mt Portal lookout, Blue Mountains. 	<p>Impact ratings assigned to representative viewpoints are considered to be appropriate and consistent with industry standards and guidance, including NSW Roads and Maritime Services <i>Practice Note – Guideline for Landscape Character and Visual Impact Assessment</i>, and Landscape Institute and Institute of Environmental Management and Assessment <i>Guidelines for Landscape Visual Impact Assessment</i>.</p> <p>The potential impact at Luddenham village was rated moderate-high. This is the second-highest impact rating in the landscape character and visual impact grading matrix (see Figure 22-1 of Chapter 22 (Volume 2a)). This impact rating is considered appropriate as the Stage 1 development would only be partially visible at a distance of one kilometre due to the partial restriction of views by the existing topography.</p> <p>The potential impact at Badgerys Creek Road was considered moderate due to obstruction of views by vegetation.</p> <p>The potential impact at Silverdale Road was considered moderate-low due to the potential for limited views in multiple instances as a result of aspect, topography and obstruction of views by vegetation.</p> <p>The potential impact at Mt Portal Lookout was considered negligible due to obstruction of views by topography and vegetation and the presence of existing views of developed areas.</p>
Overflights	Environmental groups Community groups Residents	<p>Overflights</p> <p>Submissions raised issues regarding the visual impacts of increased aircraft overflights, particularly in the Blue Mountains. Submissions stated that overflights from the proposed airport would be at significantly lower altitude than overflights from the existing Sydney Airport.</p>	<p>Impacts of overflight on the Blue Mountains were assessed in both Chapter 22 and Chapter 26 (Volume 2a).</p> <p>As stated in section 26.5.2.3 (Chapter 26 (Volume 2a)), overflights in the Greater Blue Mountains Area are generally expected to be at an altitude in excess of 5,000 feet above sea level and for most locations over 10,000 feet above sea level.</p> <p>As shown in Photograph 26-1 (Chapter 26 (Volume 2a)), flights at 3,000 feet are not visually prominent and would be even less prominent at higher elevations of 6,000 feet and above.</p>

Theme	Stakeholders	Summary of issue	Response
Landscape changes	Local councils Community groups Environmental groups Residents	<p>Landscape changes</p> <p>Submissions raised concerns about the overall visual impact the Stage 1 development would have on the landscape and character of the region, particularly due to land clearing on the airport site and from urban development in the broader region, as well as the transition of peri-urban landscape to more urban areas.</p> <p>Some submissions noted that, the size of the Stage 1 development would mean it is not possible to mitigate all landscape and visual impact but that the mitigation measures provided would help to reduce that impact.</p>	<p>It is acknowledged that the proposed airport would represent a broad scale visual change that would be visible from a number of viewpoints. However, as stated in the submissions, this change would occur within the context of the broader urbanisation of Western Sydney. Although the proposed airport would likely be a facilitator of development in and around the airport site, Western Sydney is considered to be urbanising independently of the proposed airport as evidenced by the additional one million residents expected by 2030.</p> <p>It is acknowledged that the visual impacts of the proposed airport cannot be entirely mitigated. Nonetheless the Visual and Landscape CEMP in Chapter 28 (Volume 2b) will promote the integration of the proposed airport into the landscape and work to reduce its visual impact.</p>
Lighting impacts	Local councils Environmental groups Residents	<p>Skyglow and light spill</p> <p>Submissions raised issues regarding the assessment of lighting impacts. Submissions stated that the proposed airport and facilitated development would generate lighting impacts and particularly aircraft light and sky glow that would affect:</p> <ul style="list-style-type: none"> • the local community; • the Aboriginal community; • visitors to the Blue Mountains; and • Linden Observatory in the Blue Mountains. <p>Submissions made the general comment that the assessment of the potential impacts of outdoor lighting on the airport site was inadequate.</p> <p>Some submissions raised concerns that lighting impacts may increase due to local incidences of fog and air pollution.</p>	<p>As described in Section 22.3.5.3 (Chapter 22, Volume 2a), the potential light spill and sky glow impacts of outdoor lighting would be minimal.</p> <p>Most outdoor lighting would have very limited light spill outside of the airport site and would be designed in accordance with AS 4280 Control of the obtrusive effects from outdoor lighting.</p> <p>High intensity approach lighting is designed to be seen from the sky but is not expected to contribute significantly to sky glow – particularly in the context of broader urbanisation in Western Sydney.</p> <p>The distance of the airport site from many surrounding receptors would also reduce any potential lighting impacts. Linden Observatory in the Blue Mountains is around 30 kilometres from the airport site.</p> <p>Light spill effects may be affected by a range of environmental conditions such as fog and/or pollution; however, these are difficult to measure due to a range of variables (such as time of day and distance) that can also be difficult to quantify and measure. It should be noted that these are specific environmental conditions that are generally only temporary and the visual effects (either beneficial or negative) are likely to be minor.</p>

Theme	Stakeholders	Summary of issue	Response
Landscape and visual amenity		<p>Visual impact mitigation</p> <p>Submissions made a number of recommendations to mitigate visual impacts. Particular measures that were recommended include:</p> <ul style="list-style-type: none">• retention of existing trees at the airport site;• screening planting along airport site perimeter fencing;• planting of locally endemic tree species at the airport site;• avoidance of severe or unnatural grade transitions or barriers;• retention and embellishment of natural areas at the airport site; and• low angle, cut off fittings to mitigate lighting impacts.	<p>As stated in Chapter 28 (Volume 2b), a Visual and Landscape CEMP will be developed. The CEMP will include a range of measures to mitigate visual impacts including tree planting, avoidance of severe cut and fill designs and lighting design.</p>



26 Social

Volume 2 (Stage 1 Development), Chapter 23 (Social) of the draft EIS assessed the likely social impacts of the construction and operation of the Stage 1 development of the proposed Western Sydney Airport (the proposed airport).

The chapter drew on three assessments undertaken, which were included as Appendix P1 (Social impact), P2 (Property values) and P3 (Economic analysis).

26.1 About the submissions on this chapter



Table 26–1 Submissions related to social

Issue	Number of times the issue was raised	Percentage of total submissions
Social	674	13.5%

26.1.1 Origin of submissions

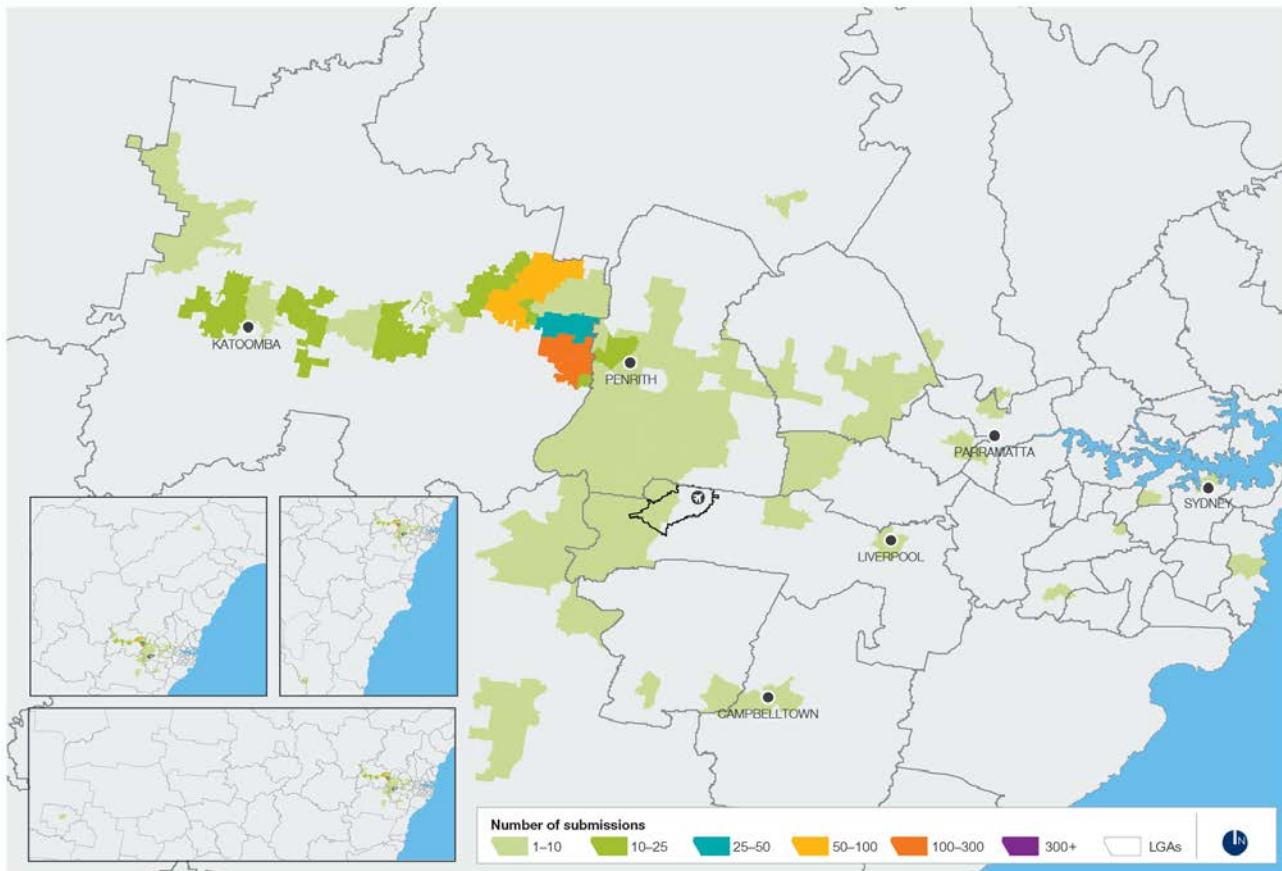



Figure 26–1 Map depicting origin of submissions in relation to Chapter 23 of the draft EIS

26.2 Summary and response

26.2.1 Overarching summary of submissions

Submissions were received from a range of stakeholders on the indicative nature of the proposed flight paths, noting that their use had led to uncertainty around the level of social and amenity impacts associated with the proposed airport.

A number of submissions raised an issue of perception of social equity between communities in Sydney and Western Sydney, particularly around the 24-hour operations at the proposed airport. Multiple submissions discussed mitigation measures that have been put in place at Sydney Airport and questioned whether similar measures would be put in place for the proposed airport. A number of submissions raised concerns about changes in housing prices, both positively and negatively. These issues relate to both social and economic impacts and have been addressed in both Section 26 (Social) and Section 27 (Economics) of this report.



The key themes from the submissions are summarised under the following headings:

- adequacy of assessment;
- employment;
- uncertainty of impacts;
- social equity;
- property prices/affordable housing; and
- realising and maximising benefits.

The submission comments are summarised and addressed in section 26.2.3.

26.2.2 Overarching response to issues raised

Following publication of the draft EIS, the social impact assessment was updated to improve readability and reflect finalisation of the EIS. Minor updates were also made to reflect updated information on planning initiatives, and infrastructure projects such as WestConnex.

26.2.3 Issues and responses

Theme	Stakeholders	Summary of issue	Response
Adequacy of assessment	Local councils	<p>Adequacy of assessment</p> <p>Submissions raised concerns over the adequacy of the social impact assessment in Chapter 23 and Appendix P1 of the draft EIS. Submissions noted that a number of adverse social impacts were identified in the assessment but questioned the rigor and detail of their consideration. In particular, submissions questioned the adequacy of:</p> <ul style="list-style-type: none"> • the significance of adverse social impacts to communities; • the implications of adverse social impacts to communities; • measures that may be applied to reduce social impacts; and • social impacts in other chapters of the EIS. 	<p>The social impact assessment presented in Appendix P1 (Volume 4) was undertaken in accordance with the EIS guidelines issued under the EPBC Act for the proposed airport and industry guidelines developed by the International Association for Impact Assessment.</p> <p>As explained in Section 2 and demonstrated in Section 6.11 of the social impact assessment (Appendix P1, Volume 4), the identified social impacts were assigned a significance rating – very low, low, medium, high or very high – based their assessed likelihood and consequence. The implications of the identified social impacts were discussed throughout Section 6 of the social impact assessment.</p> <p>Some of the key social impacts are triggered by amenity issues such as noise and air quality. These amenity issues were also separately assessed in dedicated chapters of the draft EIS (and their associated technical reports) – including noise in Chapter 10 and Chapter 11, air quality in Chapter 12 and visual amenity in Chapter 22 (Volume 2a).</p> <p>Measures to maximise social benefits and opportunities and reduce social impacts, as well as mitigation measures to reduce and manage primary impacts such as noise and air quality are discussed in Chapter 28 (Volume 2b).</p>
Adequacy of assessment	Residents Local councils	<p>Benefits and disadvantages</p> <p>Submissions expressed concern that the social and economic assessments undertaken for the draft EIS did not provide a balanced discussion, with disproportionate emphasis on the economic benefits of the proposed airport over its social impacts.</p>	<p>The social impact assessment presented in the EIS was undertaken in accordance with the EIS guidelines issued under the EPBC Act for the proposed airport and industry guidelines developed by the International Association for Impact Assessment.</p> <p>It is considered that the social impact assessment gives appropriate consideration to the social impacts of the proposed airport, including consideration of the social dimension of economic and employment benefits as well as impacts on amenity, lifestyle values, property values, housing, and social infrastructure.</p>

Theme	Stakeholders	Summary of issue	Response
Adequacy of assessment	Local Councils	<p>Translation of issues from the technical paper into the EIS</p> <p>Some submissions raised concerns about how aspects of the social impact assessment were carried from the technical report at Appendix P1 into the social chapters and the Executive Summary of the draft EIS. Submissions noted that the risk assessment in the social impact assessment identified a number of adverse impacts that were considered likely to occur but they had not been discussed in the relevant social chapters of the draft EIS. Submissions stated that the chapters in the draft EIS, as well as the Executive Summary, do not provide a full summary of the issues raised in the technical report and do not allow readers to fully appreciate the social impacts predicted</p>	Chapter 23 (Volume 2a) and the Executive Summary (Volume 1) of the final EIS have been updated with expanded analysis sourced from the social impact assessment at Appendix P1 (Volume 4).
Adequacy of assessment	Residents Local councils	<p>Geographic focus of assessment</p> <p>Submissions expressed concern that there is a strong focus in the draft EIS on regional and Australian economic benefits of the proposed airport, as distinct from any prospective local impacts. The social and economic impacts to centres within close proximity to the proposed airport, such as Luddenham or the South West Growth Centre were discussed little, if at all.</p>	The economic benefits of the proposed airport are necessarily described at a regional scale due to the nature of the economic modelling and impact assessment in Chapter 24 and Appendix P3 of the EIS. These benefits are further quantified for Western Sydney and the rest of Greater Sydney. For Western Sydney alone, the project is forecast to generate nearly \$80 million in incremental value-add per year, with higher productivity per worker, labour income and business profits by 2031. The social impact assessment presented in the draft EIS considered the social impacts of the proposed airport at both regional and local scales. Potential impacts to lifestyle and amenity at Luddenham, for example, are explicitly discussed in Section 6.5 of the social impact assessment in Appendix P1 (Volume 4).

Theme	Stakeholders	Summary of issue	Response
Adequacy of assessment	Local councils	<p>Response to stakeholder engagement</p> <p>Submissions suggested that the draft EIS be revised to include a summary consultation paper that details how the specific technical studies have addressed the issues raised during consultation with stakeholders. In addition the body of the EIS should identify the most appropriate mitigation measures to minimise community concerns.</p>	<p>The EIS documents the consultation undertaken through the social impact assessment, the preparation of the EIS generally, public exhibition on the draft EIS, and how this contributed to the content of the EIS.</p> <p>Consultation undertaken through the social impact assessment is outlined in Section 2.2.5 of Appendix P1 (Volume 4). Consultation involved stakeholders at multiple levels to gain a broad understanding of social issues relevant to the proposed airport. The stakeholders consulted included regional organisations, local governments, NSW Government agencies and the property manager at the airport site. Issues raised by stakeholders informed the social baseline described in Section 4 and Section 5 of the social impact assessment and subsequently the identification and assessment of social impacts.</p> <p>Other consultation undertaken during the preparation of the EIS is described in Chapter 8 (Volume 1). The chapter outlines the consultation activities undertaken, the issues that were raised, and how they have been addressed in the EIS.</p> <p>Issues raised by stakeholders during public exhibition of the draft EIS and how they have been addressed in the various technical assessments are summarised throughout this volume of the EIS.</p>
Adequacy of assessment	Major land owners Businesses Local councils	<p>Local job opportunities</p> <p>Submissions stated that construction and operation of the proposed airport should provide local job opportunities, allowing residents of Western Sydney to work close to home.</p>	<p>As discussed in Section 6.1 of the social impact assessment in Appendix P1 (Volume 4) and the economic assessment in Appendix P3 (Volume 4), the proposed airport would generate a number of jobs directly and indirectly. Direct jobs would include jobs involved in the construction of the proposed airport and the day to day operation of the proposed airport. Indirect jobs would be generated through industrial and consumption effects of the proposed airport.</p> <p>Chapter 28 (Volume 2b) contains a number of mitigation measures to maximise local job opportunities throughout construction and operation. In particular, employment targets will be developed within the Sustainability Plan to drive the uptake of local employment and equal opportunity employment. Consultation will occur with government agencies and local organisations in the community to inform them of local employment opportunities.</p>

Theme	Stakeholders	Summary of issue	Response
Adequacy of assessment	Major land owners Businesses Local councils	<p>Transfer and redistribution of impacts</p> <p>Submissions expressed concern that the draft EIS does not discuss the social or economic implications of the transfer of economic activity to Western Sydney from other areas in Sydney or the rest of Australia.</p>	<p>The EIS finds that the proposed airport would generate \$205 million in added value across Australia in 2031. This increase in economic activity would also be reflected in some redistribution of economic activity from other parts of Australia, amounting to a \$39 million reduction in value add in 2031.</p> <p>It was not within the scope or capability of economic modelling to predict the sources of this redistributed economic activity, particularly as it would depend on numerous economic factors at the time of airport operation. However, this redistribution of economic activity is not considered likely to affect any one particular region or community. It is also important to note that the proposed airport is nonetheless predicted to generate net economic benefit for Western Sydney, Greater Sydney and Australia.</p> <p>Overall, the proposed airport has the ability to help bridge the growth gap between Western Sydney and the rest of Sydney by providing a solid economic footprint during its construction and operation and making Western Sydney a more attractive place for people to live and work. It is predicted that firms will locate in Western Sydney as a result of the airport opening due to their ability to access a greater labour pool and investment opportunities. In particular, this will help diversify the existing industrial composition of Western Sydney by encouraging firms from a number of industries to cluster together, potentially leading to agglomeration benefits. Perhaps most importantly, the proposed airport is predicted to enhance the productivity of both firms and workers which in turn will boost the output and value-add of the region, as well as the rest of Sydney.</p>

Theme	Stakeholders	Summary of issue	Response
Adequacy of assessment	Major land owners Businesses Local Councils Residents	<p>Impacts on the Blue Mountains community</p> <p>Submissions expressed concern that the draft EIS did not assess the full range of social and economic impacts on Aboriginal Communities and Country in the Blue Mountains, the character of the Blue Mountains, and on the tourism and nature-based recreation sectors.</p>	<p>Impacts on the Greater Blue Mountains area and its communities are assessed in the Aboriginal heritage assessment in Chapter 19 (Volume 2a), the social impact assessment in Chapter 23 (Volume 2a), and in the specific Greater Blue Mountains assessment in Chapter 26 (Volume 2a). No significant impacts were found in the assessments of impacts on the Greater Blue Mountains and its communities.</p> <p>Section 19.6 (Chapter 19 (Volume 2a)) of the Aboriginal heritage assessment considers the impacts of overflight noise on the Aboriginal heritage values of the GBMWhA.</p> <p>Section 23.5.5.1 (Chapter 23 (Volume 2a)) of the social impact assessment considers the impacts of overflight noise on the recreational assets of the Greater Blue Mountains and hence their tourism value.</p> <p>Section 26.5 (Chapter 26 (Volume 2a)) of the Greater Blue Mountains assessment considers the impacts of overflight noise, air quality and general amenity on the values and character of the GBMWhA.</p> <p>As discussed in the economic assessment in Appendix P3 (Volume 4) and Chapter 24 (Volume 2a) of the EIS, the proposed airport would generate economic benefits for Western Sydney – including the Blue Mountains community. The proposed airport has the potential to increase tourism to the Greater Blue Mountains area and lead to associated benefits in this industry.</p>

Theme	Stakeholders	Summary of issue	Response
Adequacy of assessment	Residents Local councils	<p>Impacts on social cohesion</p> <p>Submissions expressed concern that the proposed airport would restrict access across the local area and that any resulting physical and perceived impacts on community and cultural connections have not been considered.</p>	<p>The social impact assessment at Appendix P1 (Volume 4) has identified, analysed and assessed the impacts of the transition of the Western Sydney region from a semi-rural area to a more urbanised land use, amenity and character. Transport connectivity within the area and with other parts of Sydney is addressed in the traffic, transport and access assessment (Appendix J, Volume 4) which outlines the investment plans for transport infrastructure in Western Sydney.</p> <p>The development of the proposed airport has been integrated into Commonwealth, NSW Government and local government strategic planning for Western Sydney over several decades.</p> <p>The Australian Government will continue to work closely with the NSW Government and local government to ensure land use planning and development is coordinated and complementary to the future operation of the proposed airport.</p> <p>This commitment to coordinated planning would include consideration of the impacts of the proposed airport on regional connectivity.</p> <p>Consideration of cultural connection to the airport site has been assessed in the Aboriginal heritage assessment in Chapter 19 and the European Heritage Assessment in Chapter 20 (Volume 2a).</p>
Adequacy of assessment	Residents Local councils	<p>Health impacts on the local community</p> <p>Submissions expressed concern that the perceived or actual social impacts of the proposed airport on community health should be evaluated.</p>	<p>A specialised health risk assessment is included as Appendix G (Volume 4) and presented in Chapter 13 (Volume 2a). The assessment predicts the health risks associated with associated with impacts to noise, air (including ozone) and water.</p> <p>The risk assessment found that health risks associated the proposed airport would largely be acceptable in reference to national and international standards and would be reduced further with the implementation of the mitigation and management measures outlined in Chapter 28 (Volume 2b).</p>

Theme	Stakeholders	Summary of issue	Response
Adequacy of assessment	Residents Local councils	<p>Change from semi-rural to urban locality</p> <p>Submissions expressed concern that the draft EIS did not address the social implications of the locality around the proposed airport changing from a semi-rural and low density residential area to a more urbanised one and the resulting effect on green space and recreational resources.</p>	<p>The proposed airport is one of multiple proposed developments that reflect the broader urbanisation of Western Sydney, including the developments contemplated by the:</p> <ul style="list-style-type: none"> • South West Growth Centre Structure Plan; • Broader Western Sydney Employment Area Structure Plan; and • Western Sydney Infrastructure Plan. <p>The social impact assessment at Appendix P1 (Volume 4) has identified, analysed and assessed the impacts of the transition of the Western Sydney region from a semi-rural area to a more urbanised land use, amenity and character.</p> <p>As acknowledged in Section 21.7.1.4 of the land use and planning assessment in Chapter 21 (Volume 2a), the proposed airport would involve the removal of Badgerys Creek Park – while other recreational resources and green spaces could potentially be affected by aircraft overflight noise and visual impacts.</p> <p>The protection and creation of recreational resources would be a key part of future regional planning in Western Sydney in the context of broader urbanisation. The Australian Government continues to work closely with NSW Government agencies, local government, and stakeholders to ensure land use planning and development is coordinated and complementary to the future operation of the proposed airport.</p>

Theme	Stakeholders	Summary of issue	Response
Adequacy of assessment	Local councils	<p>Impacts on social infrastructure</p> <p>Submissions expressed concern that the draft EIS did not consider the impact on social services in the locality of the proposed airport due to the increase in population and employment.</p>	<p>The social impact assessment presented in Appendix P1 (Volume 4) and summarised in Chapter 23 (Volume 2a) of the EIS considers the potential impacts of the proposed airport on social infrastructure such as shops, health services, recreation and leisure services.</p> <p>The social impact assessment acknowledges that planning is currently underway by the NSW Government and relevant local councils to determine what is required to service the existing and future populations of the areas already identified for new growth. This planning is reflected in part through the establishment of various priority growth areas and land release areas.</p> <p>Due to the announcement in April 2014 that Badgerys Creek will be the site of the proposed airport, the impact of the proposed airport on future population growth is the subject of ongoing consideration and analysis by the relevant agencies and councils. As a facilitator of development in Western Sydney, the proposed airport may result in the following changes to the expected population growth:</p> <ul style="list-style-type: none"> • a faster rate of population growth; • a greater increase in population overall; • changes in the expected profile of future residents and workers; and • changes in the distribution of population growth across the region with some locations experiencing more or less growth (or faster or slower growth) than previously anticipated. <p>All of these factors would take place within the context of the continuing transformation of Western Sydney. Taken together, these factors would impact on social infrastructure planning and provision, and therefore on the lives of Western Sydney residents and workers. To meet the increasing demand, NSW Government agencies and councils will need to plan for the appropriate, timely and well-located provision of social infrastructure for Western Sydney communities, to meet the future needs for both the proposed airport workforce and overall growth in Western Sydney.</p>

Theme	Stakeholders	Summary of issue	Response
Assessment methodology	Residents Local councils	<p>Definition of study area and geographic focus of assessment</p> <p>Submissions expressed concern that there is a strong focus in the draft EIS on regional and Australian economic benefits of the proposed airport, as distinct from any prospective local impacts. The social and economic impacts to centres within close proximity to the proposed airport, such as Luddenham or the South West Priority Growth Area are discussed only a little, if at all.</p> <p>Some submissions questioned how the local study area was identified and defined. In particular, submissions stated that it wasn't clear why all suburbs in the local study area weren't explicitly identified and assessed (for example, Cecil Park).</p>	<p>The economic benefits of the proposed airport are necessarily described at a regional scale due to the nature of the economic modelling and impact assessment in Chapter 24 (Volume 2a) and Appendix P3 (Volume 4) of the EIS.</p> <p>The social impact assessment presented in Chapter 23 (Volume 2a) and Appendix P1 (Volume 4) of the EIS considered the social impacts of the proposed airport at both regional and local scales. Potential impacts to lifestyle and amenity at Luddenham, for example, are explicitly discussed in Section 6.5 of the social impact assessment in Appendix P1 of the EIS.</p> <p>The local social study area was defined based on impact areas identified in the noise, air quality and traffic and transport impact assessments. Impacts on suburbs not explicitly identified can be inferred from the impact assessment on adjacent suburbs.</p>
Employment	Residents Local councils	<p>Impacts on agriculture</p> <p>Submissions expressed concern over the proposed airport's potential impacts on agriculture in the local area, particularly the potential loss of employment from the relocation of agricultural related industries and the Sydney region's access to fresh food.</p>	<p>As stated in Section 21.4 of the land use and planning assessment in Chapter 21 (Volume 2a), the airport site includes some agricultural land used for cattle grazing and agriculture. The proposed airport represents a loss of the current and future agricultural productivity of this land.</p> <p>The loss of this agricultural productivity would be part of a larger trend in the context of the broader urbanisation of Western Sydney, which includes other extensive rural lands. This trend is recognised in the Department of Primary Industries' <i>Industry Action Plan for Agriculture</i> which, along with other local and regional planning initiatives, is expected to manage this transition.</p>
Employment	Residents Peak bodies Community groups Local councils	<p>Local employment opportunities</p> <p>Submissions noted that localised Western Sydney employment opportunities should be provided for the construction and operation of the proposed airport to support local businesses.</p>	<p>The proposed airport would create jobs for both Western Sydney and Greater Sydney. A large number of jobs would be generated locally including direct employment during construction and operation as well as employment provided by business park areas at the airport site as described above.</p> <p>Chapter 28 (Volume 2b) contains a number of mitigation measures to maximise local job opportunities throughout construction and operation. In particular, employment targets will be developed within the Sustainability Plan to drive the uptake of local employment and equal opportunity employment. Consultation will occur with government agencies and local organisations in the community to inform them of local employment opportunities.</p>

Theme	Stakeholders	Summary of issue	Response
Uncertainty of impacts	Residents Local councils	<p>Indicative nature of flight paths</p> <p>Submissions received from a range of stakeholders expressed concern over the indicative nature of the proposed flight paths, noting that it has led to uncertainty around the level of social and amenity issues associated with the proposed airport</p>	<p>The indicative flight paths assessed in the EIS provide an appropriate and contemporary basis for assessing the potential extent and intensity of impacts associated with introducing aircraft operations at a Western Sydney Airport. It was never intended that the draft flight paths would be implemented without further analysis, including detailed consideration of potential noise abatement opportunities, and community and other stakeholder consultation.</p> <p>The future airspace design process described in Chapter 7 (Volume 1) of this EIS will allow the final airspace arrangements to better reflect the operating environment closer to the time the airport opens, taking into account factors such as new aviation technology and further detailed assessments of environmental impacts. This process will involve extensive public engagement, including the establishment of a community and stakeholder reference group, which will provide a forum for community and stakeholder representatives to exchange information with technical experts and others about the proposed flight path options and their impacts. It is expected that membership of the group would include local government representation.</p>
Social equity	Residents Local councils	<p>Potential disparity in Sydney</p> <p>Submissions received from a range of stakeholders expressed concern over the proposed 24-hour operation of the airport. Submissions noted that Sydney Airport operates with a curfew in place and that if the proposed airport is to operate 24 hours without a curfew, it would be unfair and create disparity between affected communities.</p> <p>Submissions stated that the people of Western Sydney and the Blue Mountains have a right to 'quiet' enjoyment where they live and work and that there is an obvious and definite lack of social equity where one group of residents have noise free nights and another group are exposed to overnight noise.</p>	<p>The proposed airport is also expected to bring a range of economic benefits to Western Sydney, including regional investment and job creation that will have positive flow-on effects to the local community.</p> <p>The economic assessment in Appendix P3 (Volume 4) includes additional content regarding the economic impacts that would be imposed by a curfew at the proposed airport. The assessment concludes that a curfew at the proposed airport would have wide-reaching effects on the operation and associated economic benefits of the proposed airport.</p> <p>Current planning controls around the airport site have been based on the ANEF which was developed in Second Sydney Airport Site Selection Programme EIS in 1985. The area surrounding the airport site has therefore been protected from development that would be incompatible with airport operations for several decades. The proportion of population subject to potential sleep disturbance from the proposed airport is therefore extremely low in comparison to the highly developed urban areas surrounding the existing Sydney Airport site.</p> <p>The Australian Government continues to work closely with NSW Government agencies, local government, and stakeholders to ensure land use planning and development is coordinated and complementary to the future operation of the proposed airport.</p>

Theme	Stakeholders	Summary of issue	Response
Impact assessment	Local councils Environmental groups Community groups Residents Members of Parliament and Senators	<p>Consideration of perceived and actual impacts</p> <p>A number of submissions noted that the draft EIS considered both perceived and actual social impacts that may occur.</p> <p>Some submissions raised concerns about the assessment of actual and perceived impacts in the social impact assessment. In particular, submissions were concerned that communities in the Blue Mountains would experience a negative impact of a very high significance rating to lifestyle and amenity as a result of aircraft noise and that this was the same rating for communities close to the airport site.</p> <p>Some submissions suggested that because the social impact assessment acknowledges that perceived impacts are as important as actual impacts that further work should be done in the EIS to assess perceived impacts to health associated with issues such as sleep disturbance and fuel jettisoning.</p>	<p>Table 6-2 of the social impact assessment in Appendix P1 (Volume 4) provides a significance risk rating for each social impact which may occur. For each impact, the significance rating is a general rating which applies to all communities who may experience that impact, including if the impact actually occurs or if the impact is perceived to occur. This is because people may alter their behaviour based on perceived impacts as well as actual impacts. As such, this could result in an overstatement of the significance of impacts for some communities when compared to other communities closer to the proposed airport.</p> <p>The social impact assessment recognises the special values that contribute to the amenity of communities in the Greater Blue Mountains Area. It also notes that, while maximum noise levels from aircraft overflights are not predicted to be as high as areas close to the airport, they will nevertheless be audible and that an increase in audible aircraft overflights may be considered intrusive by recreational and tourist visitors and communities in the Greater Blue Mountains more generally.</p> <p>The social impact assessment also acknowledges that residents of the Greater Blue Mountains place special emphasis on amenity and lifestyle values. When perceived impacts on these values are taken into account, the significance rating of those impacts for specific communities are based on quantifiable impacts from airport operations as predicted in the noise impact assessment. Also the assessment considers the perception of noise annoyance as subjective and it is possible that rating of such impacts for individuals in Blue Mountain communities could be similar to ratings for individuals closer to the airport.</p>

Theme	Stakeholders	Summary of issue	Response
Impact assessment	Residents Community groups Education institutions	<p>Impacts on educational outcomes</p> <p>Some submissions raised concerns about the possibility of the proposed airport affecting educational outcomes in Western Sydney. In particular, submissions suggested that aircraft noise would adversely affect children's learning and cognitive development, as well as disrupt classes and homework, resulting in a broader reduction in educational outcomes for students and schools in Western Sydney, particularly in areas which already experience socio-economic disadvantage.</p> <p>Some submissions stated that the final EIS should give greater consideration to aircraft noise mitigation measures. Other submissions stated that any impact on educational outcomes was unacceptable.</p>	<p>The health risk assessment at Appendix G (Volume 4) estimates the risk to learning and cognitive development in children using the hazard quotient method. A hazard quotient of greater than one indicates an increased risk of learning and cognitive development in children.</p> <p>With the exception of Luddenham, hazard quotients calculated in the noise health risk assessment are all less than one for aircraft overflight and ground based operations noise that would be experienced inside and outside of educational buildings. This means that noise associated with the proposed airport is not predicted to increase the risk of learning and cognitive development in children. This suggests that noise from the proposed airport is unlikely to impact on broader educational outcomes in Western Sydney.</p> <p>At Luddenham, the hazard quotient is predicted to be slightly above one. This does not mean that there will be an impact on children's learning and cognitive development but that there is an increased risk, albeit very low, at Luddenham.</p> <p>The noise exposure associated with aircraft overflight noise is dependent on a number of factors, primarily the approved flight paths for the proposed airport as well as the airport operating mode, meteorological and other factors. As outlined in the EIS, the flight paths were based upon a proof-of-concept airspace design which would be thoroughly reviewed as part of a formal airspace design process if the Stage 1 development proceeds. This would include considerations such as noise exposure, with the aim of reducing impacts on populations and other sensitive facilities. Potential amelioration measures for residential dwellings and other noise sensitive buildings such as educational facilities will be considered through the detailed airspace and flight path design process to manage the effects of aircraft overflight noise.</p> <p>The mitigation measures included in Chapter 28 (Volume 2a) provide for the development of a Noise OEMP and other measures which would reduce noise impacts from ground-based operations at the airport site. The Noise OEMP to be prepared by the ALC, will consider any noise amelioration actions proposed to mitigate offsite noise exposure that cannot be managed appropriately by operational and other onsite mitigation measures. A reduction of noise levels associated with the implementation of any noise amelioration works would reduce the predicted risks of impact on children's learning and cognitive development.</p>

Theme	Stakeholders	Summary of issue	Response
Impact assessment	Residents Local councils	<p>Impacts on agriculture</p> <p>Submissions expressed concern over the proposed airport's potential impacts on agriculture in the local area, particularly the potential loss of employment from the relocation of agricultural related industries and the impacts on food security due to changes in the Sydney region's access to fresh food.</p> <p>Some submissions raised concerns that the impact on agriculture was understated in the draft EIS as it didn't fully consider issues such as the increased sensitivity of agricultural businesses and workers to air quality and noise impacts.</p> <p>It was suggested that the EIS include consultation with the agricultural industry to better understand these likely impacts.</p>	<p>As stated in Section 21.4 of the land use and planning assessment in Chapter 21 (Volume 2a), the airport site includes some agricultural land used for cattle grazing and agriculture. The proposed airport represents a loss of the current and future productivity of this land.</p> <p>The loss of this agricultural productivity in the region would be part of a larger trend in the context of the broader urbanisation of Western Sydney, which includes other extensive rural lands. This trend is recognised in the Department of Primary Industries' <i>Industry Action Plan for Agriculture</i> which, along with other local and regional planning initiatives is expected to manage this transition.</p> <p>The Community and Stakeholder Engagement Plan outlined in Chapter 28 (Volume 2b) will provide for a broader range of stakeholder engagement activities to help maximise opportunities and benefits and manage the impacts associated with the proposed airport.</p>
Property prices	Residents	<p>Impacts on property prices</p> <p>Submissions raised concerns about potential changes in housing prices due to the proposed airport and overflight noise. It was suggested that property values would decrease for housing located under flight paths, while uncertainty regarding the flight paths would confound decisions by residents to relocate. Conversely, some submissions stated that the proposed airport would increase property prices.</p>	<p>A review of the literature analysing property values surrounding other airport developments did not confirm a statistically significant relationship with aircraft noise as discussed in Appendix P2 (Volume 4) and Chapter 23 (Volume 2a) of the EIS.</p> <p>An analysis of housing prices in Sydney since 1991 found no appreciable difference in housing price growth in areas affected by aircraft noise and areas not affected by aircraft noise.</p> <p>Since the announcement of the proposed airport in April 2014, house prices have in fact increased in suburbs close to the airport site.</p> <p>The proposed airport is also expected to bring a range of social and economic benefits to Western Sydney that are likely to have positive flow-on effects to property values, including increased investment in infrastructure and businesses on and around the airport site, increased employment growth, and more job opportunities closer to where people live.</p> <p>The Australian Government continues to work closely with NSW Government agencies, local government, and stakeholders to ensure land use planning and development is coordinated and complementary to the future operation of the proposed airport.</p>

Theme	Stakeholders	Summary of issue	Response
Property prices	Local council	<p>Property values assessment methodology</p> <p>Submissions noted that land and properties surrounding the proposed airport are characteristically more like the localities surrounding Adelaide and Brisbane Airports and quite different to the land surrounding Sydney Airport.</p> <p>Submissions expressed concern that because of this there would be a different correlation between noise and land values compared to the Sydney Airport analysis in the draft EIS.</p> <p>Submissions also stated that the whilst property price growth rates in Western Sydney may be on par with growth rates for property prices in other parts of Sydney, it is important to take into account that property prices in Western Sydney are generally lower to begin with than property prices in other parts of Sydney.</p>	<p>The property values assessment in Appendix P2 (Volume 4) and Chapter 23 (Volume 2a) of the EIS considers multiple airports – including Sydney, Adelaide, Brisbane, Melbourne and Perth. The assessment did not find a statistically significant relationship between property value and aircraft noise.</p> <p>It is acknowledged that property prices in parts of Western Sydney may be lower than other parts of Sydney. The comparison of growth rate is an acceptable method of assessing the impact of development of property values.</p>

Theme	Stakeholders	Summary of issue	Response
Property prices	Residents Community group	<p>Affordable housing</p> <p>Submissions expressed concern that the draft EIS has not considered the impact of rising house prices on affordable housing in Western Sydney. Submissions recommended engagement with relevant housing associations in Western Sydney, analysis of the impact of rising house prices for affordable housing, and development of management strategies to reduce the negative impacts.</p> <p>It was noted also that there is a need to collaborate with relevant NSW Government agencies and Local governments to ensure that new residential developments near the proposed airport include a diversity of housing types that are affordable to low and middle income groups.</p>	<p>The social impact assessment in Chapter 23 (Volume 2a) and Appendix P1 (Volume 4) of the EIS acknowledges that the proposed airport may have an effect on housing affordability.</p> <p>The proposed airport is expected to bring a range of economic benefits to Western Sydney that will have positive flow-on effects for social equity, including regional investment, job opportunities and increased income which will increase buying capacity. In addition to this, the proposed airport may increase demand for housing due to demand from airport workers and increased population growth associated with the proposed airport.</p> <p>As stated in the property values assessment in Appendix P2 (Volume 4) of the EIS, following the formal announcement of the proposed airport, house prices have in fact increased in suburbs close to the airport site. The social impact assessment found that this may also impact on housing affordability.</p> <p>It is important to note that these changes would be limited compared to the broader changes occurring as part of the transition of Western Sydney. This transition will see substantial increases in Western Sydney's population, economic activity, and housing availability.</p> <p>It is acknowledged that timely information and co-ordination between various planning agencies and local councils regarding project progress and overall Western Sydney development would initiate various planning interventions to address housing availability and affordability.</p> <p>The Australian Government continues to work closely with NSW Government agencies, local government, and stakeholders to ensure land use planning and development is coordinated and complementary to the future operation of the proposed airport.</p>

Theme	Stakeholders	Summary of issue	Response
Property prices	Residents	<p>Mitigation of impacts on property values</p> <p>Some submissions raised concerns that the proposed airport would negatively impact on property values and that the EIS should include measures to compensate land owners.</p>	<p>A review of the literature analysing property values surrounding other airport developments did not confirm a statistically significant relationship with aircraft noise as discussed in Appendix P2 (Volume 4) and Section 23.5.11, Chapter 23 (Volume 2b) of the EIS.</p> <p>An analysis of housing prices in Sydney since 1991 found no appreciable difference in housing price growth in areas affected by aircraft noise and areas not affected by aircraft noise.</p> <p>Following the formal announcement of the proposed airport, house prices have in fact increased in suburbs close to the airport site.</p> <p>The proposed airport is also expected to bring a range of social and economic benefits to Western Sydney that are likely to have positive flow-on effects to property values, including increased investment in infrastructure and businesses on and around the airport site, increased employment growth and more job opportunities closer to where people live.</p>
Realising and maximising benefits	Residents Major land owners Community groups Local councils NSW Government Senators and Members of Parliament	<p>Coordination of Commonwealth, state and local planning and other developments</p> <p>Many submissions identified the need for strong coordination across Government and industry to maximise the economic benefits of the proposed airport, and enhance existing and other proposed developments.</p>	<p>The Australian Government continues to work closely with NSW Government agencies, local government, and stakeholders to ensure land use planning and development is coordinated and complementary to the future operation of the proposed airport.</p>

27 Economic

Volume 2 (Stage 1 Development), Chapter 24 (Economic) of the draft EIS reviewed the potential economic and employment effects that could be expected as a result of the construction and operation of the Stage 1 development.

The chapter drew on two assessments undertaken, which were included as Appendix P1 (Social impact) and P3 (Economic analysis) (Volume 4).

27.1 About the submissions on this chapter



Table 27–1 Submissions related to economics

Issue	Number of times the issue was raised	Percentage of total submissions
Economic – jobs	424	8.5%
Economic – property prices	273	5.5%
Economic – tourism impacts	983	19.8%

27.1.1 Origin of submissions

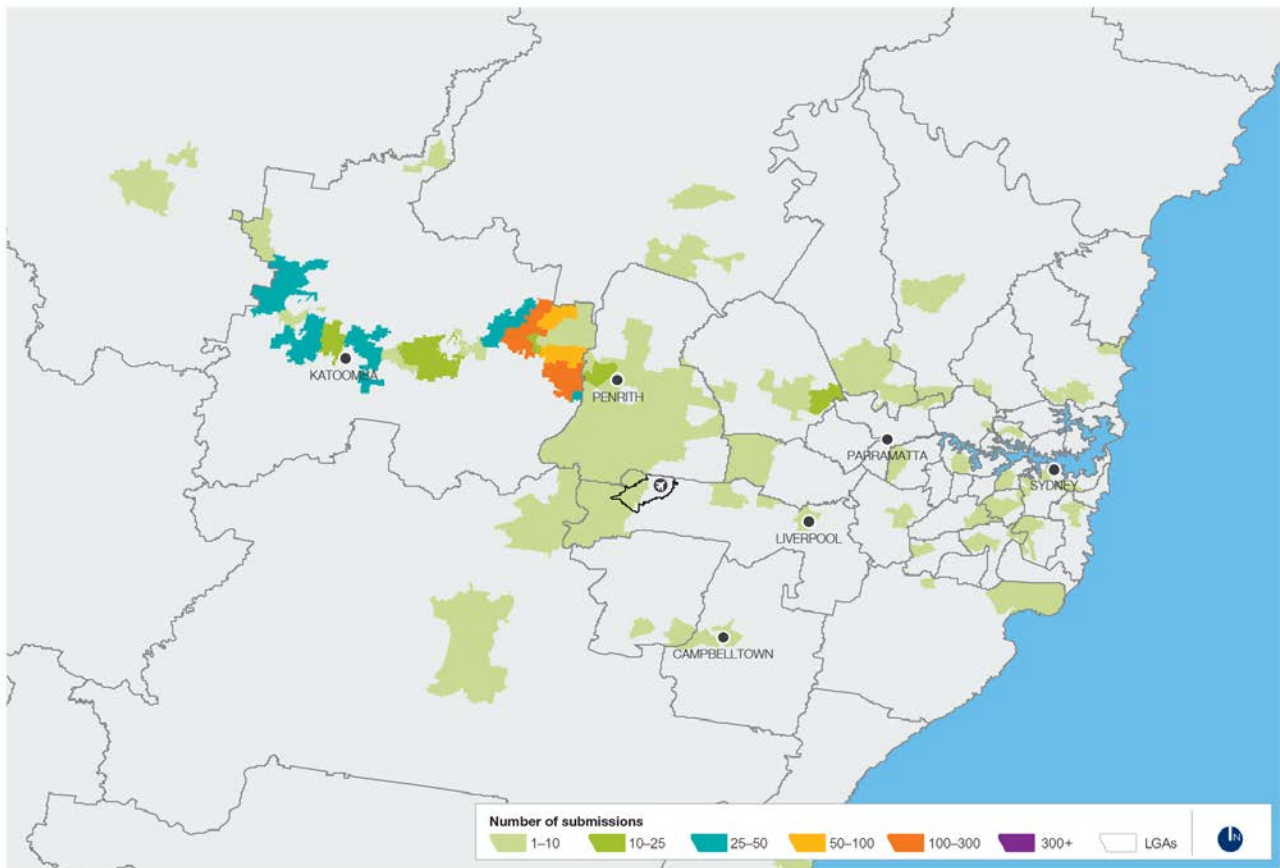



Figure 27–1 Map depicting origin of submissions in relation to Chapter 24 of the draft EIS

27.2 Summary and response

27.2.1 Overarching summary of submissions

Submissions suggested that the final EIS should provide greater clarity on the expected economic uplift and job creation potential of the proposed airport. A range of views was put forward on the employment benefits from the construction and operation of a Western Sydney Airport, with submissions stating that the proposed airport should prioritise support to local businesses. A number of submissions raised concerns about changes in housing prices, both positive and negative.

Submissions also raised issues related to the commercial framework for the airport, including operating costs to airlines and commercial development.



The key themes from the submissions are summarised under the following headings:

- adequacy of assessment;
- assessment methodology;
- commercial framework;
- employment;
- property prices;
- realising and maximising benefits; and
- tourism impacts.

The submission comments are summarised and addressed in section 27.2.3.

27.2.2 Overarching response to issues raised

Following publication of the draft EIS, the economic assessment was updated to improve readability and reflect any changes to the finalised EIS. The revised assessment also includes additional content regarding the economic impacts that would be associated with a curfew at the proposed airport, concluding that a curfew would have wide-reaching effects on the operation and associated economic benefits of the proposed airport. The revised assessment is presented in Chapter 24 (Volume 2a) and Appendix P3 (Volume 4) of the EIS.

27.2.3 Issues and responses

Theme	Stakeholders	Summary of issue	Response
Adequacy of assessment	Residents Local councils	<p>Geographic focus of assessment</p> <p>Submissions expressed concern that there is a strong focus in the draft EIS on regional and Australian economic benefits of the proposed airport, as distinct from any prospective local impacts. Submissions stated that the social and economic impacts to centres within proximity to the proposed airport, such as Luddenham or the South West Growth Centre were discussed little, if at all.</p>	<p>The economic benefits of the proposed airport are necessarily described at a regional scale due to the nature of the economic modelling and impact assessment in Chapter 24 (Volume 2a) and Appendix P3 (Volume 4) of the EIS. These benefits are further quantified for Western Sydney and the rest of Greater Sydney. For Western Sydney alone, the operation of the Stage 1 development is predicted to generate nearly \$80 million in incremental value-add per year, with higher productivity per worker, labour income and business profits by 2031.</p> <p>The social impact assessment presented in the EIS considered the social impacts of the proposed airport at both regional and local scales. Potential impacts to lifestyle and amenity at Luddenham, for example, are explicitly discussed in Section 6.4 of the social impact assessment in Appendix P1 (Volume 4).</p>
Adequacy of assessment	Residents Local councils	<p>Benefits and disadvantages</p> <p>Submissions expressed concern that the social and economic assessments undertaken for the draft EIS do not provide a balanced discussion and are focussed on economic benefits rather than a discussion of economic and social benefits and costs.</p>	<p>The economic impact analysis provided as Appendix P3 (Volume 4) gives consideration to economic costs as well as benefits.</p> <p>As acknowledged in the economic impact analysis, the proposed airport is predicted to generate \$205 million in added value in 2031. This increase in economic activity would also be reflected in some redistribution of economic activity from other parts of Australia.</p> <p>It was not within the scope or capability of economic modelling to predict the particular sources of this redistributed economic activity as this would depend on numerous economic factors at the time of operation. However, this redistribution of economic activity is not considered likely to affect any one particular region or community. It is important to note that the proposed airport is nonetheless predicted to generate net economic benefit for Western Sydney, Greater Sydney and Australia.</p> <p>The social costs and benefits were considered in the social impact assessment in Appendix P1 (Volume 4).</p>

Theme	Stakeholders	Summary of issue	Response
Adequacy of assessment	Local councils	<p>Transfer and redistribution of impacts</p> <p>Submissions expressed concern that the draft EIS did not discuss the social or economic implications of the transfer of economic activity to Western Sydney from other areas in Sydney or the rest of Australia.</p>	<p>As acknowledged in the EIS, the Stage 1 development is predicted to generate \$205 million in added value in 2031. This increase in economic activity would also be reflected in some redistribution of economic activity from other parts of Australia.</p> <p>It was not within the scope or capability of economic modelling to predict the particular sources of this redistributed economic activity as this would depend on numerous economic factors at the time of operation. However, this redistribution of economic activity is not considered likely to affect any one particular region or community. It is also important to note that the proposed airport is nonetheless predicted to generate net economic benefit for Western Sydney, Greater Sydney and Australia.</p>
Adequacy of assessment	Local councils	<p>Mitigation measures</p> <p>Submissions expressed concern regarding the lack of mitigation measures in the economics chapter to redress any negative impacts or maximise any benefits that will be experienced.</p>	<p>As stated in the economics assessment in Chapter 24 (Volume 2a), the proposed airport is predicted to generate net economic benefit for Western Sydney, Greater Sydney and Australia. Negative social impacts associated with the economic impact are discussed in Chapter 23 (Volume 2a).</p> <p>Chapter 28 (Volume 2b) outlines the mitigation measures that would be implemented to maximise the economic benefits and reduce social impacts.</p>
Adequacy of assessment	Local councils	<p>Economic impacts of rail</p> <p>Submissions stated that the final EIS should include discussion on the economic impacts of not having a rail link at opening of the proposed airport and the needs of different target markets such as airline operators, businesses, international passengers and domestic passengers.</p>	<p>The timing and assessment of a potential rail service to the proposed airport is outside the scope of the EIS. As such, the economic impact analysis provided as Appendix P3 (Volume 4) does not assume the inclusion of a rail service at the start of operations.</p> <p>The timing and assessment of a potential rail service to the proposed airport will be determined as part of a joint scoping study between the Australian and NSW governments. Planning for the proposed airport preserves flexibility for several possible rail alignments including a potential express service.</p>
Adequacy of assessment	Local councils	<p>Airport curfew</p> <p>Submissions expressed concern that the draft EIS did not present a cost benefit analysis of the proposed airport with a curfew.</p>	<p>The proposed airport is expected to bring a range of economic benefits to Western Sydney, including regional investment and job creation that will have positive flow-on effects for social equity.</p> <p>The economic assessment in Appendix P3 (Volume 4) has been updated to include information regarding the economic advantages and disadvantages that would be imposed by a curfew at the proposed airport.</p> <p>The assessment concludes that a curfew at the proposed airport would have wide-reaching effects on the operation and associated economic benefits of the proposed airport.</p>

Theme	Stakeholders	Summary of issue	Response
Adequacy of assessment	Local councils	<p>Economic study area</p> <p>Submissions expressed concern regarding the uncertainty of what constitutes the economic study area for the assessment and why certain suburbs were or were not included.</p>	<p>The study area for the economic assessment in Appendix P3 (Volume 4) includes all metropolitan suburbs of Greater Sydney – divided into Sydney West, Sydney West Central, Sydney South West and the rest of Sydney. This categorisation is consistent with NSW Government planning documents. Suburbs outside of these areas were categorised as either the rest of NSW or the rest of Australia.</p>
Adequacy of assessment	Local councils	<p>Economic impacts of traffic</p> <p>Submissions stated that the draft EIS recognises that the proposed airport would increase congestion on parts of the M4, M5 and M7 Motorways together with the M31 Hume Highway. The potential impacts to businesses reliant on these access routes for servicing and delivery should be considered.</p>	<p>The proposed airport has the potential to increase traffic congestion. However, the current dispersed employment of Western Sydney residents is also responsible for road network congestion. Furthermore, the urbanisation of Western Sydney at the larger scale is predicted to place additional demands on the existing road network.</p> <p>While the proposed airport may increase congestion costs, it will also generate significant benefits for local businesses. The proposed airport will directly result in improved access to regional, interstate and international markets and make Western Sydney an even more attractive place to live and do business. As outlined in Chapter 24 (Volume 2a) and Appendix P3 (Volume 4), operation of the proposed airport is predicted to increase value-add, business profits, worker productivity, and net imports and will redistribute employment and population growth towards Western Sydney.</p> <p>A range of planning and infrastructure initiatives are underway for Western Sydney to address current and future traffic demands. These planning and infrastructure initiatives include:</p> <ul style="list-style-type: none"> ▪ A Plan for Growing Sydney (the Metropolitan Plan); ▪ Western Sydney Priority Growth Area; ▪ South West Priority Growth Area; ▪ Western Sydney Employment Area; ▪ Western Sydney Infrastructure Plan; ▪ South West Rail Link Extension; ▪ Outer Sydney Orbital; and ▪ WestConnex. <p>Overall, the EIS finds that the proposed airport would not generate the level of traffic required to significantly impact the surrounding road network, the capacity of which will be enhanced by the development of additional transport infrastructure through the Western Sydney Infrastructure Plan.</p>

Theme	Stakeholders	Summary of issue	Response
Assessment methodology	Residents Local councils	<p>Quantification and balanced discussion of economic benefits</p> <p>Submissions stated that the draft EIS included a number of economic benefits resulting from the proposed airport, however, the extent of these benefits are not adequately quantified. Submitters stated that, while the projection for jobs growth is speculated to be in the thousands, it is not clear as to what type of employment opportunities this represents, or the cumulative impact as a consequence of adjacent employment areas.</p>	<p>The economic benefits of the proposed airport are detailed in the economic impact analysis provided as Appendix P3 (Volume 4). Section 3 of the economic impact analysis discusses the potential employment mix.</p> <p>Employment figures for the operation of the proposed airport are based on a benchmark analysis of employment to passenger ratios at major airports in Australia and around the world. To estimate employment figures for operation of the proposed airport a ratio of 750 FTE jobs per million annual passengers was used. This is considered to be a conservative figure when compared to similar airports in Australia and around the world.</p> <p>As with other airports in Australia, the proposed airport is expected to generate employment opportunities across a diverse range of industries, occupations and qualification levels. In an assessment of employment characteristics across major airports in Australia, the Bureau of Infrastructure, Transport and Regional Economics (BITRE) found that airports have become amongst the most important employment hubs in Australia, generating diverse employment opportunities (BITRE 2013). The BITRE found that while the transport, postal and warehousing industry on average makes up around 48 per cent of jobs at airports, significant employment opportunities are also available in public administration and safety, retail trade, accommodation and food services, manufacturing, professional, scientific and technical services, information media and telecommunications. On average, these jobs tend to be relatively evenly split across a range of occupations (including managers, professionals, shop workers, technicians and trade works, machinery operators, and labourers) and employees tend to have a range of educational qualifications (including high school diploma, certificates, and advanced diplomas and degrees).</p> <p>The establishment of a business park area would generate further job opportunities which would depend on the ultimate land use but could support industrial, office, hotels or retail industry types.</p> <p>The economic impact analysis also includes a consideration of land use change in broader Western Sydney facilitated by the proposed airport and the associated implications for economic growth and job opportunities.</p>

Theme	Stakeholders	Summary of issue	Response
Commercial framework	Aviation industry	<p>Economic value of other airports</p> <p>A number of submissions raised concerns about the economic impacts associated with possible interactions between the proposed flight paths and with existing aviation activity in the Sydney basin.</p> <p>Submissions contended that alternative flight training areas need to be identified that are operationally and commercially acceptable to flight training organisations operating from Bankstown and Camden Airports. Submissions also requested more detailed consideration of the economic and community value of Bankstown and Camden Airports.</p>	<p>The indicative flight paths prepared by Airservices Australia were used to model and assess the impacts of aircraft operations as described in Chapter 7 (Volume 1). This analysis demonstrates that the Stage 1 development could operate independently of Sydney Airport.</p> <p>The introduction of aircraft operations at the proposed airport will impact some existing operations, in particular flight training activities, at other regional airports including Camden Airport and Bankstown Airport. The findings of a preliminary high-level assessment of the impacts upon visual flight rule (VFR) general aviation activities in the Sydney basin are presented in Section 7.4.1 (Volume 1).</p> <p>Further detailed technical analysis and testing of viable options for managing general aviation, including the identification of suitable flying training areas, will need to be undertaken by regulatory authorities before final solutions are identified and implemented. The formal airspace and flight path design process for the proposed Western Sydney Airport will assess in detail the impacts on general aviation activities from establishing a Western Sydney Airport control zone and flight paths. This work will seek to minimise impacts on existing airspace arrangements while implementing a new world class management system. Extensive consultations with Sydney basin aerodromes and airspace users will be undertaken to confirm and take account of future user requirements before final decisions are made.</p>

Theme	Stakeholders	Summary of issue	Response
Commercial framework	Local councils	<p>Commercial development</p> <p>Submissions stated that the draft Airport Plan and draft EIS should identify the scope of services, business co-location and retail opportunities available to support the proposed airport and the broader Government objectives.</p> <p>While recognising the opportunity for some commercial development to be part of the proposed airport, there is no consideration of the role of commercial development in supporting the proposed airport and the Government's objective to optimise employment and investment in the region. The draft Airport Plan and draft EIS should identify the scope of services, business co-location and retail opportunities available.</p>	<p>Development of business parks on the airport site are largely outside the scope of the assessment of the Stage 1 development and therefore detailed assessment is outside the scope of the EIS. While the revised draft Airport Plan contains a Land Use Plan which identifies zones on the airport site for which business development would be acceptable, it would not specifically authorise the construction or operation of those developments. These types of developments would be subject to separate assessment and approval processes.</p> <p>To demonstrate the potential benefits of onsite commercial development the economic impact analysis contained in Appendix P3 (Volume 4) includes consideration of potential employment opportunities that could be created if the proposed business development zones in the Land Use Plan were developed. As stated in Section 3.3 of the economic impact analysis (Appendix P3, Volume 4), the business zones would generate numerous job opportunities which would depend on the ultimate land use but could support industrial, office, hotels or retail industry types. The analysis undertaken in the EIS is consistent with the regulatory framework applied to all major airports in Australia under the Airports Act. Consistent with this framework, the ALC will be responsible for managing commercial development (also known as non-aeronautical development) on the airport site. As such, the nature of commercial developments on the airport site will be a business decision for the ALC. In this context, the Land Use Plan in the revised draft Airport Plan sets out the broad scope of land uses which are permissible in each zone on the airport site.</p>
Commercial framework	Residents Environmental stakeholders	<p>Economic viability of the proposed airport</p> <p>Submissions questioned the economic viability of the proposed airport, stating that demand for flights from a Western Sydney Airport will be very limited.</p>	<p>As with many other major infrastructure projects, the proposed airport would be developed in stages, commensurate with the expected growth in aviation demand.</p> <p>The need for, and viability of, the proposed airport is discussed in Chapter 2 (Volume 1). In particular, Section 2.3 discusses the increased aviation demand that is a key driver for the proposed airport.</p>

Theme	Stakeholders	Summary of issue	Response
Employment	Residents Businesses Peak bodies Community groups Local councils Senators and Members of Parliament	<p>Catalyst for employment and economic growth</p> <p>Some submissions expressed support for the creation of new jobs and the associated benefits for Western Sydney, noting in particular that the proposed airport will be a facilitator for employment.</p>	<p>The proposed airport is predicted to create jobs and economic growth across both Western Sydney and Greater Sydney. In particular, the proposed airport will help to redistribute employment growth to provide a more balanced and sustainable economic growth across Greater Sydney.</p> <p>The economic benefits of the proposed airport are detailed in the economic impact analysis provided as Appendix P3 (Volume 4).</p>
Employment	Local councils	<p>Economic uplift</p> <p>Submissions suggested that the final EIS should provide greater clarity on the expected economic uplift and job creation potential of the proposed airport.</p>	<p>The economic benefits of the proposed airport are detailed in the economic impact analysis provided as Appendix P3 (Volume 4) and summarised in Chapter 24 (Volume 2a) of the EIS.</p> <p>The assessment provides a clear indication of these economic benefits including predicted changes in employment and value-add at various regional and State scales. Direct onsite jobs during construction are anticipated to reach about 760 FTEs by around year 7 of the construction programme, generating a footprint that includes over 1,200 FTE jobs in the supply chain and another 660 FTE jobs through consumption effects. The total Western Sydney value-add footprint is predicted to reach over \$450 million by year 7 of the construction program, summing up to greater than \$1.9 billion over the construction period.</p> <p>The operation of the proposed airport will create a number of employment opportunities, both for the airport operations and at a future onsite business park. This is expected to grow in line with passenger growth. After 5 years of operation, which for assessment purposes is assumed to be the year 2031, the Stage 1 development is predicted to generate an estimated 8,730 direct FTE employees for the operation of the Stage 1 development and potentially up to 4,400 FTE employees in an onsite business park. By 2031, the proposed airport is predicted to generate an incremental \$205 million in value-add per year across Australia, the majority of which is in Greater Sydney.</p>

Theme	Stakeholders	Summary of issue	Response
Employment	Residents Peak bodies Community groups Local councils	Local employment opportunities Submissions noted that localised Western Sydney employment opportunities should be provided for the construction and operation of the proposed airport to support local businesses.	The proposed airport would create jobs for both Western Sydney and Greater Sydney. A large number of jobs would be generated locally including direct employment during construction and operation as well as employment provided by business park areas at the airport site as described above. A key mitigation measure for the proposed airport is the development of a local participation plan as part of an Australian Industry Participation Plan. The aim of these plans will be to ensure a high level of local and regional community involvement in the development of the proposed airport. Further information about this mitigation measure can be found in Chapter 28 (Volume 2b).

Theme	Stakeholders	Summary of issue	Response
Employment	Residents	<p>Characterisation of jobs</p> <p>A range of different views were put forward in relation to impacts on jobs as a result of the construction and operation of the proposed airport. A number of submissions raised concerns about the number and type of jobs that would be generated by a Western Sydney Airport, with suggestions that the figures provided have been overestimated and that the majority of jobs will be in the service industry as opposed to employment opportunities for professionals</p> <p>Some community submissions suggested that the creation of additional jobs may not be beneficial to the Western Sydney economy as overseas or interstate workers fill take the jobs.</p>	<p>The economic assessment was undertaken in accordance with industry best practice including the development of input-output and computational general equilibrium models, land use econometric models, the use of standard assumptions and multiplier effects, and benchmark analysis with major airports in Australia and overseas. The analysis of the number and types of employment opportunities are outlined in Chapter 24 (Volume 2a) as well as Appendix P3 (Volume 4) of the final EIS.</p> <p>Employment figures for the operation of the proposed airport are based on a benchmark analysis of employment to passenger ratios at major airports in Australia and around the world. This analysis is described in detail in Appendix P3 (Volume 4). To estimate employment figures for operation of the proposed airport a ratio of 750 FTE jobs per million annual passengers was used. This is considered to be a conservative figure when compared to similar airports in Australia and around the world.</p> <p>As with other airports in Australia, the proposed airport is predicted to generate employment opportunities across a diverse range of industries, occupations and qualification levels.</p> <p>In an assessment of employment characteristics across major airports in Australia, the Bureau of Infrastructure, Transport and Regional Economics (BITRE) found that airports have become amongst the most important employment hubs in Australia, generating diverse employment opportunities (BITRE 2013). The BITRE found that while the Transport, Postal and Warehousing industry on average makes up around 48 per cent of jobs at airports, significant employment opportunities are also available in public administration and safety, retail trade, accommodation and food services, manufacturing, professional, scientific and technical services, and information media and telecommunications. On average, these jobs tend to be relatively evenly split across a range of occupations (including managers, professionals, shop workers, technicians and trade works, machinery operators, and labourers) and employees tend to have a range of educational qualifications (including high school diploma, certificates, and advanced diplomas and degrees).</p>

Theme	Stakeholders	Summary of issue	Response
Property prices	Residents	<p>Impacts on property prices</p> <p>Submissions raised concerns about potential changes in housing prices due to the proposed airport and overflight noise. It was suggested that property values would decrease for housing located under flight paths, while uncertainty regarding the flight paths would confound decisions by residents to relocate. Conversely, some submissions stated that the proposed airport would increase property prices.</p>	<p>A review of the literature analysing property values surrounding other airport developments did not confirm a statistically significant relationship with aircraft noise as discussed in Appendix P2 (Volume 4) and Chapter 23 (Volume 2a).</p> <p>An analysis of housing prices in Sydney since 1991 found no appreciable difference in housing price growth in areas affected by aircraft noise and areas not affected by aircraft noise.</p> <p>Since the announcement of the proposed airport in April 2014, house prices have in fact increased in suburbs close to the airport site.</p> <p>The proposed airport is also expected to bring a range of social and economic benefits to Western Sydney that are likely to have positive flow-on effects to property values, including increased investment in infrastructure and businesses on and around the airport site, increased employment growth, and more job opportunities closer to where people live.</p> <p>The Australian Government continues to work closely with NSW Government agencies, local government, and stakeholders to ensure land use planning and development is coordinated and complementary to the future operation of the proposed airport.</p>
Property prices	Local council	<p>Property values assessment methodology</p> <p>Submissions noted that land and properties surrounding the proposed airport are characteristically more like the localities surrounding Adelaide and Brisbane Airports and quite different to the land surrounding Sydney Airport.</p> <p>Submissions expressed concern that because of this there would be a different correlation between noise and land values compared to the Sydney Airport analysis in the draft EIS.</p> <p>Submissions also stated that the whilst property price growth rates in Western Sydney may be on par with growth rates for property prices in other parts of Sydney, it is important to take into account that property prices in Western Sydney are generally lower to begin with than property prices in other parts of Sydney.</p>	<p>The property values assessment in Chapter 23 (Volume 2a) and Appendix P2 (Volume 4) considered multiple airports – including Sydney, Adelaide, Brisbane, Melbourne and Perth. The assessment did not find a statistically significant relationship between property value and aircraft noise.</p> <p>While property prices in parts of Western Sydney may be lower than other parts of Sydney, the comparison of growth rate is an acceptable method of assessing the impact of development of property values.</p>

Theme	Stakeholders	Summary of issue	Response
Realising and maximising benefits	Residents Major land owners Community groups Local councils NSW Government Senators and Members of Parliament	<p>Coordination of Commonwealth, state and local planning and other developments</p> <p>Many submissions identified the need for strong coordination across Government and industry to maximise the economic benefits of the proposed airport, and enhance existing and other proposed developments.</p>	The Australian Government continues to work closely with NSW Government agencies, local government, and stakeholders to ensure land use planning and development is coordinated and complementary to the future operation of the proposed airport.
Tourism impacts	Residents Businesses Industry Groups	<p>Impacts on tourism and tourism-related employment</p> <p>A number of submissions suggested that the tourism industry will benefit from the construction and operation of a Western Sydney Airport as domestic and international visitors will be able to access the Blue Mountains more easily than if they were travelling from Sydney.</p> <p>Conversely, a large number of submissions stated that the airport may impact jobs related to ecotourism in the Blue Mountains region. It was noted in particular that the economy of the Blue Mountains is reliant on tourism and has a burgeoning nature-based recreation and tourism industry that depends on a high level of amenity and tranquillity in natural areas.</p>	<p>The EIS found that the proposed airport would not have a significant impact on the recreation and tourism values associated with the Greater Blue Mountains Area. In particular, aircraft using the proposed airport would result in only minimal noise incursions and are not expected to be visually intrusive.</p> <p>As discussed in Appendix P3 (Volume 4) and Chapter 24 (Volume 2a) of the EIS, the proposed airport would generate a net economic benefit for Western Sydney, Greater Sydney and NSW as a whole. As noted in a number of submissions, the project has the potential to increase tourism to the Blue Mountains and its associated benefits to tourism supported industries.</p>

28 Resources and waste

Volume 2 (Stage 1 Development), Chapter 25 (Resources and waste) of the draft EIS analysed the resources that would be consumed and waste generated by the construction and operation of the proposed Western Sydney Airport.

28.1 About the submissions on this chapter



Table 28–1 Submissions related to resources and waste

Issue	Number of times the issue was raised	Percentage of total submissions
Resources and waste	17	0.3%

28.1.1 Origin of submissions

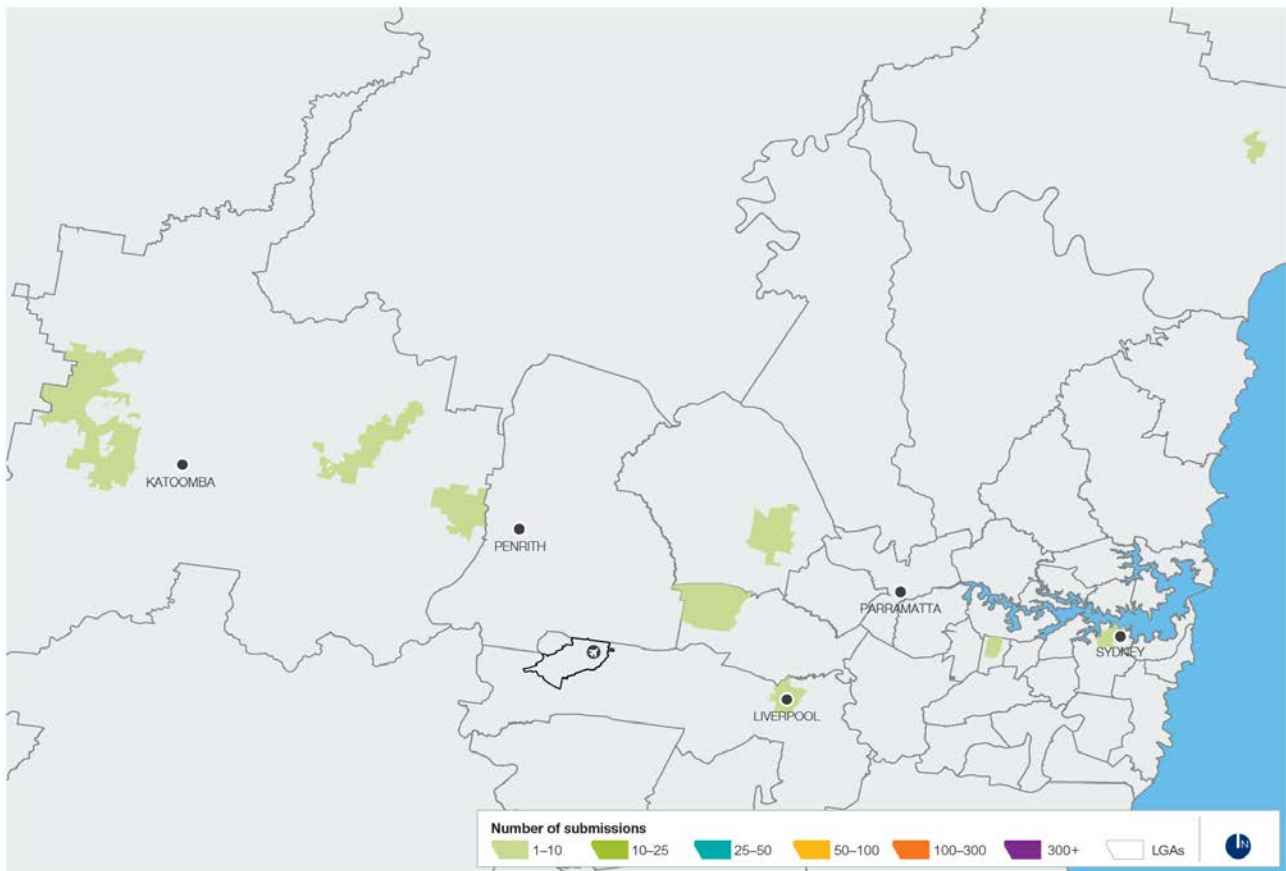


Figure 28–1 Map depicting origin of submissions in relation to Chapter 25 of the draft EIS

28.2 Summary and response

28.2.1 Overarching summary of submissions

There were a small number of submissions received that addressed the areas of resources and waste. The key area of concern raised in submissions was related to how the proposed airport would impact on local council waste management and, in turn the provision of services to existing residents. Submissions also raised the issue of impacts from onsite treatment of waste as well as the management of hazardous materials and illegal waste disposal.

The key themes from the submissions are summarised under the following headings:

- assessment methodology;
- impact assessment; and
- environmental management.

The submission comments are summarised and addressed in section 28.2.3.



28.2.2 Overarching response to issues raised

Following publication of the draft EIS, the resources and waste assessment has been updated to improve readability and reflect the finalisation of the EIS. The revised assessment also corrects a typographical error in the estimated volume of quarantine waste expected during the operation of the proposed airport. This correction does not affect the estimated overall quantity of generated waste or its management. The revised assessment is presented in Chapter 25 of Volume 2a.

28.2.3 Issues and responses

Theme	Stakeholders	Summary of issue	Response
Assessment methodology	Local councils Peak business groups	<p>Review of issues and legislation</p> <p>Submissions contended that the draft EIS provided a comprehensive review of waste and resource issues and legislation in both the development and operational stages of the proposed airport. Stakeholders requested involvement in the development of the waste management plan for the proposed airport. Other submissions raised a concern that a low level of importance had been placed on the assessment of waste in the draft EIS.</p>	<p>The waste assessment was undertaken to a level of detail that was commensurate with project planning and was typical of assessments of other major projects in the planning and approvals phase.</p> <p>As outlined in Chapter 28 (Volume 2b), the airport operator will be required to consult with relevant stakeholders and authorities when developing environmental management plans, including the Waste and Resources CEMP and Waste and Resources OEMP.</p>
Assessment methodology	Local councils	<p>Technical report</p> <p>Submissions claimed that the draft EIS did not contain a technical report dedicated to analysing waste and management issues.</p>	<p>The waste and resources assessment was undertaken to a level of detail that was commensurate with project planning and was typical of assessments of other major projects in the planning and approvals phase.</p> <p>The waste and resources assessment was prepared by waste management specialists familiar with the Western Sydney Region, existing and proposed waste management facilities in the region and the specific waste management issues associated with airports. Considerable technical information was collected and analysed to produce the EIS. It was judged not to be necessary to include this information in an appendix to the EIS in the form of a technical report as all key elements of the information collected and analysed were reflected in Chapter 25 (Volume 2a).</p>
Assessment methodology	Local councils	<p>Assumptions used in assessment</p> <p>Submissions queried the assumptions used in the assessment of waste and noted that the draft EIS does not provide detail about the assumptions used to generate waste forecasts.</p>	<p>As stated in Section 25.2 in Chapter 25 (Volume 2a), the two key inputs to the waste and resources assessment were construction planning information and a literature review of waste data from existing airports. These inputs are considered appropriate to estimate the quantity and range of waste requiring management at the proposed airport at a level of detail commensurate with project planning.</p>

Theme	Stakeholders	Summary of issue	Response
Assessment methodology	Local councils	<p>Assessment of long term scenario</p> <p>Submissions raised concerns that the strategic level assessment of the long term development did not provide enough detail about waste and resource management issues. In particular, submissions questioned whether the market would be able to meet long term waste quantities generated by the proposed airport.</p>	<p>As outlined in Section 39.6.2 (Volume 3), while the proposed airport would appear to be a major waste generator, it would not be a major contributor to waste and recyclables volumes in the broader Sydney Region. As such, it is expected that the waste management needs of the proposed airport would be met by existing and proposed facilities. As expansion of the proposed airport would occur proportionately with passenger demand, this would allow sufficient time for the waste management market to adapt to the changing needs of the proposed airport and the broader region.</p> <p>Expansion of airport operations beyond the Stage 1 development would be subject to separate assessment and approval processes.</p>
Assessment methodology	Local councils	<p>Consultation on waste management issues</p> <p>Submissions queried why resource and waste management issues did not have a bigger focus in the consultation activities for the draft EIS and draft Airport Plan.</p>	<p>As outlined in Chapter 8 (Volume 1), the public exhibition of the draft EIS and draft Airport Plan provided an opportunity for the community to be informed and express their views on the proposal and its environmental impacts. In addition to this, extensive consultation has occurred with local councils and other stakeholders in Western Sydney. A broad range of topics were raised and discussed throughout these consultation activities, including waste and resource management issues. Waste and resource management issues have been discussed in briefings and consultations to an extent commensurate with the level of significance which stakeholders placed on those issues and reflects the current stage of project planning.</p>
Impact assessment	Local councils	<p>Inconsistency of waste volumes</p> <p>Submissions highlighted inconsistencies in annual volumes of operational waste reported in Section 5.6.15 and in the resources and waste assessment in Chapter 25.</p>	<p>As noted in the resources and waste assessment in Chapter 25 (Volume 2a), Stage 1 operations are predicted to generate about 5,251 tonnes of waste each year – as well as about 2.5 mega litres of wastewater per day that would be treated onsite.</p> <p>Due to a typographical error, Section 5.6.15 of the draft EIS incorrectly stated that the operation of the proposed airport would generate up to about 11,210 tonnes of waste per year. This error has been rectified in finalising the EIS.</p>

Theme	Stakeholders	Summary of issue	Response
Impact assessment	Local councils Businesses NSW Government	<p>Wastewater management and use</p> <p>Some submissions stated that the proposal to manage wastewater onsite could reduce environmental impacts associated with the transport and disposal of wastewater offsite. However, it was suggested that the EIS should go further in committing to the use of wastewater onsite.</p> <p>Some submissions questioned the conclusion that wastewater could be managed onsite. In particular, concerns were raised that the quantity of wastewater to be treated and irrigated onsite would be significant and result in groundwater contamination. It was also suggested that assessment of irrigation as a method to discharge treated wastewater should take into account the impact of weather preventing such discharge.</p> <p>Submissions requested clarification on the expected regulatory approval and licensing requirements for the effluent management system and irrigation area. It was recommended that a wastewater report be undertaken to demonstrate the adequacy of the wastewater management system.</p>	<p>As stated in Section 25.6.4 of Chapter 25 (Volume 2a), wastewater would be preferentially reused or alternately irrigated at the airport site. Transport of wastewater offsite does not form part of the planned waste water management strategy during operation of airport facilities. Some offsite transport and disposal of wastewater may be required during construction prior to the establishment of onsite wastewater treatment and irrigation facilities. This arrangement is typical of other construction projects and is not considered to represent a large scale or long lasting potential impact.</p> <p>The risk of material contamination of soil or water due to irrigation would be avoided in the first instance through the treatment of water to an appropriate standard prior to irrigation occurring.</p> <p>Risks associated with excess irrigation are discussed in Section 17.5.3 in (Volume 2a). These risks include waterlogging, leaching of nutrients, rising water tables and increased soil salinity or other soil properties.</p> <p>As outlined in Chapter 17 of, these risks would be managed through the design and operation of the irrigation scheme in accordance with the risk framework and management principles contained in the <i>National Guidelines on Water Recycling</i> (Environment Protection and Heritage Council 2006) and <i>Environmental guidelines: Use of effluent by irrigation</i> (DEC 2004).</p> <p>The irrigation scheme would also be required to operate in accordance with the <i>Airport (Environment Protection) Regulations 1997</i>, which prohibit the pollution of soil or water due to operations at the airport site.</p> <p>The details of the irrigation scheme would be investigated further during detailed design. Key considerations would include the application rate, the size of the irrigation field, the size of associated storage and operating protocols taking into account of a range of scenarios including prevention of uncontrolled discharge during wet weather.</p> <p>The assessment of the effluent management system was commensurate with the level of detail of the airport design.</p> <p>Mitigation and management measures for groundwater and surface water are set out in Chapter 28 (Volume 2b).</p>

Theme	Stakeholders	Summary of issue	Response
Impact assessment	Local councils	<p>Impact on waste management facilities</p> <p>Submissions raised issues regarding the capacity of waste management facilities in the region to process waste from the proposed airport. Submissions noted that the proposed airport may generate some similar waste streams as local councils and may use some waste management facilities which are also used by local councils. It was recommended that further investigations take place to predict the impacts the proposed airport may have on how local councils use these waste management facilities.</p>	<p>Section 25.6.5 (Chapter 25 (Volume 2a)) describes the mature waste management market in Western Sydney which manages a very large quantity of waste from a wide range of sources.</p> <p>It is expected that the quantity of waste to be generated by the proposed airport would be small in proportion to the rest of the market and would be well within the capacity of existing waste management facilities.</p>
Impact assessment	Local councils NSW Government Businesses	<p>Onsite waste management facilities</p> <p>Submissions raised concerns that there were no specific assessments of the waste management facilities that would be operated onsite including:</p> <ul style="list-style-type: none"> • incineration/autoclaving of quarantine waste; • treatment of sewage from incoming flights; and • the use of organic treatments. 	<p>The EIS considers the likely nature and volume of waste generated at the airport site and methods of managing that waste including quarantine waste, sewage and wastewater – primarily in Chapter 25 (Volume 2a).</p> <p>As stated in Section 25.6.3 of Chapter 25, it is planned that quarantine waste would be sterilised in an autoclave at the proposed airport prior to disposal at an appropriately licensed facility. Emissions associated with the decomposition or incineration of the waste thereafter would be under the operational control of the waste facility operator.</p> <p>Treatment of domestic wastewater and sewage is discussed in Section 25.6.4 of Chapter 25 (Volume 2a), while irrigation of treated wastewater and sewage is discussed more specifically in Section 17.5.3 (Chapter 17 (Volume 2a)).</p> <p>Specific details of the waste management facilities proposed at the airport site would be subject to detailed design and agreements with waste contractors where relevant.</p> <p>Mitigation and management measures for waste are set out in Chapter 28 (Volume 2b).</p>
Impact assessment	Residents	<p>Impact on existing services</p> <p>There was a small number of submissions concerned with the management of wastewater and rubbish on the airport site and whether this would impact on existing services in the area.</p>	<p>Management of waste, including effluent, at the airport site would not interact with existing municipal waste services.</p> <p>Waste collected at the airport site would be subject to agreements with appropriately licensed commercial waste contractors. Effluent generated at the airport site would be managed through an the effluent management system, which would be designed and operated in accordance with the <i>National Guidelines on Water Recycling</i> and the <i>Environmental guidelines: Use of effluent by irrigation</i>.</p>

Theme	Stakeholders	Summary of issue	Response
Impact assessment	Local councils	<p>Cumulative impacts</p> <p>Submissions stated that the proposed airport would result in cumulative impacts for waste management including:</p> <ul style="list-style-type: none"> increased traffic induced by the proposed airport affecting local council waste truck routes and access to waste collection facilities; increased waste that would be generated by urban development expected to be induced by the development of the proposed airport; and greenhouse gas emissions from waste generated by the proposed airport. 	<p>Traffic generated by the proposed airport is assessed in detail in the traffic, transport and access assessment presented in Chapter 15 (Volume 2a) and Appendix J (Volume 4). The assessment considers traffic generated by the proposed airport combined with increases in background traffic associated with the broader urbanisation of Western Sydney.</p> <p>The assessment also considers the mitigating effects of the various major transport infrastructure projects planned for Western Sydney including the Western Sydney Infrastructure Plan projects and those documented in plans such as the NSW Government's regional planning strategy <i>A Plan for Growing Sydney</i>. The purpose of these strategic planning initiatives is to provide adequate transport infrastructure for residents in Western Sydney and municipal services such as waste collection and public transport.</p> <p>As stated in Section 25.6.5 (Chapter 25 (Volume 2a)), the waste management market in Western Sydney currently handles a large volume of waste from various domestic, commercial and industrial sources. It is expected that the waste market will continue to grow and adapt to meet the demands that are placed on it as Western Sydney develops. This would include urban development induced by the proposed airport as well as the broader urbanisation of Western Sydney that would occur independently of the proposed airport.</p> <p>Section 12.2.3 in Chapter 12 (Volume 2a), indicates that Scope 3 emissions associated with waste generated by an airport would not normally be included in a greenhouse gas assessment of the airport, due to the possibility of these emissions being already counted by other entities, such as waste facility operators.</p> <p>The greenhouse gas assessment for the EIS focusses on emissions associated with fuel burning during flights, even though these may be counted already by other entities, as this is likely to be the major source of Scope 3 emissions. Greenhouse gas emissions from waste disposal are likely to be much less significant than fuel burning.</p>

Theme	Stakeholders	Summary of issue	Response
Impact assessment	Residents Local councils	<p>Illegal waste disposal and littering</p> <p>Submissions noted the potential for the proposed airport to attract illegal littering and dumping of waste either by members of the public or employees, both on and off the airport site. It was suggested that this was a particular risk during construction. It was stated that this littering and dumping could impose clean-up costs on local councils and create environmental hazards including bushfire ignition.</p> <p>Submissions observed that illegal dumping already occurs at the airport site and that this waste would need to be cleared before construction can commence.</p>	<p>Illegal waste disposal is a common occurrence within the area, including on the airport site.</p> <p>Closing road access to the Commonwealth-owned internal road network has assisted in achieving greater site management and maintenance objectives. Improving site security and minimising instances of unlawful activity (such as illegal waste disposal) occurring on the site are the key objectives of the road closures.</p> <p>The Australian Government is working with local authorities including NSW Police, the Rural Fire Service and Liverpool City Council to address site issues including illegal waste disposal. Illegal waste disposal discovered on the site is being reported to Liverpool City Council to assist in its clean up, as part of the current arrangements between the Commonwealth and the Council.</p> <p>Construction and operation of the proposed airport would involve increased security and human activity at the airport site which should decrease incidents of illegal disposal activity.</p> <p>Any illegal disposal identified during construction or operation of the proposed airport would be reported to the relevant authority at the time.</p>
Impact assessment	Local councils	<p>Management of asbestos</p> <p>Submissions stated that the draft EIS should provide more information about the management of asbestos and other hazardous waste generated from the demolition of buildings on the airport site.-</p>	<p>Structures on the airport site, except those of identified heritage value, are being demolished as they become vacant. In March 2015, the Department established a panel of five demolition contractors to carry out demolition works onsite as part of ongoing site management processes. Demolition work occurs in accordance with the <i>Work Health and Safety Act 2011</i> (NSW) and the <i>Work Health and Safety Regulation 2011</i> (NSW) and relevant Codes of Practice, including the <i>Code of Practice for Demolition, How to safely remove asbestos</i> and <i>How to manage and control asbestos in the workplace</i>.</p>

Theme	Stakeholders	Summary of issue	Response
Environmental management	Local councils Businesses	<p>Detail provided in the assessment</p> <p>Submissions raised concerns with the level of detail provided in the draft EIS, particularly in relation to:</p> <ul style="list-style-type: none"> the practical measures that would be implemented to manage waste; the bin-system for the airport site; the onsite treatment and irrigation of wastewater measures to manage the risk of illegal waste disposal; the resources and waste management plan; and whether licences would be required for the management of waste. 	<p>Specific details of the waste management facilities and processes proposed at the airport site would be subject to detailed design and agreements with waste contractors where relevant. These measures will be outlined in the Waste and Resources CEMP and the Waste and Resources OEMP as outlined in Chapter 28 (Volume 2b).</p> <p>The Environmental Management Framework outlined in Chapter 28 will require the ALC to consult with relevant stakeholders and authorities when developing environmental management plans and to comply with all relevant regulations. Chapter 28 also provides detailed information about the overall objectives and performance criteria for mitigation measures as well as monitoring and reporting measures to demonstrate effectiveness over time.</p>
Environmental management	Local councils	<p>Resource recovery</p> <p>Submissions raised concerns about the how resource recovery issues would be managed and the targets to be set for resource recovery.</p> <p>Submissions claimed that a lack of information was presented in the draft EIS about the level of resource recovery being targeted during the construction phase.</p> <p>Further, it was noted that operational solid waste recycling, as outlined in Table 25–5 of the draft EIS, would amount to 710 tonnes per year, representing a recycling rate of approximately 15 per cent.</p> <p>It was stated that this recycling rate would fall below the NSW Waste and Resource Recovery Strategy target recycling rate of 70 per cent for commercial and industrial waste.</p> <p>It was recommended that the proposed airport should consider committing to best practice in line with NSW EPA recycling targets of 70 per cent for commercial and industrial waste and 80 per cent for construction and demolition waste. It was suggested that high rates of resource recovery will be difficult to achieve without strategic planning.</p>	<p>Chapter 28 (Volume 2b) states that a Waste and Resources CEMP and a Waste and Resources OEMP will be developed. The CEMP and OEMP would reflect the waste management hierarchy as per the <i>Waste Avoidance and Resource Recovery Act 2001</i> (NSW) and would therefore give preference to the avoidance and reduction of waste, followed by reuse, recycling, recovery, treatment and finally disposal.</p> <p>As stated in Chapter 28, a Sustainability Plan will also be prepared and would include targets to reduce consumption of resources and thereby reduce waste.</p> <p>It is expected that as these plans are developed and their performance is monitored, concrete targets for recovery and other waste management options would be identified as relevant to particular waste streams.</p> <p>Demonstration of the management of consumption and waste would also be required to achieve the various sustainability ratings committed to in the EIS, and administered by the Infrastructure Sustainability Council of Australia and Green Building Council of Australia.</p>

Theme	Stakeholders	Summary of issue	Response
Environmental management	Local councils	<p>Resource and waste mitigation measures</p> <p>Submissions stated that waste management measures included in the draft EIS were not described in adequate detail. Further information was recommended particular for measures that would promote waste avoidance, reuse and recovery in particular.</p> <p>Submissions also recommended a commitment to recycling 70 per cent of commercial and industrial waste and 80 per cent of commercial and demolition waste in line with the NSW Environment Protection Authority <i>Waste Avoidance and Resource Recovery Strategy</i>.</p>	<p>As stated in Chapter 28 (Volume 2b), a Waste and Resources CEMP and a Waste and Resources OEMP will be developed. The CEMP and OEMP will provide further detail on the measures described in the EIS including measures for avoidance, reuse and recovery as well as targets to measure performance.</p> <p>The Sustainability Plan outlined in Chapter 28 will require a number of environmental performance targets to be established and implemented by the ALC. This will include targets on recycling, waste, and resource use.</p>

29 Greater Blue Mountains

Volume 2 (Stage 1 Development), Chapter 26 (Greater Blue Mountains) of the draft EIS considered the potential impacts of development of the proposed airport on the World Heritage and National Heritage values, and other values of the Greater Blue Mountains World Heritage Area (GBMWA). The chapter drew on environmental and social assessments undertaken for the proposed airport, which were included in Volume 4 as well as the relevant assessment chapters in Volume 2.

29.1 About the submissions on this chapter



Table 29–1 Submissions related to the Greater Blue Mountains

Issue	Number of times the issue was raised	Percentage of total submissions
Greater Blue Mountains World Heritage Area	3,539	71.1%

29.1.1 Origin of submissions

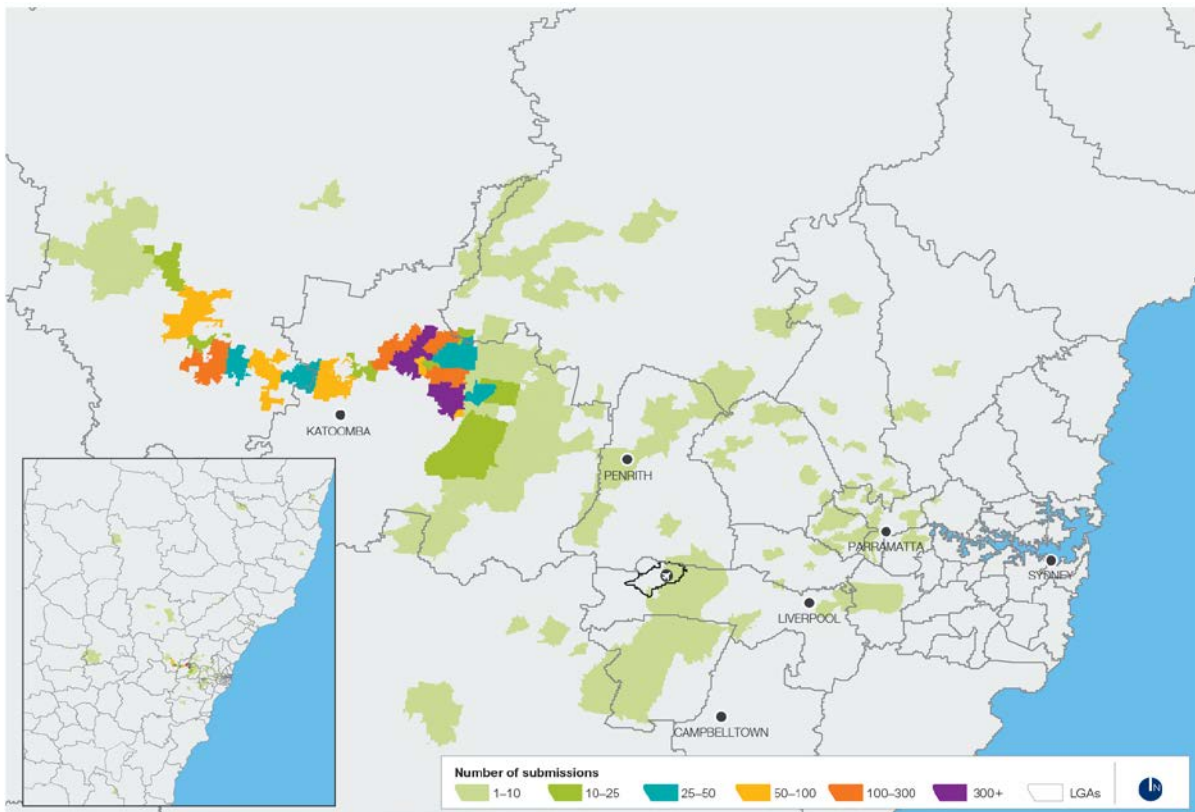


Figure 29–1 Map depicting origin of submissions in relation to Chapter 26 of the draft EIS


29.2 Summary and response

29.2.1 Overarching summary of submissions

Many submissions received made comments about the potential impacts of the proposed airport on the GBMWHA. Particular matters that were raised included:

- adequacy of assessment;
- outstanding universal value of the GBMWHA;
- tourism values of the GBMWHA;
- amenity impacts;
- biodiversity impacts;
- air quality;
- GBMWHA Strategic Plan;
- World Heritage Centre; and
- consultation.

The submission comments are summarised and addressed in section 29.2.3.



Numerous submissions also raised concerns about the proposed development's impacts on the biodiversity values of the Blue Mountains, including the GBMWhA. These matters are discussed in Chapter 29.

29.2.2 Overarching response to issues raised

Following publication of the draft EIS, the Greater Blue Mountains chapter was updated to provide additional information on amenity impacts including noise impacts and flight altitudes over sensitive areas, improve readability and reflect the finalisation of the EIS. The revised assessment is presented in Chapter 26 (Volume 2a).

29.2.3 Issues and responses

Theme	Stakeholders	Summary of issue	Response
Adequacy of assessment	<p>Environment groups</p> <p>Local councils</p> <p>Residents</p> <p>GBMWhA Advisory Committee</p>	<p>Limited nature of impact assessment</p> <p>Submissions expressed concern that the draft EIS did not adequately consider impacts to the Greater Blue Mountains World Heritage Area (GBMWhA).</p> <p>Submissions were critical of the draft EIS assessment of potential impacts because it was limited to noise, air emissions and amenity impacts from the overflight of aircraft, lighting and traffic. Councils were of the view the draft EIS did not adequately consider potential impacts, did not take into account current international trends in the management of aircraft noise in national parks, particularly those in the United States, or utilise alternative noise measures to quantify the amount of time that aircraft noise is audible above background noise.</p> <p>Stakeholders stated that the draft EIS did not use the correct name of the World Heritage Area (i.e. GBMWhA); nor is there any systematic or rigorous understanding of the World Heritage Convention requirements and processes. Submissions noted that the Greater Blue Mountains are listed as a National Heritage place and as a declared World Heritage property.</p>	<p>Potential indirect impacts on World Heritage and National Heritage values from the construction and operation of the proposed Stage 1 Western Sydney Airport are addressed in Chapter 26 (Volume 2a) having regard to the attributes identified in the property's Statement of Outstanding Universal Value and the complementary values of the area identified in the GBMWhA Strategic Plan. The assessment considers noise, air emissions and amenity impacts from the overflight of aircraft, lighting and traffic. The assessment concludes that the Stage 1 development would not result in a significant impact on World Heritage values and other values of the GBMWhA.</p> <p>Current international trends in the management of aircraft noise in national parks, including those in the United States, were considered in the preparation of the EIS. The management of aircraft noise in the Grand Canyon National Park is discussed in Section 7.2.3 of this submissions report.</p> <p>An abbreviation for the Greater Blue Mountains Area (GBMA) was used in Chapter 26 in the draft EIS as well as an abbreviation for the Greater Blue Mountains World Heritage Area (GBMWhA). References in the EIS to the Greater Blue Mountains Area have been retained where necessary for accuracy and to more clearly distinguish values that have been recognised as World Heritage values from other values of the area. For example, the property inscribed in the World Heritage List is the GBMA (see the Statement of Outstanding Universal Value and the UNESCO World Heritage Centre Internet site). Where appropriate, the abbreviation GBMWhA has been generally adopted for the finalised EIS.</p> <p>The EIS identifies and recognises the obligations of the Australian and NSW Governments under the World Heritage Convention in Section 26.3.2.3 (Volume 2a). The assessment of impact was conducted in accordance with the Statement of Outstanding Universal Value and the EPBC Act Significant Impact Guidelines 1.1 – Matters of National Environmental Significance and concluded that the level of impact was likely to be low.</p> <p>Section 26.3.3 (Volume 2a) indicates that the values identified for the National Heritage place are the same as those for the World Heritage Area. Therefore, the assessment addresses both aspects.</p> <p>The detailed airspace and flight path design process for the proposed airport will consider the impacts of aircraft operations on natural and visually sensitive areas such as the GBMWhA. As noted in Chapter 7 (Volume 1), the detailed airspace design will be subject to separate regulatory processes before implementation.</p>

Theme	Stakeholders	Summary of issue	Response
Adequacy of assessment	GBMWA Advisory Committee	<p>Outstanding universal value</p> <p>Concern was expressed that the draft EIS did not adequately consider the potential adverse impacts on the GBMWA and its outstanding universal value.</p>	The EIS presents an assessment of all potential impacts from airport development and operation on the recognised World Heritage values, the outstanding universal value of the GBMWA (Table 26-5) and other complementary values of the property outlined in the GBMWA Strategic Plan (Table 26-6). The potential for the proposal to contribute to the threats identified in the Strategic Plan is also considered (Table 26-7).
Adequacy of assessment	Local councils GBMWA Advisory Committee Environment groups Residents	<p>Multidisciplinary workshop</p> <p>Concern was raised that a detailed assessment of the GBMWA had been deferred until a 'multidisciplinary workshop' was held to identify and assess potential impacts.</p>	<p>A detailed assessment of potential impacts on the World Heritage and National Heritage (and other) values of the GBMWA was undertaken for the EIS. The assessment concludes that there would be no direct effects on the GBMWA resulting from construction or operation of the proposed airport. Potential indirect impacts associated with air quality, noise and visual amenity were investigated and assessed and it was concluded that they would not have a significant impact on the World Heritage values and the integrity of the GBMWA.</p> <p>An appendix to the biodiversity technical report prepared for the draft EIS (Appendix K1) included a statement that referred to a process for finalising the technical report. This sentence was unintentionally retained in the final draft of the report.</p>
Adequacy of assessment	Local councils Blue Mountains Greens GBMWA Advisory Committee	<p>Flight path uncertainty</p> <p>Concern was expressed about the uncertain location of flight paths over the Blue Mountains and whether they will be concentrated over urban/rural areas adjacent to the GBMWA, over bushland and wilderness areas of the GBMWA, or will be alternated between these areas. Submissions suggested that the airspace architecture presented in the draft EIS should be substantially revised to exclude the overflight of the GBMWA and adjacent residential areas.</p>	Issues relating to the determination of final flight paths for the proposed airport are addressed in Chapter 7 (Volume 1) and Section 10.2.3 of this submissions report.
Outstanding universal value of the GBMWA	Community groups Local councils Senators and Members of Parliament Blue Mountains Greens GBMWA Advisory Committee Residents	<p>World Heritage status of the Greater Blue Mountains Area (GBMA)</p> <p>Submissions stated that World Heritage listing of the GBMA was of great value to the Australian community and represented many years of hard work and negotiation. Submissions expressed concern that aircraft noise and engine emissions are a threat to World Heritage listing of the GBMA due to adverse impacts on the outstanding universal value of this World Heritage property. It was contended that the proposed airport would have a significant and permanent impact on World Heritage values and that a very high number of aircraft movements over wilderness areas would degrade</p>	<p>The Australian Government is fully committed to protecting and conserving the World Heritage values and integrity of the GBMWA. World Heritage listing can assist in the conservation of the listed place and also can benefit local communities through increased tourism, employment opportunities and income, as well as improved planning and management of the region. In recognition of preserving our natural environment and Australia's obligations under the World Heritage Convention, the EIS considers noise, air quality and amenity impacts on the GBMWA from overflight of aircraft.</p> <p>Indirect impacts on World Heritage values from the operation of the proposed airport are assessed in the EIS against the attributes identified in the Statement of Outstanding Universal Value for the GBMWA and the complementary values of</p>

Theme	Stakeholders	Summary of issue	Response
		<p>the integrity of the property. Submissions noted that in 1999 the World Heritage listing nomination was deferred as a direct result of the airport proposal at the time and potential effects on the area. An assessment was sought against the World Heritage criteria taking into consideration the previously stated concerns of the International Union for Conservation of Nature (IUCN).</p>	<p>the area outlined in the GBMWhA Strategic Plan. The assessment found that construction and operation of the proposed airport would not have a significant impact on the World Heritage and other values of the GBMWhA, including its wilderness values and integrity.</p> <p>The 1999 nomination of the Greater Blue Mountains Area (GBMA) for inscription on the World Heritage List was deferred for several reasons. In deferring the nomination, the Bureau of the IUCN decided:</p> <ul style="list-style-type: none"> • to invite Australia to consider a serial nomination to cover the full range of values of eucalyptus ecosystems (on the basis that the GBMA, though nationally important, was not considered on its own to be a globally significant representation of eucalyptus-dominated vegetation); • to recommend that the World Heritage Committee not inscribe the site on the World Heritage List on the basis of cultural criteria; and • there were unresolved integrity questions, including boundary anomalies that reduce the effectiveness of the area's size to protect the biota and ecosystem processes, and the potential development of an airport at Badgerys Creek. <p>Based on its review of the 1997 Second Sydney Airport draft EIS, the IUCN in 1999 observed that aircraft noise levels of 70 to 80 dBA would occur over the Blue Mountains and flights would also be visually intrusive and adversely affect the natural quiet and ambience of parts of the GBMA. The IUCN also expressed concern about fuel dumping and the airport's impact on regional air quality.</p> <p>The noise assessment for the current EIS, based on conservative fleet mix and other assumptions, indicates that only limited areas of the GBMWhA close to the airport site would experience aircraft noise levels above 55 dBA L_{Amax} from a typical Airbus 320 arrival or departure. These areas are restricted to the south-eastern boundary of the Blue Mountains National Park. It is unlikely that any areas of the GBMWhA would experience noise levels above 70 dBA L_{Amax} on a regular basis from a worst case operation of a Boeing 747 aircraft, which is currently being phased out of operation.</p> <p>It is important to note that civil and general aviation aircraft operating to and from Sydney (Kingsford Smith) Airport and Bankstown Airport currently pass over the GBMWhA. The assessment presented in Chapter 26 (Volume 2a) shows that, when viewed from selected key sensitive areas, aircraft using the proposed airport are likely to be at least 6,000 feet above ground level. Above this height, aircraft would become increasingly difficult to discern and are unlikely to be visually obtrusive. The detailed airspace and flight path design process for the proposed airport will consider the impacts of aircraft operations on natural and</p>

Theme	Stakeholders	Summary of issue	Response
			<p>visually sensitive areas such as the GBMWhA to see if impacts can be further reduced having regard to safety and efficiency considerations.</p> <p>The EIS comprehensively addresses air quality impacts associated with the operation of the proposed airport and the likelihood and effects of emergency fuel jettisoning. The modelled contribution of aircraft and vehicle emissions from the proposed airport would represent a very small component of total ozone concentration levels in Western Sydney. Likewise, the extremely very rare event of an aircraft needing to jettison fuel is unlikely to have a significant impact on local air quality, or adversely affect the recognised World Heritage values or the integrity of the property.</p>
Tourism values of the GBMWhA	Tourism industry Local councils GBMWhA Advisory Committee	<p>Sensitive tourism and recreation areas</p> <p>Submissions expressed support for the draft EIS's identification of the Jamison Valley south of Echo Point lookout, the Scenic Cableway and Scenic Skyway at Katoomba and Wentworth Falls lookout and related walking tracks and nearby waterfalls, as being sensitive areas for tourism and recreation in relation to potential impacts from noise, air quality and amenity. Other submissions considered that the EIS should address the impacts on additional tourist sites closer to the airport site to understand the full range of users of the area.</p>	The EIS includes the listed sites and other areas as part of its consideration of impacts on the GBMWhA. Further consultation will be undertaken with local government, industry groups and the community to ensure that potential impacts on sensitive tourism and recreation areas are taken into account in the detailed airspace and flight path design process.
Tourism values of the GBMWhA	Tourism industry	<p>Increase in tourism</p> <p>Submissions expressed strong support for the proposed airport as favourable in driving the growth of tourism in the Blue Mountains. Support was given for the long term development of the proposed airport and the positive impacts it would have for the Greater Blue Mountains and tourism in the area. A submission stated that the long term indicative flight paths would not have any negative impact on the appeal of the Blue Mountains as a tourist destination.</p>	These comments are noted.

Theme	Stakeholders	Summary of issue	Response
Tourism values of the GBMWHA	Local councils Blue Mountains Greens Residents	Risks to tourism Submissions expressed concern that the indicative flight paths would affect the nature-based recreation and tourism industry and have potentially severe effects on the economy of the Blue Mountains. Submissions stated that the EIS should assess the economic impact of airport operations on the tourism industry.	The GBMWHA attracts tourists due to its natural and cultural heritage features and wilderness areas. Chapter 26 (Volume 2a) assesses the impact of the proposed Western Sydney Airport on these features and concludes that any potential impact would not be significant. In addition, the future process to determine final flight paths would further consider the impact of aircraft on areas highly utilised by tourists such as scenic viewing locations. Given the predicted low-level impact on these aspects of the GBMWHA, it is considered unlikely that the proposed development would have a negative impact on nature-based recreation and the broader tourism industry.
Amenity impacts	Local councils GBMWHA Advisory Committee Residents	Loss of amenity A number of submissions expressed concern over what are believed to be unacceptable amenity impacts on the GBMWHA. Particular reference was made to the World Heritage listing of the Greater Blue Mountains Area because of its natural features, which do not include human activities that generate noise and air pollution. Submissions also stated that there would be visual as well as aural intrusion into vast areas of the GBMWHA and that an appropriate buffer zone should be retained between the Blue Mountains and urbanised areas.	Areas of the GBMWHA currently experience noise, air quality, visual and amenity impacts from human activities associated with road and rail traffic, urban development, tourism activities and aircraft operations at Sydney Airport and other airfields. Aircraft operations associated with the proposed Western Sydney Airport will contribute to the cumulative impact of these activities on the amenity of the GBMWHA. Assessments of the noise and air quality impacts of the proposed airport on the GBMWHA are presented in Sections 26.5.2.1 and 26.5.2.2 (Volume 2a) respectively. The visual amenity impacts resulting from Stage 1 operations are investigated and documented in Section 26.5.2.3 (Volume 2a). Aircraft overflying most locations within the GBMWHA would be at an altitude in excess of 6,000 feet above mean sea level. Overall, the assessment concluded the level of visual impact from Stage 1 operations is likely to be low. The visual impacts of the airport development on the GBMWHA are also addressed in Section 25.2.3 of this volume.
Amenity impacts	Environment groups Local councils	Level of impacts on the GBMWHA Submissions rejected the suggestion that the level of impacts on the GBMWHA would be low based on the assumed altitude of aircraft overflights. It was contended that flights above 10,000 feet would have more than 'minimal impact' and that existing aircraft flights above this altitude are intrusive. Submissions suggested that, while aircraft noise levels of 50 dBA may equate to what is acceptable traffic noise on a suburban street, they are not acceptable for a World Heritage listed area classified for its natural features and where background noise levels well below 30 dBA are expected. The environmental awareness of visitors to national parks and the values they seek to experience in such areas (e.g. tranquillity, scenic beauty) were considered to exacerbate the perceived impact	Estimating noise impact and defining acceptable limits are difficult, largely because of the subjective nature of an individual's response to different types, characteristics and levels of noise. Studies have shown that personal and psychological factors and attitudes can explain a comparatively large proportion of the observed variation in reaction to aircraft noise. By contrast, the actual amount of noise present (its loudness) represents a relatively small proportion of the variation in reaction. The environmental context of a noise event and the activities of the person affected are factors that may affect a person's perception of noise. Other factors include how long the noise occurs for, whether the noise is expected and predictable, the time of day that the noise occurs, the tonal and frequency characteristics of the noise, familiarity with the noise and its source, and a person's perception of the aviation sector and aircraft activities in general. The EIS noise assessment is based on predictions of quantifiable maximum noise

Theme	Stakeholders	Summary of issue	Response
		<p>of aircraft overflights.</p> <p>Submissions questioned the use of criteria under the NSW <i>Industrial Noise Policy</i> as a basis for determining the significance of noise impact from aircraft operations.</p>	<p>levels and generally accepted thresholds for day and night time aircraft operations. Special consideration has been given to noise effects in sensitive environments by modelling 50 dBA L_{Amax} and 55 dBA L_{Amax} noise contours for arrivals and departures of a 'worst case' Boeing 747 aircraft and a more typical Airbus 320 aircraft. This assessment shows that, based on the EIS indicative flight paths, most sensitive areas within the GBMWA would only experience aircraft noise at or above the 50 dBA L_{Amax} level during the infrequent operation of the Boeing 747 (an aircraft type that is generally being phased out of operation).</p> <p>Peak noise levels associated with a single aircraft overflight are not directly comparable to the criteria based on average noise levels, such as those contained in the NSW <i>Industrial Noise Policy</i> (INP). For this reason, the draft EIS assessment of aircraft noise impacts on sensitive areas notes that it is based on a conservative worst case basis. For aircraft noise, average noise levels, or L_{Aeq}, will always be well below maximum noise levels, as presented in the EIS. Averaged noise levels for aircraft overflights of the GBMWA are expected to be below 40 decibels. Given the difficulty in comparing single event noise values (as used in the aircraft overflight noise assessment) with average noise levels (as used in the INP), the finalised EIS does not make reference to the INP criteria.</p> <p>It is likely that areas of the GBMWA would experience background noise levels below 30 dBA L_{Aeq}. Where these areas coincide with overflights, individual aircraft events would be audible and would change the location's existing sound characteristics. However, as discussed in Chapter 26 (Volume 2a), the general level of impacts on the GBMWA is likely to be low from Stage 1 operations in accordance with the indicative flight path arrangements. The potential to reduce noise impacts on the GBMWA will be further considered in determining the final airspace and operational arrangements for the proposed airport.</p> <p>Additional comments about the altitude of flights over the Blue Mountains and their perceived impact are provided in Section 10.2.3 of this submissions report.</p>

Theme	Stakeholders	Summary of issue	Response
Amenity impacts	Environment groups	<p>Tourist and other general aviation flights</p> <p>Submissions stated concern that the proximity of the proposed airport would lead to an increase in tourist flights across the GBMWA. Statements were made that helicopters and small aircraft flights fly loud and low, and their operations could become a major intrusive noise factor emanating from the proposed airport.</p>	<p>The Government's primary objectives for a Western Sydney Airport are to improve access to aviation services for Western Sydney and solve the long term regular public transport (RPT) capacity constraints in the Sydney Basin. The revised draft Airport Plan acknowledges that Bankstown Airport remains the principal general aviation aerodrome in the Sydney basin. While not explicitly planning for general aviation, future use of the proposed airport for such activity is not excluded and investment in associated support facilities will be a commercial decision for the ALC in consultation with the general aviation sector, and subject to relevant approvals.</p> <p>It could generally be expected that operations by general aviation aircraft, and in particular helicopters, would not follow the RPT standard departure and arrival flight paths to the same extent as regular commercial aircraft. Given the greater flexibility and uncertain purpose of these operations it is difficult to identify flight routes likely to be used by general aviation aircraft</p> <p>Given the airport site's proximity to the GBMWA, two types of operation that could be based at the proposed airport (either on a temporary or more permanent basis) are firefighting and hazard reduction operations, and scenic tourist flights. Although emergency operations would generally be conducted at low altitude, they would occur infrequently. At most airports, standard departure and arrival procedures ensure that, if possible, twin engine helicopters do not fly over residential areas below 1,500 feet (noting that lower levels may be flown during landing and take-off or in emergency situations).</p> <p>Several airports have established Fly Neighbourly Agreements (FNAs) between aircraft operators and airports or local councils. FNAs normally include advice on how to avoid noise sensitive areas and procedures for minimising noise over residential areas. A FNA is in place for scenic flights over the Blue Mountains National Park. Prior to departure, pilots undertaking sightseeing flights should obtain details of the areas to be avoided and the preferred scenic routes. Except when operating on preferred scenic routes, pilots are requested to maintain a minimum altitude of 2,000 feet above the surface of the park (the surface being the highest point of terrain within a radius of 600 m). Any scenic flight operations based at the proposed airport would be expected to comply with the conditions of this FNA and any other applicable FNA so as to reduce the impact of these activities on residential and other noise sensitive areas.</p>

Theme	Stakeholders	Summary of issue	Response
Amenity impacts	Local councils Blue Mountains Greens Environment groups	<p>Ambient noise monitoring</p> <p>Submissions stated that the frequency of aircraft overflights in remote areas of the GBMWH A was considered particularly important for determining changes to the natural soundscape. Submissions recommended that the draft EIS noise assessment should be amended to take into account ambient noise measurements from a representative sample of locations within the GBMWH A.</p> <p>Submissions claimed that the draft EIS assumes background noise levels in the GBMWH A to be below 50-55 dBA L_{Amax} and that aircraft noise would not exceed background noise levels.</p>	<p>Section 7.11.2 (Volume 1) presents data on the predicted number of aircraft movements per day for the proposed Stage 1 development. The frequency of aircraft movements over particular locations within the GBMWH A can be estimated by combining this information with the indicative flight paths and operating strategies provided in Chapter 7. The final location of flight paths will be reviewed through the detailed airspace and flight path design process to be completed prior to implementation (see Section 7.8 (Volume 1)).</p> <p>The contention that the EIS assumes an aircraft noise level of below 50-55 dBA L_{Amax} to be comparable to ambient noise levels is not correct. The L_{Amax} noise measure is used for representing noise from single events, not background or ambient noise levels. The EIS does not assert that aircraft noise would not exceed background noise levels.</p>
Amenity impacts	Environment groups	<p>Re-exhibit the draft EIS</p> <p>Submissions suggested that the draft EIS should be re-exhibited with a consideration on how to prevent significant aircraft noise impacts on the natural quiet of the GBMWH A.</p>	<p>The EIS provides a wide-ranging assessment of aircraft noise and other impacts on the values and environmental attributes of the GBMWH A. Opportunities to minimise impacts of aircraft operations on the amenity of the World Heritage property will be considered in the detailed airspace and flight path design process (see Section 7.8 (Volume 1)).</p> <p>This process will include a separate EPBC Act referral and community consultation.</p>
Biodiversity impacts	Environment groups Blue Mountains Greens	<p>Impacts on birds</p> <p>Submissions stated that bird numbers would likely decline in a noisy environment and consequently pollination and seed dispersal will also decline. These impacts were seen as a threat to the World Heritage status of the GBMWH A. Concern was also expressed about the lack of consideration of bird and bat strike over the GBMWH A, Burragorang Conservation Area, Warragamba Dam, Lake Burragorang and parts of the Nepean River.</p> <p>Submissions stated that the assessment of the impact of aircraft overflight noise on wildlife is difficult and that there is considerable uncertainty and an unacceptably high risk of impact on the diverse fauna of the GBMWH A.</p>	<p>Section 26.5.2.1 (Volume 2a) indicates that, given the height at which flights to and from the proposed airport are likely to occur over the GBMWH A, maximum noise levels from individual overflights are unlikely to exceed 65 dBA, a level at which disturbance to bird behaviour has been observed. The assessment found that operation of aircraft is highly unlikely to permanently alter foraging or breeding behaviour of any fauna species or ecosystem processes important to the biodiversity of the GBMWH A.</p> <p>Most bird and bat strikes by aircraft occur during take-off or landing and within less than 5 km of airports. As discussed in Section 19.2.3 of this volume, migratory species moving at higher altitudes and at greater distances from an airport are less likely to be involved in aircraft strikes. The GBMWH A and Lake Burragorang are more than 5 km from the airport site and it is considered highly unlikely that the incidence of bird and bat strike over these areas would be of a magnitude that would adversely affect the viability of populations of native fauna, including populations of migratory bird species protected under Commonwealth and State legislation.</p>

Theme	Stakeholders	Summary of issue	Response
Biodiversity impacts	Environment groups	<p>Biosecurity</p> <p>Submissions expressed concern that the draft EIS did not look at the impact of biosecurity issues on the GBMWhA, particularly the potential introduction of leafhoppers capable of transmitting the bacterium <i>Xyella fastidiosa</i> and various invasive ant species.</p>	<p>The potential for the introduction of invasive pest species is discussed in Section 6.1.10 of the EIS Biodiversity Assessment (Appendix K1, Volume 4). All aircraft arriving in Australia from overseas are subject to Australian biosecurity requirements administered by the Department of Agriculture. Further, the proposed airport and airlines using the proposed airport would be expected to comply with all Australian laws relating to biosecurity, similar to existing airports.</p>
Air quality	<p>Residents</p> <p>Senators and Members of Parliament</p> <p>Local councils</p> <p>Community groups</p>	<p>Fuel jettisoning</p> <p>Concern was expressed about the potential impact of fuel jettisoning over the GBMWhA. It was suggested that aircraft needing to jettison fuel in emergency situations should use Sydney (Kingsford Smith) Airport as it provides the opportunity to jettison over the ocean rather than over the GBMWhA.</p>	<p>The issue of emergency fuel jettisoning and how it has been assessed is addressed in Section 10.2.3 of this submissions report and Section 7.11.4 (Volume 1). Fuel jettisoning occurs very rarely and only after authorisation from air traffic control. In 2014 there were 10 instances of civilian aircraft jettisoning fuel in Australia, representing approximately 0.001 per cent of all domestic and international aircraft movements across the nation.</p> <p>The standards that apply to these emergency events and the high evaporation and dispersion rates known to occur at high altitude, aircraft operations at the proposed Western Sydney Airport are not considered likely to adversely impact the health of people or wildlife in the GBMWhA.</p>
Air quality	Blue Mountains Greens	<p>Greenhouse gas emissions</p> <p>Submissions stated that greenhouse gas emissions from the proposed airport will contribute to climate change and threaten the integrity of the GBMWhA.</p>	<p>As discussed in Chapter 12 and Section 26.5.2.2 (Volume 2a), greenhouse gas emissions from the proposed airport would not be material in terms of national inventory of emissions (contributing approximately 0.1 per cent of Australia's projected 2030 transport-related GHG emissions) or represent a significant contribution to global climate change.</p>
GBMWhA Strategic Plan	<p>Local councils</p> <p>Blue Mountains Greens</p>	<p>Status of the airport proposal in the context of the GBMWhA Strategic Plan</p> <p>Submissions stated that the values and existing threats identified in the GBMWhA Strategic Plan were developed in the context of there being no proposed airport. They advocated the plan be updated to reflect potential airport issues prior to a decision being made on the basis of the current EIS.</p>	<p>The timing and nature of any changes or updates to the January 2009 GBMWhA Strategic Plan are a matter for the responsible Commonwealth and NSW government agencies.</p>

Theme	Stakeholders	Summary of issue	Response
World Heritage Centre	Senators and Members of Parliament Blue Mountains Greens Local councils GBMWA Advisory Committee	<p>Notification of the World Heritage Centre</p> <p>Submissions noted that the notification of the environmental assessment process (relating to the referral and the draft EIS) and opportunity for public comment had been made to the World Heritage Centre. The GBMWA Advisory Committee recommended that the draft EIS and copies of submissions from conservation and community groups be sent to the World Heritage Centre for its consideration.</p>	<p>The Australian Government has provided periodic updates about the Western Sydney Airport proposal to the World Heritage Centre. This included notification of the release of the draft EIS. All draft EIS documents have been accessible via the Department's Internet site since their public release. The Department of Infrastructure and Regional Development is aware that several conservation and community groups have written to the World Heritage Centre directly about the proposed development.</p>
Consultation	Local councils	<p>Engagement with traditional owners</p> <p>Submissions asserted that limited engagement had been conducted with local Darug and Gundungurra traditional owners. Ongoing and transparent dialogue with local government on the proposed airport and its potential impacts on the GBMWA and Blue Mountains communities was recommended.</p>	<p>Representatives of local traditional owner communities participated in onsite surveys and salvage investigations and associated consultations. Consultation including with local government and other stakeholders will continue during the pre-operation phase of the project and beyond.</p>

30 Cumulative impact assessment

Volume 2 (Stage 1 Development), Chapter 27 (Cumulative impact assessment) of the draft EIS assessed the potential cumulative impacts that may arise as a result of the construction and operation of the proposed airport concurrently or sequentially with other projects in the region. The chapter drew on environmental and social assessments undertaken for the proposed airport, which were included in Volume 4 as well as the relevant assessment chapters in Volume 2.

30.1 About the submissions on this chapter



Table 30–1 Submissions related to cumulative impact assessment

Issue	Number of times the issue was raised	Percentage of total submissions
Cumulative impact assessment	67	1.3%

30.1.1 Origin of submissions

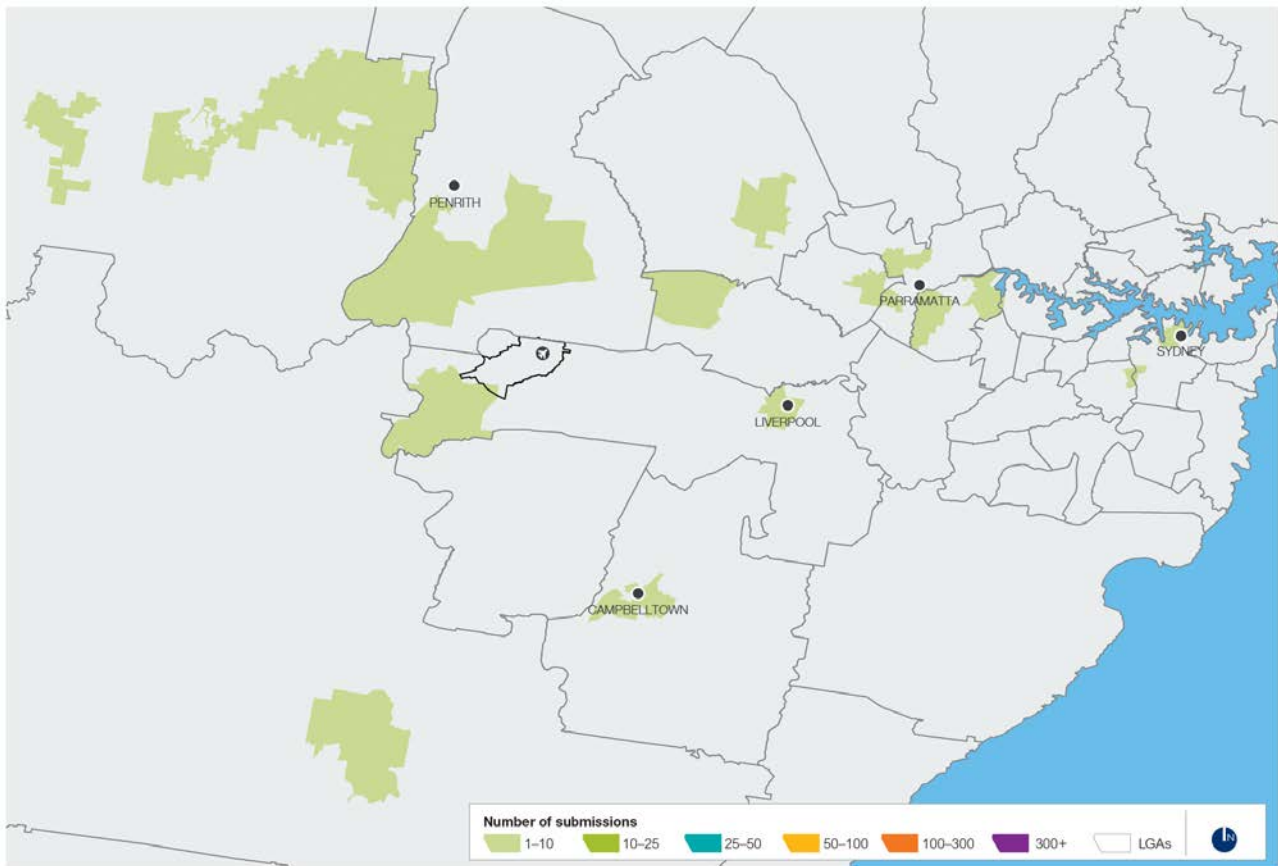


Figure 30–1 Map depicting origin of submissions in relation to Chapter 27 of the draft EIS

30.2 Summary and response

30.2.1 Overarching summary of submissions

Submissions questioned the scope of the cumulative impact assessment in the draft EIS, particularly in relation to the interaction with existing airspace arrangements in Sydney, as well as transport related infrastructure projects in Western Sydney.

The key themes from the submissions are summarised under the following headings:

- adequacy of assessment;
- airspace architecture;
- cumulative biodiversity impacts;
- cumulative aircraft overflight noise impacts;
- cumulative ground-based noise impacts;
- cumulative Aboriginal heritage impacts;
- cumulative waste and resources impacts; and
- commercial development.



The submission comments are summarised and addressed in section 30.2.3.

30.2.2 Overarching response to issues raised

Following publication of the draft EIS, the cumulative impact assessment was updated to improve readability and reflect the finalisation of the EIS. The assessment was also updated to:

- reflect the status of other existing or proposed projects in the region;
- include a clearer explanation of the process for airspace design and authorisation under the Airports Act; and
- reflect ongoing refinement of mitigation and management measures such as the offsets strategy and potential establishment of a 'keeping place' for certain salvaged Aboriginal heritage material.

The revised assessment is presented in Chapter 27 of Volume 2a.

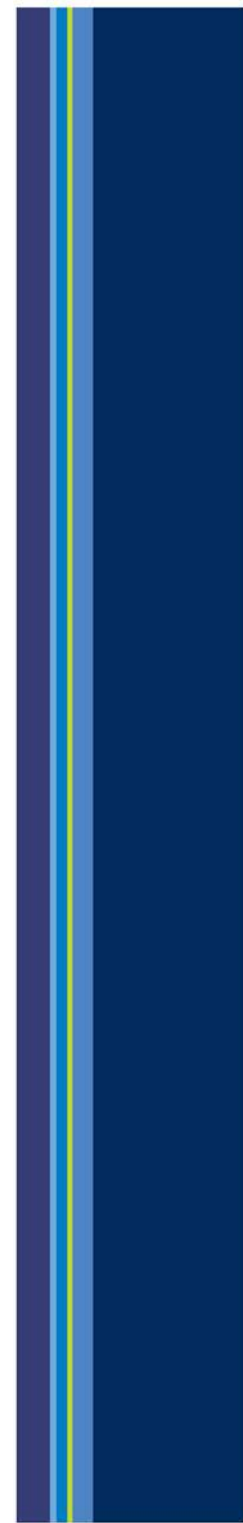
30.2.3 Issues and responses

Theme	Stakeholders	Summary of issue	Response
Adequacy of assessment	NSW Government Residents Local councils Community groups Environmental groups Land owners	<p>Adequacy of assessment</p> <p>Submissions stated that the cumulative impact assessment did not adequately discuss the impacts of other projects in the region including:</p> <ul style="list-style-type: none"> • the Western Sydney Employment Area; • priority growth areas and precincts; • light rail, passenger rail and freight rail; • road upgrades, new roads and orbital freeways; • commercial and industrial areas and employment lands; • urban growth facilitated by the long term development; and • transport infrastructure and utilities supporting the proposed airport. <p>Particular areas of concern included biodiversity, noise, air quality and traffic. Submissions suggested the need for additional information in the final EIS on the cumulative impacts of these and other projects in the region.</p>	<p>The cumulative impact assessment in the EIS considers a range of other significant projects or initiatives in the region (see Section 27.2 (Volume 2a)). The EIS guidelines require that the potential cumulative impacts of the proposed airport are assessed where they are in addition to existing impacts of other activities (including known potential expansions or developments in the region and vicinity). Mitigation measures to address these issues are outlined in Chapter 28 (Volume 2b).</p> <p>Western Sydney is undergoing a transformation from a rural urban landscape to one which is much more urban. The proposed airport will contribute to this transformation and, where appropriate, the cumulative impact assessment has examined how the proposed airport would contribute to the impacts of existing and proposed developments such as those identified in submissions.</p> <p>Many of the projects and urban growth activities identified by submissions commenced prior to the Australian Government's decision to locate an airport at Badgerys Creek and would occur irrespective of the proposed airport. Impacts associated with those projects and activities will occur irrespective of the proposed airport development.</p> <p>Biodiversity</p> <p>The EIS acknowledges that the proposed airport would contribute to regional biodiversity impacts as part of the broader urbanisation of Western Sydney (see Appendix K1 (Volume 4)). In particular, the proposed airport would result in the additional removal of native vegetation and habitat, increase fragmentation and increase the risk of fauna injury and mortality. The assessment notes that ecosystem resilience is already low due to impacts from past and existing activities and climate change, and that the proposed airport would contribute to the impacts of global climate change. The biodiversity offset package (Appendix K2 (Volume 4)) seeks to protect biodiversity values within the local bioregion to compensate for the proposed airport's contribution to the regional impacts on listed threatened biota.</p> <p>Aircraft overflight and ground operation noise</p> <p>The EIS assessment has found that activities associated with the construction of the proposed airport will make a limited contribution to cumulative noise impacts in the vicinity of the airport site. This is because construction noise would</p>



Theme	Stakeholders	Summary of issue	Response
			<p>generally not extend far beyond the airport site, which is located some distance from most other significant projects and initiatives in the region. Depending on the timing of the respective proposed developments, it is possible that airport construction could coincide with the proposed realignment and upgrade of The Northern Road. If this eventuates, and contingent on the distance between concurrent activities, there is potential for noise from both construction activities to impact areas close to the airport boundary including the village of Luddenham.</p> <p>Cumulative noise impacts during construction are expected on some roads due to noise from heavy vehicles accessing the airport site. The roads that will be used as haulage routes to the airport site already carry relatively high volumes of traffic and the increase in noise from construction traffic is predicted to be less than 2 dBA, which is generally considered to be imperceptible.</p> <p>During operation, aircraft overflight and ground-based noise at the proposed airport would increase cumulative noise exposure to the surrounding community. Noise exposure levels would increase most noticeably in Luddenham, not only due to aircraft noise but also from road traffic using upgraded or new roads such as the realignment of The Northern Road. The airport and these road developments will contribute to changed background noise levels in the vicinity of the airport site. As outlined in the cumulative impact assessment at Section 27.3.1 Chapter 27 (Volume 2a), the cumulative impacts from aircraft noise and noise abatement opportunities would be considered through the formal airspace and flight path design process.</p> <p>Traffic and transport</p> <p>The EIS identifies that the potential for cumulative traffic impacts is generally limited. As outlined in Section 27.3.4, Chapter 27 (Volume 2a), cumulative impacts associated with the proposed airport are taken into account in the transport modelling approach and are reported in the traffic impact assessment and the cumulative impact assessment. The EIS uses the Sydney Strategic Travel Model which is a tool developed by the Bureau of Transport Statistics at Transport for NSW to project travel patterns in the Sydney Greater Metropolitan Area. The modelling takes into account population and employment projections together with existing and planned projects and activities and their traffic impacts to assess the additional impact of traffic growth and trip generation caused by the proposed airport. It is noted that following publication of the draft EIS, the traffic assessment was revised due to updates to the Strategic Travel Model. The updated model was included in the assessment to ensure the modelled impacts</p>

Theme	Stakeholders	Summary of issue	Response
Airspace architecture	Local councils Aviation industry Businesses Community groups	<p>Interaction with existing airspace arrangements</p> <p>Submissions raised issues regarding the assessment of the interaction of airport operations with existing airspace arrangements including those for:</p> <ul style="list-style-type: none"> • Sydney Airport; • Camden Airport; • Bankstown Airport; 	<p>were as accurate as possible, accounting for revised road network planning, proposed projects and background traffic.</p> <p>Overall, the EIS finds that the proposed airport would not generate the level of traffic required to impact the surrounding road network significantly, the capacity of which will be enhanced by the development of additional transport infrastructure through the Western Sydney Infrastructure Plan.</p> <p>The cumulative impact assessment found that the main risk associated with traffic impacts was community fatigue associated with concurrent construction work for the proposed airport, The Northern Road and the M12 Motorway. To manage this risk, the EIS commits to the coordination of activities, traffic control and other management measures between the Department of Infrastructure and Regional Development, NSW Roads and Maritime and relevant construction contractors.</p> <p>Local and regional air quality</p> <p>Similar to traffic impacts, cumulative air quality impacts are captured in the overall modelling approach for the assessment of air quality. The air quality models used in the EIS account for existing ambient air quality data obtained from monitoring stations in the vicinity of the airport site, as well as the results of the cumulative traffic impacts from the traffic assessment.</p> <p>The results of the air dispersion modelling indicate that predicted emissions would typically be below the respective air quality assessment criteria during construction and operation when considering both the incremental impacts of the proposed airport alone as well as the cumulative impacts of other surrounding land use and development. Predicted exceedances are generally associated with external sources such as regional dust storms and emissions generated by background traffic on the surrounding road network. The assessment of regional air quality finds that Stage 1 operations would have only a marginal impact on regional ozone levels.</p>
			<p>As outlined in Section 27.3.1 of the cumulative impact assessment (Chapter 27 (Volume 2a), the operation of the proposed airport would interact with the operations at Sydney Airport, Camden Airport, Bankstown Airport, RAAF Base Richmond and several other minor aviation facilities in the region. A preliminary assessment of airspace implications for the Sydney region associated with an introduction of flights at the proposed airport was undertaken by Airservices Australia to develop indicative air traffic management designs. The indicative designs demonstrate that Stage 1 of the proposed airport and Sydney Airport</p>



Theme	Stakeholders	Summary of issue	Response
		<ul style="list-style-type: none"> • RAAF Base Richmond, and • Orchard Hills restricted airspace. <p>In particular, submissions stated that the EIS should provide a more detailed description of airspace interactions and how this may impact on community exposure to aircraft noise from existing airports, changes to operating capacity or regulation of operations at existing airports, any subsequent economic and financial impacts from changes to existing airport operations, and impacts on other airspace users.</p> <p>Some submissions also expressed concern that cumulative impacts resulting from airspace design and operations for the long term development had not been adequately addressed.</p>	<p>could safely operate independently as high capacity airports without changes to existing flight paths and noise sharing arrangements at Sydney Airport. Further detail is provided in Chapter 7 (Volume 1).</p> <p>The cumulative environmental impacts (noise, air quality and public safety) of additional aircraft movements over the Sydney metropolitan area would be considered as part of future airspace planning. It is important to note that the flight path design for the proposed airport is a long and complex process which will be finalised closer to the commencement of operations. The formal design process will provide an opportunity to optimise flight paths on the basis of safety, efficiency, capacity, noise and environmental considerations, while minimising changes to existing regional airspace arrangements.</p> <p>Airservices Australia and the Civil Aviation Safety Authority (CASA) will make decisions about airspace management arrangements, including the determination of final flight paths. These decisions are expected to trigger further environmental assessment processes and community and stakeholder engagement, including a future referral under the EPBC Act following additional technical design. This process would involve extensive consultation with airlines, the community, Sydney basin airspace users and other stakeholders.</p> <p>The introduction of parallel runway operations at a Western Sydney Airport in the longer term would require a comprehensive review of all aviation operations in the Sydney basin, including any noise sharing arrangements operating at that time. A proposal to construct and operate a second runway would require separate approvals under the Airports Act, along with further environmental assessment and community consultation before implementation. Current demand forecasting indicates that a second parallel runway would not be required until about 2050.</p> <p>As stated in Section 7.3 in Chapter 7 (Volume 1), preliminary assessment of airspace by Airservices Australia indicates that the long term development could operate in conjunction with Sydney Airport. Given the conceptual level of long term airspace design, the duration of time prior to the commencement of long term operations, and uncertainty regarding other potential future actions affecting airspace, it is not considered practicable to undertake a more detailed cumulative assessment of long term airspace operations. These considerations would form part of the formal airspace design and determination process under the Airports Act or equivalent in force at that time.</p>

Theme	Stakeholders	Summary of issue	Response
Cumulative biodiversity impacts	Residents Environmental groups Community groups	<p>Cumulative biodiversity impacts for vegetation clearance</p> <p>Some submissions raised concerns that the Western Sydney region has been subject to increased urbanisation in recent years, resulting in a loss of Cumberland Plain Woodland and other biodiversity values.</p> <p>Some submissions stated that cumulative biodiversity impacts for vegetation clearance beyond the Stage 1 development would need to be assessed in a future EIS.</p>	<p>The EIS acknowledges that the proposed airport would contribute to regional biodiversity impacts as part of the broader urbanisation of Western Sydney. In particular, the proposed airport would result in the additional removal of native vegetation and habitat, increased fragmentation, and increased risk of fauna injury and mortality. The assessment notes that ecosystem resilience is already low due to impacts from existing activities and climate change and that the proposed airport would contribute to the impacts of global climate change. As outlined in Chapter 28 (Volume 2b), a range of measures has been developed to protect biodiversity values within the local bioregion to mitigate the proposed airport's contribution to the regional impacts listed threatened biota. These include an extensive offsets proposal and other construction and operation related measures.</p> <p>Vegetation clearance beyond the Stage 1 development would be subject to separate environmental and approval processes.</p>

Theme	Stakeholders	Summary of issue	Response
Cumulative aircraft overflight noise impacts	Local councils Residents Community groups Environmental groups	<p>Cumulative impact of existing and future aircraft overflights</p> <p>Some submissions stated that the draft EIS does not contain an assessment of the cumulative impact of existing and future aircraft overflights, particularly on areas such as the Blue Mountains communities which are exposed to existing aircraft overflight impacts.</p>	<p>Areas of the Blue Mountains are currently subjected to low-level noise from aircraft using Sydney (Kingsford Smith) Airport and other aviation activities, including low-altitude sightseeing flights. Modelling for this EIS shows that occasional noise events from operations at the proposed airport may reach 60 dBA at some points in the area; however, levels in the vicinity of the indicative flight paths will typically be below 55 dBA and often much lower. While noise events at these levels will be audible and may be considered to be intrusive by people engaged in outdoor activities, such noise events are below noise threshold values typically used for assessing the environmental impacts of aircraft operations. As shown in Chapter 10 (Volume 2a), urbanised areas and the most heavily visited tourist locations in the Blue Mountains are well outside the N60 and N70 contours for airport operations at the proposed airport.</p> <p>At relatively low noise exposure levels such as those predicted for the Blue Mountains, it is difficult for traditional modelling and assessment approaches to predict and meaningfully describe cumulative aircraft noise exposure. Experience has shown that cumulative noise measures such as those used in the Australian Noise Exposure Forecasting (ANEF) system have been a poor indicator of peoples' reaction to aircraft noise, particularly in areas outside the 20 ANEF contour. Presenting data about the predicted number and location of aircraft movements can be more effective in these circumstances. Therefore, in order to illustrate the potential changes to the number of aircraft movements in the Blue Mountains, track density plots have been prepared to provide a graphical representation of the number of existing and projected future operations in the area. The results of this analysis are presented in Chapter 26 (Volume 2a) and Section 7 of Appendix E1 (Volume 4).</p>

Theme	Stakeholders	Summary of issue	Response
Cumulative ground-based noise impacts	Local councils	<p>Cumulative noise impact from all ground noise sources</p> <p>Some submissions stated that the EIS does not consider the cumulative noise impact from all ground noise sources (e.g. simultaneous operation of activities including run ups and taxiing) at the nearest noise sensitive receptors both with and without mitigation measures as required by the EIS Guidelines.</p> <p>Submissions stated that additional assessment should also be undertaken for other ground noise sources, such as the compass calibration pad.</p>	<p>There are technical and other challenges associated with portraying cumulative noise exposure levels from different noise generating activities. For example, engine run-ups will be an infrequent activity at the proposed airport during which the majority of an engine test would be at low power settings but could include short periods of high power testing. Such operations would generally occur at a limited number of locations and may be restricted at certain times of the day. In contrast, aircraft taxiing operations would occur in a more continuous way, particularly during peak traffic periods, across a much wider area of the airfield and at varying low engine power settings. It is also important to note that, consistent with traditional environmental impact assessment approaches, the EIS noise exposure modelling for these activities makes ‘worst case’ assumptions, including for prevailing weather conditions which suppose a temperature inversion – a phenomenon generally associated with the night time period. At night the frequency of aircraft taxiing operations would be below that expected during the day and high-power engine run-ups would likely be a very rare event.</p> <p>Figure 23-1 (Chapter 23 (Volume 2a)) illustrates a ‘worst case’ representation of an operational noise envelope, by overlaying N60 and N70 noise contours and engine ground running noise contours for Stage 1 operations. This figure shows the social infrastructure near the airport site that would be affected by one or more types of operational noise.</p> <p>Noise from aircraft using the isolation and compass calibration pad depicted in the Stage 1 indicative airport site layout would be indistinguishable from that produced by other aircraft involved in taxiing operations across the broader airfield. It is expected that this area would be used only on an infrequent basis. Accordingly, specific noise exposure modelling of aircraft using this facility is not considered necessary.</p>

Theme	Stakeholders	Summary of issue	Response
Cumulative Aboriginal heritage impacts	Heritage groups NSW Government Community groups	<p>Cumulative impact on local Aboriginal heritage</p> <p>Submissions noted that the cumulative impact of the proposed airport on the Aboriginal archaeological and cultural values of the Badgerys Creek area is significant and that the airport would add to the cumulative impact on these values by bringing forth further development.</p>	<p>The EIS addresses the Aboriginal cultural heritage significance of the airport site and its landscape values within the context of the Cumberland Plain. Aboriginal stakeholder concerns about the cumulative impact of large developments including the proposed airport on cultural heritage values of the Cumberland Plain are acknowledged in Section 19.3.5 (Chapter 19 (Volume 2a)) and Section 2.2.2 of the Aboriginal Cultural Heritage Assessment (Appendix L1, Volume 4) of the EIS. The cumulative impacts of the airport development are assessed in Sections 9.2.3 and 9.3.3 of Appendix L1 (Volume 4). The assessment finds that, as a consequence of the proposed airport's incremental effect on the aggregate of past development and its role as a key infrastructure component of planned growth areas, the cumulative impact of the proposed Stage 1 development would be substantial.</p> <p>The potential impacts of the proposed airport, including its cumulative impact, on Aboriginal cultural heritage and landscape values would be addressed by a number of measures outlined in the EIS. Mitigation measures for Aboriginal heritage described in Chapter 28 (Volume 2b) ensure that salvage actions are directed at all landscape variability across the site, including the generation of representative samples and sufficient survey coverage. To address cumulative impacts on the regional Aboriginal cultural heritage resource, the Department of Infrastructure and Regional Development will collaborate with other government agencies and Aboriginal stakeholders with the aim of establishing an Aboriginal cultural heritage 'keeping place' for the long term curation of material salvaged from the airport site, and potentially material salvaged from other development areas across Western Sydney.</p>

Theme	Stakeholders	Summary of issue	Response
Cumulative waste and resources impacts	Local councils	<p>Affect on councils' ability to manage waste</p> <p>A submission stated that the cumulative impacts over the short and long term may affect Western Sydney local councils' abilities to manage waste. Identified potential cumulative impacts included:</p> <ul style="list-style-type: none"> impacts of airport-related traffic on waste truck routes from council collection areas to the numerous landfills and recycling facilities in the area; the effects on waste management of the many satellite businesses and residential areas that are expected to arise in Western Sydney as a result of the proposed airport; and greenhouse gas emissions generated at landfill locations from waste received from the proposed airport. 	<p>Traffic generated by the proposed airport is assessed in detail in the traffic, transport and access assessment presented in Chapter 15 (Volume 2a) and Appendix J (Volume 4). The assessment considers traffic generated by the proposed airport combined with increases in background traffic associated with the broader urbanisation of Western Sydney.</p> <p>The assessment also considers the mitigating effects of the various major transport infrastructure projects planned for Western Sydney including the Western Sydney Infrastructure Plan projects and as documented in plans such as the NSW Government's regional planning strategy document <i>A Plan for Growing Sydney</i>.</p> <p>The purpose of these strategic planning initiatives is to provide adequate transport infrastructure for residents in Western Sydney and municipal services such as waste collection and public transport.</p> <p>As stated in Section 25.6.5 of Chapter 25 (Volume 2a), the waste management market in Western Sydney currently handles a large volume of waste from various domestic, commercial and industrial sources. It is expected that the waste market will continue to grow and adapt to meet the demands that are placed on it as Western Sydney develops. This would include urban development induced by the proposed airport as well as the broader urbanisation of Western Sydney that would occur independently of the proposed airport. It is expected that the quantity of waste to be generated by the proposed airport would be very small in proportion to the rest of the market.</p> <p>As stated in Section 12.2.7 of Chapter 12 (Volume 2a), Scope 3 emissions associated with waste generated by an airport would not normally be included in a greenhouse gas assessment due to the likelihood of these emissions being already counted by other entities, such as waste facility operators.</p> <p>The level of emissions arising from waste disposal would be under the operational control of, and therefore reported by, the waste facility operators.</p>

Theme	Stakeholders	Summary of issue	Response
Commercial development	Local councils Major landowners	<p>Cumulative impact of commercial development</p> <p>Some submissions raised concerns that the cumulative impacts of the potential commercial development on the airport site was not adequately addressed in the draft EIS. In particular, submissions stated that the EIS does not consider how a business park development on the airport site would impact on existing and future land uses in the region, business and economic development in the region, as well as flow on impacts to air quality, traffic and other environmental factors.</p>	<p>Development of business parks on the airport site are largely outside the scope of the Stage 1 development and therefore detailed assessment is outside the scope of this EIS. While the revised draft Airport Plan contains a Land Use Plan which identifies zones on the airport site for which business development would be acceptable, it would not specifically authorise the construction or operation of those developments. These types of developments would be subject to separate assessment and approval processes.</p> <p>Nevertheless, to demonstrate the potential benefits of onsite commercial development, the economic impact analysis contained in Appendix P3 (Volume 4) considers the potential employment opportunities that could be created if the business development zones outlined in the Land Use Plan are developed. As stated in Section 3.3 of Appendix P3, the economic impact analysis, the business zones would generate numerous job opportunities which would depend on the ultimate land use but could support industrial, office, hotels or retail industry types. The analysis undertaken in the EIS is consistent with the regulatory framework applied to all major airports in Australia under the Airports Act. Consistent with this framework, the ALC will be responsible for developing and managing commercial development (also known as non-aeronautical development) on the airport site. As such, the nature of commercial developments on the airport site will be a business decision for the ALC. In this context, the Land Use Plan in the revised draft Airport Plan sets out the broad scope of land uses which are permissible in each zone on the airport site.</p>

31 Environmental management framework

Volume 2 (Stage 1 Development), Chapter 28 (Environmental Management Framework) of the draft EIS describes the environmental management framework (EMF) that will guide the implementation of the mitigation measures outlined throughout the EIS for addressing environmental impacts and issues associated with construction and operation of the Stage 1 development.

31.1 About the submissions on this chapter



Table 31–1 Submissions related to the Environmental Management Framework (Mitigation Measures)

Issue	Number of times the issue was raised	Percentage of total submissions
Environmental management framework	383	7.7%

31.1.1 Origin of submissions

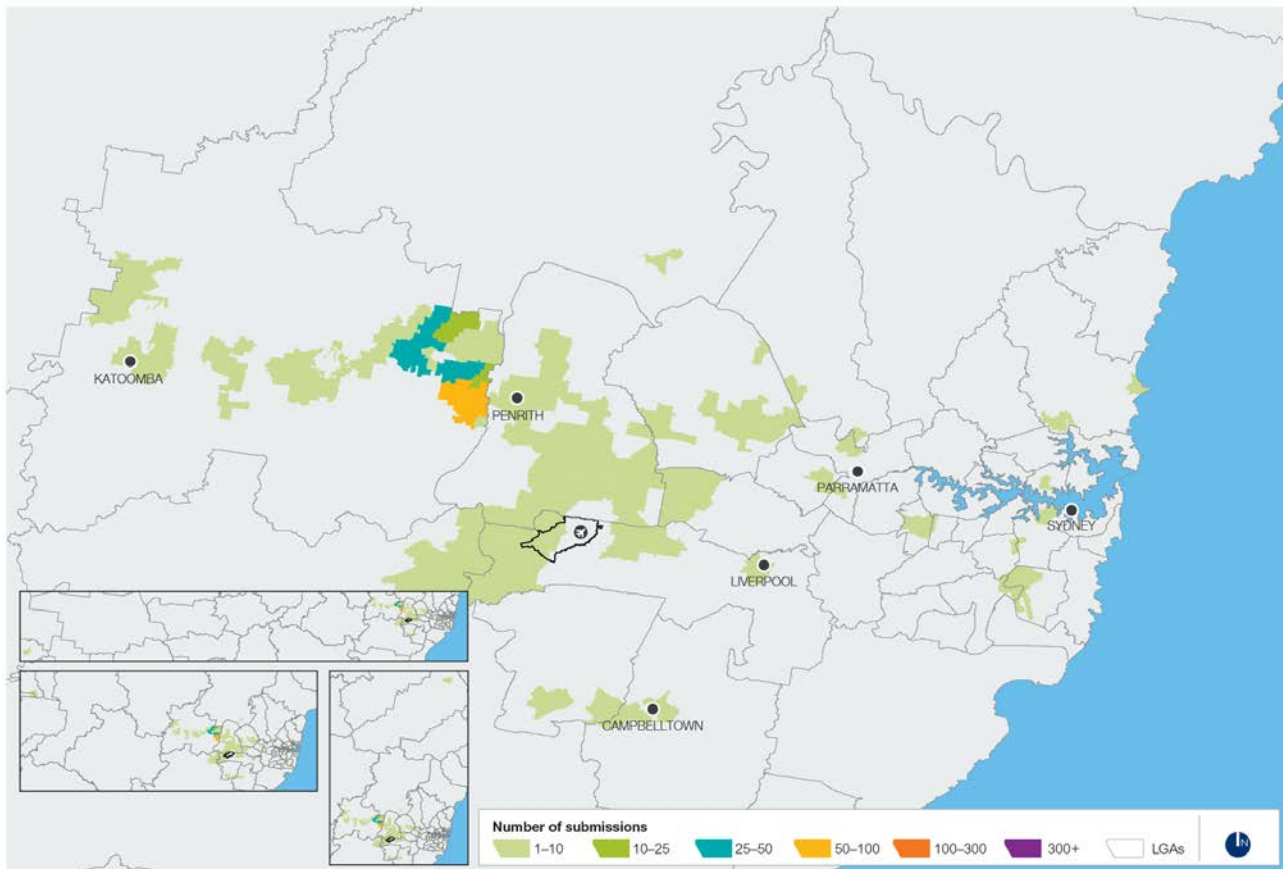


Figure 31–1 Map depicting origin of submissions in relation to Chapter 28 of the draft EIS

31.2 Summary and response

31.2.1 Overarching summary of submissions

Submissions questioned the framework for environmental management and the relevant mitigation measures proposed in the draft EIS. Submissions commented on the mitigation measures and approvals frameworks identified in the following chapters of the draft EIS:

- Stage 1 development;
- airspace architecture and operation;
- approach to impact assessment;
- aircraft overflight noise;
- ground-based operations noise;
- air quality and greenhouse gases;
- human health;
- hazard and risk;

- traffic, transport and access;
- biodiversity;
- topography, geology and soils;
- surface water and ground water;
- Aboriginal heritage;
- landscape and visual amenity;
- social;
- resources and waste; and
- environmental management framework.

The submission comments are summarised and addressed in section 31.2.3.

31.2.2 Overarching response to issues raised

Following publication of the draft EIS, Chapter 28 (Volume 2b) was updated to improve readability, respond to community submissions and reflect the finalisation of the EIS. The EMF was reworked to provide clearer objectives for the various Construction Environmental Management Plans (CEMPs) and Operational Environmental Management Plans (OEMPs) that will be implemented. Mitigation and management measures were updated to provide further clarity to commitments and responsibilities. Additional content was also provided regarding environmental management of the proposed airport during operations as this would be regulated under existing planning and environmental protection measures under the Airports Act and associated regulations.

31.2.3 Issues and responses

Theme	Stakeholders	Summary of issue	Response
Stage 1 development	NSW Government	<p>Construction access roads</p> <p>The NSW Government submission suggested that consideration should be given to airport construction access being via The Northern Road and/or Bringelly Road as these roads are being upgraded to four lane divided carriageways (by late 2019). It was suggested that these roads will be a safer and more efficient option for construction traffic.</p> <p>The submission stated that if construction access via Elizabeth Drive was pursued then a comprehensive independent road safety audit by a qualified auditor should be undertaken. It was suggested that the audit should identify any necessary remedial measures with associated costs apportioned to the airport project, and that a minimum this would include a comprehensive pre-condition survey and a need to maintain the asset to equivalent quality post construction.</p>	<p>The potential construction access routes to and from the airport site identified in the EIS, including the use of The Northern Road and Bringelly Road have been assessed to determine potential efficiency and safety impacts. As discussed in Chapter 6 (Volume 1) and Chapter 15 (Volume 2a) of the EIS, the use of these roads is not expected to significantly impact on the surrounding transport system, with the exception of oversize vehicle movements. These oversize movements would be managed in consultation with Roads and Maritime Services and the NSW Police as required.</p> <p>As outlined in Chapter 28 (Volume 2b), a Traffic and Access CEMP will be developed prior to commencement of Main Construction Works. It will collate measures to mitigate and manage potential traffic impacts generated by the use of the road network for construction access.</p> <p>The CEMP will provide the overall plan and staging for managing traffic through and around each work site and would be prepared in accordance with the Roads and Maritime's <i>Road Design Guide</i>, the Roads and Maritime Services <i>Traffic Control at Work Sites</i> manual and AS 1742.3 <i>Manual of Uniform Traffic Control Devices – Traffic control for works on roads</i>, and any other relevant standard, guide or manual. The CEMP will be developed in consultation with relevant stakeholders including Transport for NSW, Road and Maritime Services and affected local councils. This process will ensure that construction traffic is managed in the most efficient way and minimises safety risks and disruption to other road users.</p> <p>In addition, a community awareness programme will be implemented prior to and the commencement of Main Construction Works and will continue throughout the entire construction period to make road users (including local residents) aware of construction traffic and safety issues and to assist in managing those issues effectively.</p>

Theme	Stakeholders	Summary of issue	Response
Airspace architecture and operation	Aviation industry	<p>Operating modes - Implementation of noise sharing arrangements</p> <p>It was contended that, although not taken into account in Airservices Australia's preliminary airspace design, the draft EIS suggests noise sharing will be implemented at the proposed airport.</p>	<p>The preliminary airspace management analysis conducted by Airservices Australia confirmed that the proposed airport and Sydney (Kingsford Smith) Airport could operate independently and safely. It was not designed to address possible noise sharing modes of operation.</p> <p>The consideration of noise abatement modes of operation in the EIS, including the assessment of implementing night time procedures to provide respite to certain residential areas, is appropriate and consistent with the EIS Guidelines. The EIS does not propose any specific operational noise abatement or management approach over another; this would be investigated further as part of the detailed airspace and flight path design. As discussed in Chapter 7 (Volume 1) and Chapter 28 (Volume 2b), these activities will be undertaken in consultation with the community and other stakeholders.</p>
Approach to impact assessment	Residents Local councils Environmental groups Community groups	<p>Long term development</p> <p>A number of submissions raised concerns that mitigation measures had not been proposed for the impacts associated with operating the proposed airport at full capacity. Submissions stated that this was necessary to provide the community with greater certainty over the impacts of the airport at full capacity in the future.</p>	<p>Mitigation measures proposed in Chapter 28 (Volume 2b) are based on the expected impacts associated with the construction and operation of the Stage 1 development. Development proposals beyond Stage 1 would be subject to separate environmental and planning approval processes under the Airports Act. Mitigation measures for developments beyond Stage 1 will be considered at that time.</p>
Approach to impact assessment	Local councils Residents Community groups	<p>Indicative nature of the draft EIS</p> <p>Submissions stated that the level of analysis and detail in the draft EIS does not reflect the level of significance of the expected impacts on the environment. Submissions commented that the environmental impacts need to be better quantified and raised concerns about the lack of certainty associated with the extent and nature of a range of likely environmental impacts across Western Sydney generally.</p> <p>Submissions noted that unknown variables and assumptions made in the assessment, such as future aircraft types, proposed staged runway development, technology implementation, and assumed traffic projections require further, more detailed analysis.</p>	<p>It is important to note that, notwithstanding the indicative nature of some of the anticipated impacts, the EIS adopts well-recognised methods for assessing impacts. Further, having regard to the information currently available, the indicative elements of the EIS are a reasonable and appropriate benchmark to adequately assess the likely impacts of the proposed airport.</p> <p>It is noted that the issues raised in submissions fundamentally reflect that the development of an airport is a major, complex and long term infrastructure project. In particular, many of the variables used in the EIS are subject to assumptions about future aircraft types, technology use and air traffic demand forecasts. While these assumptions are based on accurate sources available to the EIS project team and best-practice methodology, the realisation of these assumptions depends on global events and trends, business decisions of airlines and other industry participants, decisions by international organisations such as the International Civil Aviation Organization (ICAO), and other factors which are outside the control of any airport developer or operator.</p> <p>In addition, the consultative and contractual obligations under the Right of First Refusal, a condition of the 2002 Sydney (Kingsford Smith) Airport Share Sale Agreement, mean that identification of who will operate the proposed airport and</p>

Theme	Stakeholders	Summary of issue	Response
			<p>be responsible for its development, the ALC, cannot be known until those obligations have been satisfied (see Chapter 3 (Volume 1)).</p> <p>The assessment of construction and ground-based operation impacts in the EIS is based on the indicative airport site layout presented in the revised draft Airport Plan and this may be refined through the process of detailed design. To address this, the EIS and revised draft Airport Plan focus on providing certainty on key activities and impacts of the Stage 1 development, including: the scale of construction and operation of the proposed development; the location of bulk earthworks and land clearing of areas within the construction impact zone; and development of the Land Use Plan in the revised draft Airport Plan (see Chapter 4 (Volume 1)) to manage future development and environmental conservation on the airport site.</p> <p>In addition, the development of the Environmental Management Framework (as outlined in Chapter 28 (Volume 2b)), the identification of the specific developments to be authorised for the proposed airport in Part 3 of the revised draft Airport Plan (and replicated in Chapter 5 (Volume 1)), as well as the existing Airports Act regulatory framework, provide certainty about how a future airport would be developed and how environmental impacts would be managed.</p> <p>The assessment of impacts from aircraft overflight operations are based on indicative air traffic management designs and flight paths prepared by Airservices Australia. This preliminary airspace design provides a proof-of-concept that the proposed airport can operate safely within existing airspace arrangements in the Sydney basin. Flight paths will be refined and finalised as part of a comprehensive airspace planning and design process (see Chapters 3 and 7 (Volume 1)). The EIS has been updated to provide more detail and certainty for the community about the detailed airspace design process and, to reflect that comprehensive community and stakeholder consultation will be part of this process.</p>

Theme	Stakeholders	Summary of issue	Response
Approach to impact assessment	NSW Government	<p>Identification of sustainability targets</p> <p>Submissions sought the strengthening and identification of, and commitment to specific sustainability targets in the draft EIS, including principles and/or outcomes for the future development of the airport site.</p>	<p>Chapter 28 (Volume 2b) has been updated to reflect the Australian Government's commitment to early integration of appropriate sustainability considerations into the design, construction and operation of the Stage 1 development. This will ensure that the proposed airport is developed using sustainable processes, standards and materials throughout the life of the project. This will increase efficiency in resource and energy consumption, reduce waste, improve liveability at and around the airport site, and enhance engagement with the local community.</p> <p>A Sustainability Plan will be prepared by the ALC and will include details about how sustainability considerations are to be integrated into the design, construction, and operation of the Stage 1 development. In particular, the Sustainability Plan will outline the specific targets that the ALC intends to achieve, how those targets would be achieved, as well as describing how the ALC intends to achieve the required sustainability ratings for the Stage 1 development. These requirements would be based on three key nationally recognised rating systems: the Infrastructure Sustainability (IS) Rating developed by the Infrastructure Sustainability Council of Australia (ISCA); the Green Star Rating developed by the Green Building Council of Australia; and the National Australian Built Environment Rating System (NABERS), which is a national initiative managed by the NSW Office of Environment and Heritage on behalf of the Commonwealth, State and Territory governments.</p>

Theme	Stakeholders	Summary of issue	Response
Aircraft overflight noise	Residents NSW Government Senators and Members of Parliament Local councils Educational institutions	<p>Noise mitigation and noise amelioration works</p> <p>Submissions expressed support for the implementation of a noise insulation and acquisition programme, similar to those established at other Australian airports, for residences and other sensitive receivers close to the airport site. This was a particular concern for residents in Luddenham, who requested details of the noise attenuation measures that would be installed and the noise exposure criteria that would trigger actions to mitigate impacts to residential and non-residential places, such as schools. Local residents also stated that additional properties on Willowdene Avenue, immediately to the southwest of the airport site, should be acquired having regard to the changed location of the northern runway compared to that shown in the 1999 EIS and the community severance resulting from previous government property acquisitions. Luddenham residents advocated building the southern runway first so as to avoid short to medium term impacts on the community, including noise impacts associated with possible head-to-head operations at night.</p> <p>Submissions stated that retrofitting insulation and other noise attenuation measures to light-weight timber or asbestos buildings in noise affected areas would be prohibitively expensive and potentially ineffectual. Clarification was sought as to whether insulation measures would only be considered within certain ANEF areas, or if such measures would be considered at all locations where internal noise levels may be expected to exceed AS 2021 internal design criteria as a result of operations at the proposed airport.</p> <p>Submissions sought information about the funding options for noise amelioration works at schools. The need to compensate or “buy-out” those predicted to be most severely noise affected at “unblighted” value was advocated.</p> <p>Submissions also commented on the need for the proposed airport’s noise management plan to further investigate inbound and outbound flight patterns that avoid populated areas and help mitigate predicted noise impacts.</p>	As outlined in Chapter 10 (Volume 2a) and Chapter 28 (Volume 2b), the Australian Government is responsible for any noise amelioration programme required for the proposed airport that aims to mitigate the impact of aircraft overflight noise (including take-offs and landings) for areas surrounding the airport site. Australian Government policy relating to any aircraft noise acquisition and insulation programme at the proposed airport, including eligibility criteria and the timeframe for implementation, will be established as part of the detailed airspace and flight path design process.

Theme	Stakeholders	Summary of issue	Response
Aircraft overflight noise	Local councils	<p>Prioritising and evaluating noise mitigating measures</p> <p>Submissions sought clarification about the preferred strategies for managing aircraft noise impacts, including reference to mitigation priorities and the manner in which alternative mitigation measures would be evaluated.</p>	<p>As outlined in Chapter 28 (Volume 2b), the future airspace and flight path design process will identify and test a range of potential noise mitigation measures and noise abatement procedures. This iterative process of design and validation is a complex and lengthy technical task that is beyond the scope of this EIS. The evaluation of each measure and procedure is expected to be based on a broad range of criteria that would take into account issues such as:</p> <ul style="list-style-type: none"> • the number of people exposed to the highest noise levels; • the total number of people exposed to threshold noise levels; • impacts on residential and non-residential areas; • the effectiveness of noise abatement departure procedures under different operating scenarios; • the number and noise intensity of overflights of residential areas and noise sensitive facilities; and • the safety, efficiency, capacity, noise and other relevant environmental impacts of airport operations. <p>The evaluation of noise mitigation measures and noise abatement procedures would be conducted in consultation with regulatory and other government agencies, industry, the community and other stakeholders. This will enable key stakeholders to influence the final design and ensure the community is fully informed.</p>
Aircraft overflight noise	NSW Government Aviation industry Residents Educational institutions Local councils Community groups Environment groups	<p>Noise mitigation measures</p> <p>A number of submissions stated that the final EIS should provide additional information on the mitigation measures that would be considered for residents and businesses affected by aircraft noise.</p> <p>Some submissions also stated that the draft EIS should provide mitigation measures for community facilities impacted by aircraft noise, such as schools, in Western Sydney.</p> <p>The NSW Government suggested the development of an Australian Government policy defining the aircraft noise levels at which noise mitigation measures will be implemented and providing commitments to introduce an adaptive noise abatement programme to mitigate potential impacts through possible acquisition, insulation or possible relocation support.</p>	<p>As outlined in Chapter 10 (Volume 2a) and Chapter 28 (Volume 2b), the Australian Government is responsible for any noise amelioration programme required for the proposed airport that aims to mitigate the impact of aircraft overflight noise (including take-offs and landings) for areas surrounding the airport site. Australian Government policy relating to any aircraft noise acquisition and insulation programme at the proposed airport, including eligibility criteria and the timeframe for implementation, will be established as part of the detailed airspace and flight path design process.</p> <p>Measures to address ground-based operations noise at the airport site will be addressed as part of the Noise OEMP outlined in Chapter 28 (Volume 2b).</p>

Theme	Stakeholders	Summary of issue	Response
Aircraft overflight noise	Environmental groups Community groups Residents Local councils	<p>Mitigating noise impacts in the Blue Mountains</p> <p>Some submitters commented that the noise mitigation measures were generic and not tailored to the unique characteristics of the Blue Mountains. These submissions stated that mitigation measures should be provided for Blue Mountains communities expected to be impacted by aircraft noise.</p> <p>Some submissions suggested that the Point Merge system and other features of the flight paths should be shifted over to unpopulated areas such as the GBMWH. Other submissions stated that flight paths should not occur over populated areas or over the GBMWH as both areas are equally sensitive to aircraft noise.</p>	<p>The concern expressed by various sectors of the community about potential overflight noise impacts on residential populations and the GBMWH are acknowledged. The future detailed airspace and flight path design process, as outlined in Chapter 28 (Volume 2b), will aim to optimise flight paths on the basis of safety, efficiency, noise and environmental considerations.</p> <p>As outlined in Chapter 28 (Volume 2b), community consultation will be undertaken during the detailed design process. A preferred preliminary airspace design will be referred to the Environment Minister under the EPBC Act. Extensive public consultation activities will occur at this time to ensure community views on these matters are taken into account before final flight paths and noise abatement procedures are settled.</p>
Aircraft overflight noise	Senators and Members of Parliament	<p>Respite from aircraft noise</p> <p>Submissions suggested that the noise management plan for the proposed airport should consider opportunities for the provision of periods of respite from aircraft noise, including the possible adoption of a curfew for part of the night.</p>	<p>As outlined in Chapter 28 (Volume 2b), the detailed airspace and flight path design for the proposed airport would identify alternative flight paths that do not concentrate aircraft arrivals over any one community as far as it is possible to do so. Noise abatement and noise respite opportunities will be examined throughout the design process. Identifying flight paths and procedures that minimise aircraft noise impacts at night would be a critical component of this work.</p>
Aircraft overflight noise	Senators and Members of Parliament NSW Government	<p>Aircraft noise and flight path monitoring system</p> <p>Submissions stated that noise monitoring measures should be put in place that address community concern about aircraft noise impacts. Submissions supported the installation of permanent noise monitors and a flight tracking system that would provide real-time noise and flight tracking results online together with historic aircraft noise data. Such a system was seen as a valuable tool for informing future airport planning. The establishment of a mechanism for responding to public enquiries and complaints on aircraft noise issues was supported.</p>	<p>Airservices Australia currently provides a service (WebTrak) available to the public via its website that uses information from air traffic control radars to monitor aircraft at major Australian airports which are within 50 kilometres of the airport and up to 30,000 feet above mean sea level (AMSL). Aircraft noise data are collected and reported daily from noise monitors strategically located around communities close to major Australian airports and provided on the Airservices Australia website. Additional information about the monitoring of aircraft noise is available in Section 28.5.1.2 (Volume 2b).</p> <p>A noise and flight path monitoring system similar to those established at other major Australian airports is expected to be operated at the proposed airport by Airservices Australia. This system would provide real-time noise and flight tracking information. The design of the monitoring system would be considered as part of the airspace and flight path design process and would be informed by input from a community and stakeholder reference group.</p>

Theme	Stakeholders	Summary of issue	Response
Aircraft overflight noise	NSW Government	<p>Community Aviation Consultation Group</p> <p>The establishment of a Community Aviation Consultation Group (CACG) was supported as a mechanism for providing effective and open discussion of airport operations and their impacts on nearby communities.</p>	<p>The Department of Infrastructure and Regional Development proposes to convene a community and stakeholder reference group to participate in, and exchange information on, the future airspace and flight path design process. Before airport operations commence, and consistent with arrangements at other major Australian airports, the ALC would establish a CACG. This group would continue as a permanent forum for interested parties to exchange information on issues relating to airport operations and their impacts.</p>
Airport construction and ground operations noise	Residents Local councils	<p>Impacts of construction machinery on the local community</p> <p>Submissions discussed noise impacts arising from construction activities around the airport site. Concerns focused mainly on additional noise impacts including additional truck movements and the use of heavy machinery.</p>	<p>Construction noise is assessed in Chapter 11 (Volume 2a). The construction noise assessment includes consideration of construction activities at the airport together with construction related traffic on the local road network. Noise emissions during construction will predominantly be limited to the airport site and increased noise from construction traffic is predicted to be less than 2 dBA, which is unlikely to be perceptible.</p> <p>As outlined in Chapter 28 (Volume 2b) a Noise and Vibration CEMP will be developed and implemented to manage and monitor noise from construction traffic and activities during development of the proposed airport. The CEMP will also include avenues for complaints and other feedback, rectification measures and contingency actions.</p>

Theme	Stakeholders	Summary of issue	Response
Airport construction and ground operations noise	Residents	<p>Noise impacts on Luddenham residents</p> <p>Submissions raised concerns about the severity of noise impacts from engine ground running and aircraft taxiing on the residents of Luddenham. They also highlighted the draft EIS finding that ‘significant residual impacts would still result’ even if mitigation measures for ground noise were deemed feasible.</p> <p>Given the proximity of Luddenham village to the airport site, submissions stated that background noise levels should have been measured at a location in the village instead of 2 Twin Creeks Road, which is approximately 5 km from the airport boundary. Submitters stated that the health assessment (Appendix G of the draft EIS) did not address the effects of ground noise on EEG awakenings in Luddenham village.</p> <p>The greenfield nature of the development was seen as an opportunity to design the airport in such a way as to minimise noise impacts on the local community. Submitters stated that the most effective mitigation measure to protect the residents of Luddenham from noise associated with construction, runway operations, engine run-up and 24-hour operations would be to construct the southern runway as part of the initial airport development, away from any existing residential township. Submissions commented that construction of the southern runway would also:</p> <ul style="list-style-type: none"> • give residents time to adjust to living with airport operations before a second runway was constructed; and • alleviate noise impacts on Luddenham Public School from aircraft ground operations and provide time to either insulate or relocate the school on the western side of the town. <p>Submitters advocated the establishment of clearly defined construction noise limits and work hours to reduce disturbance of local residents. They also stated that the airport site was large enough to relocate the engine run-up area further away from Luddenham village. Submissions stated that, given the severity of predicted negative effects, efforts should focus on consulting with local residents about noise mitigation options and other tailored approaches to managing noise impacts.</p>	<p>The EIS acknowledges that the residential population of Luddenham village will experience the highest levels of noise exposure from ground-based noise sources, during both the construction and operational phases of the proposed airport. Management plans prepared for the construction and operational stages of development will identify measures and strategies for mitigating these impacts to the extent practicable. The Luddenham community will be consulted about noise-generating activities and proposed mitigation measures as construction planning and detailed design work progresses. Local representation on the community and stakeholder reference group will be sought to ensure the views of local residents are taken into account during the airspace and flight path design process. Local representation will also be sought on the Community Aviation Consultation Group (CACG) in developing a Noise OEMP for the proposed airport</p> <p>Additional baseline noise monitoring was undertaken at Luddenham village in March 2016 in response to submissions and results are presented in Chapter 11 (Volume 2a). Background noise levels measured at Luddenham were fairly typical of other western Sydney locations where monitoring was undertaken. Table 36 of Appendix G in Volume 4 of the EIS shows the predicted number of additional EEG awakenings per person per year due to ground operations noise. The locations shown in the table include the Luddenham Public School, which was considered to be representative of residential locations within the village. The health assessment found that the area most impacted by EEG awakenings is Luddenham where a significant increase in the number of awakenings from both aircraft and ground operations is predicted.</p> <p>The Stage 1 development provides for a single runway in the northern portion of the site, close to the boundary, referred to as the ‘northern runway’. The northern runway was selected to be the first runway at the airport site for the following reasons:</p> <ul style="list-style-type: none"> • reduced earthworks requirements (cut and fill) associated with the northern runway; • fewer constraints on how and when a future rail line may be accommodated on the airport site; • impacts on airport site biodiversity values would be avoided until required for future aviation development; and • shortest distance to connect utility trunk lines around the airport site.

Theme	Stakeholders	Summary of issue	Response
Airport construction and ground operations noise	Local councils	<p>Engine run-up noise</p> <p>Submissions stated that high power engine running at night time should be conditioned appropriately as part of the approval of the Stage 1 development. Submissions also recommended that semi-enclosed pens and bunded areas should be considered further as part of subsequent design stages to reduce noise impacts on surrounding communities.</p> <p>Submissions also stated that consideration should be given to relocating the engine run-up bay further to the south-east to reduce the noise impact on Luddenham.</p>	<p>Airports in Australia have rules and procedures governing engine ground running to ensure they are conducted safely and at an appropriate location, heading and time of day so as to reduce noise disturbance to residents. For example, at some airports, engine testing above a ground idle power setting is not permitted at certain locations during the night. Engine ground running procedures would be developed by the ALC and approved through the Noise Operational Environmental Management Plan prior to the commencement of operations to manage how, where and when run-ups are conducted at the proposed airport. Noise generated by these operations would be regulated under the Airports (Environment Protection) Regulations 1997 (AEPR), which contain a general duty to take reasonable and practicable steps to prevent offensive noise intruding on individual, community or commercial amenity.</p> <p>The final location of the engine run-up bay will be considered in the detailed design of the proposed airport having regard to operational factors, such as proximity to aircraft maintenance and other facilities, and opportunities to minimise noise disturbance for residents in the vicinity of the airport site.</p> <p>It may also be practicable to construct barriers near the run-up area, or design surrounding buildings to provide greater noise shielding from these activities. As described in Appendix E2 (Volume 4), reductions of around 10 dBA could be achieved with provision of a purpose-built ground running enclosure at least 10 metres high, but moderate residual impacts would still occur under worst case meteorological conditions. Night time high power engine run-ups occur infrequently at major airports in Australia. The provision of an enclosure for conducting engine runs is not currently proposed, but could be further considered if noise from this activity results in unacceptable night time noise impacts based on operational experience.</p>
Airport construction and ground operations noise	Local councils	<p>Aircraft taxiing noise</p> <p>Submissions commented that a number of potential mitigation measures could be considered to reduce aircraft taxiing noise, including single engine taxiing, engine off taxiing and the installation of acoustic barriers at effective locations.</p>	<p>The Noise OEMP (see Table 28-23 in Chapter 28 (Volume 2b)) requires the ALC to identify noise mitigation measures proposed to be implemented for ground-based noise generating activities. It also requires the completion of additional noise modelling and assessment during the detailed design phase to:</p> <ul style="list-style-type: none"> • update and refine the noise exposure modelling undertaken for this EIS; • inform the development of additional noise mitigation measures; and • test the effectiveness of any proposed noise mitigation measures and identify any residual excessive noise levels in areas surrounding the airport site. <p>The results of this further modelling and assessment would provide a basis for determining the need for any specific measures to address aircraft taxiing noise.</p>

Theme	Stakeholders	Summary of issue	Response
Airport construction and ground operations noise	Local councils	<p>Use of auxiliary power units (APUs)</p> <p>One submission noted that the use of ground power and pre-conditioned air are not included in Table 11-13 of Chapter 11 of the draft EIS, which sets out the mitigation and management measures, nor is any mention of the restriction over APU usage. It was contended that if there is a possibility of ground power units being used as an alternative power source to APUs, then the noise emissions from this source should have been considered.</p>	<p>It is expected that power and preconditioned air will be supplied at terminal gates and aircraft will not use their auxiliary power units while parked. Noise emissions generated from alternative power supplies would only occur during very infrequent contingency arrangements associated with disruptions to existing power supplies.</p> <p>The Noise OEMP will describe the measures taken to minimise the use of APUs, including the provision of fixed electrical ground power units and preconditioned air at aircraft gates and any measures to minimise APU use by stationary aircraft at other locations on the airport site (see Table 28-23 in Chapter 28 (Volume 2b)).</p> <p>There is limited information regarding the design or operation of possible alternative power supplies to accurately model emissions. However, alternative power supplies are unlikely to represent a contributing noise source in the context of the overall airport operations and would not increase the overall noise emissions from the airport site, especially given the opportunity to design noise control measures for these as part of the detailed design.</p>
Airport construction and ground operations noise	Local councils	<p>Assessing the effectiveness of noise mitigation measures</p> <p>One submission stated that the effectiveness of noise mitigation measures described in the draft EIS is not able to be determined.</p>	<p>Chapter 11 (Volume 2a) shows that aircraft engine ground running is anticipated to be the activity that generates the highest levels of ground-based noise. Additional modelling was undertaken in finalising the EIS to determine the likely noise reduction that could be achieved from construction of an engine run-up enclosure. As described in Appendix E2 (Volume 4), reductions of around 10 dBA could be achieved with provision of a purpose-built ground running enclosure at least 10 metres high, but moderate residual impacts would still occur under worst case meteorological conditions. The provision of an enclosure for conducting engine runs is not currently proposed, but could be further considered if noise from this activity results in unacceptable night time noise impacts based on operational experience.</p> <p>The Noise OEMP (Chapter 28 (Volume 2b)) requires the completion of additional noise modelling and assessment during the detailed design phase to:</p> <ul style="list-style-type: none"> • update and refine the noise exposure modelling undertaken for this EIS; • inform the development of additional noise mitigation measures; and • test the effectiveness of any proposed noise mitigation measures and identify any residual excessive noise levels in areas surrounding the airport site. <p>The Noise OEMP will also detail any noise amelioration actions proposed to mitigate offsite noise exposure that cannot be managed appropriately by operational and other onsite mitigation measures.</p>

Theme	Stakeholders	Summary of issue	Response
Air quality and greenhouse gases	NSW Government Community groups Local councils	<p>Monitoring network</p> <p>The NSW Government submissions recommended the early establishment of a comprehensive air quality monitoring network for construction and operational impacts.</p> <p>Some submissions suggested that a local and regional scale air quality monitoring programme may help manage potential future air quality (and health) concerns and that such a network be discussed with relevant NSW Government agencies.</p>	<p>As outlined in the Air Quality CEMP Chapter 28 (Volume 2b), pre-construction air quality monitoring will be undertaken to establish baseline data and the establishment of an air quality monitoring station at the airport site to continually monitor air quality during construction and, as outlined in the Air Quality OEMP, throughout operation of the Stage 1 development.</p> <p>The implementation of this monitoring station would provide scientifically robust data to demonstrate that any changes in local air quality associated with the development are within regulatory guidelines.</p> <p>The establishment of the air quality monitoring station on the airport site will complement the existing air quality monitoring network operated by the NSW Office of Environment and Heritage. As outlined in Chapter 28, air quality monitoring on the airport site will include consultation with the NSW Environment Protection Authority.</p> <p>The AEPR also requires the ALC to undertake regular air quality monitoring.</p>
Air quality and greenhouse gases	NSW Government	<p>Regional air quality targets</p> <p>The NSW Government submissions stated that, given the existing air quality issues in Western Sydney and the planned development of the region, further modelling should be done to forecast potential human health and environmental impacts. This modelling could then be used to establish operational air quality targets for the whole of Western Sydney. These targets would be set by the Commonwealth and NSW Government through a joint plan.</p>	<p>The development of regional air quality targets is a matter which is beyond the scope of this EIS. To the extent that such targets are developed, they would be considered in the preparation and implementation of the Air Quality CEMP and Air Quality OEMP as outlined in Chapter 28 (Volume 2b).</p> <p>It is noted that the Australian Government and NSW Government have existing arrangements established for the implementation of national air quality targets. The Commonwealth <i>National Environment Protection Council Act 1994</i> and complementary State and Territory legislation allow the National Environment Protection Council to make National Environment Protection Measures (NEPMs). NEPMs are a special set of national objectives designed to assist in protecting or managing particular aspects of the environment. NEPMs are made by the National Environment Protection Council and are implemented separately by governments in each jurisdiction. At the Commonwealth level this regulatory framework is administered by the Department of the Environment and Energy.</p>

Theme	Stakeholders	Summary of issue	Response
Air quality and greenhouse gases	Local councils	<p>Effectiveness of mitigation measures</p> <p>Some submissions questioned the effectiveness of mitigation measures proposed in the draft EIS. In particular, it was suggested that the effectiveness of mitigation measures has not been quantified and therefore the draft EIS has failed to demonstrate that compliance with the relevant air quality criteria could be achieved.</p>	<p>The air quality assessment outlined in Chapter 12 (Volume 2a) states that emissions from the operation of the Stage 1 development will generally fall within air quality guidelines.</p> <p>Air emissions will in any case be managed through the Air Quality CEMP and the Air Quality OEMP as outlined in Chapter 28 (Volume 2b). As part of the CEMP and OEMP, specific mitigation measures will be developed and implemented as part of this framework to further reduce air quality impacts during construction and operation. Chapter 28 also provides detailed information about the overall objectives and performance criteria for the CEMP and OEMP as well as monitoring and reporting measures to demonstrate effectiveness over time.</p>
Air quality and greenhouse gases	NSW Government Members of Parliament and Senators Environmental groups Community groups Peak bodies Residents Local councils	<p>Proposed mitigation measures</p> <p>A number of submissions put forward suggestions for measures to reduce air quality and greenhouse gas impacts from the proposed airport. Suggested measures included:</p> <ul style="list-style-type: none"> • auxiliary power units at gates; • vapour recovery at fuel storage; • electric ground support vehicles; • low-emission vehicles for transporting passengers around the airport site; • development of public transport connections, such as a rail link, to reduce the number of private vehicles accessing the site; • installation of charging stations at the airport site to encourage the use of electric vehicles; • purchase of 100 per cent of electricity from renewable sources; and • purchase of carbon offsets for emissions that cannot be mitigated by the airport operator. <p>Some submissions stated that mitigation measures should be certified by a suitably qualified and experienced air quality consultant.</p>	<p>The air quality assessment outlined in Chapter 12 (Volume 2a) states that emissions from the operation of the Stage 1 development will generally fall within air quality guidelines.</p> <p>Air quality impacts will be managed through the Air Quality CEMP and Air Quality OEMP as outlined in Chapter 28 (Volume 2b). Specific mitigation measures will be developed and implemented as part of the CEMP and OEMP to further reduce air quality impacts during construction and operation. Chapter 28 also provides detailed information about the overall objectives and performance criteria for the CEMP and OEMP as well as monitoring and reporting measures to demonstrate effectiveness over time.</p> <p>A number of the mitigation measures proposed by submissions have already been identified for inclusion or will be considered for inclusion in the CEMP and OEMP.</p>

Theme	Stakeholders	Summary of issue	Response
Air quality and greenhouse gases	NSW Government	<p>Air quality management plan</p> <p>The NSW Government submission proposed the development of an air quality management plan to minimise air quality impacts during construction and operation. It was suggested that this plan should consider the use of best-practice environmental management systems to meet or exceed the standards represented in the <i>Sydney Airport Environmental Strategy 2013-2018</i>.</p>	<p>Air quality impacts will be managed through the Air Quality CEMP and Air Quality OEMP as outlined in Chapter 28 (Volume 2b). Specific mitigation measures will be developed and implemented as part of the CEMP and OEMP to further reduce air quality impacts during construction and operation. Chapter 28 also provides detailed information about the overall objectives and performance criteria for the CEMP and OEMP as well as monitoring and reporting measures to demonstrate effectiveness over time.</p> <p>The CEMP and OEMP will be developed in consultation with the relevant authorities including the NSW Environment Protection Agency.</p>
Air quality and greenhouse gases	Community groups Local councils	<p>Mitigation of air quality impacts</p> <p>Submissions stated that the mitigation and management measures presented in the draft EIS were lacking detail or demonstrable effectiveness. Other submissions suggested that mitigation should be targeted at particularly vulnerable groups.</p>	<p>Air quality mitigation and management measures outlined in Chapter 28 (Volume 2b) and are consistent with expected air quality impacts.</p> <p>As noted earlier, following publication of the draft EIS, the environmental management framework was comprehensively reworked to provide clearer objectives for the environmental management plans such as those relating to air quality. Mitigation and management measures were also updated to provide further clarity about commitments and responsibilities.</p> <p>Air quality impacts would largely be governed by the AEPR. The AEPR sets out enforceable obligations for an ALC to manage air quality emissions and includes a comprehensive regulatory regime for the establishment of environmental performance targets, as well as provisions for monitoring and reporting to ensure compliance with those targets.</p> <p>The suggestion that mitigation measures be targeted at particularly vulnerable groups is noted. The EIS identifies (e.g. in Appendix G (Volume 4)) that more vulnerable groups would be included amongst the population predicted to experience impacts from the proposed airport. Mitigation measures and frameworks identified in the EIS will be implemented and the predicted levels of impacts will be reduced including on more vulnerable groups.</p>
Air quality and greenhouse gases	NSW Government	<p>Mitigation of construction impacts</p> <p>The NSW Government recommended the implementation of mitigation and management measures during construction in line with the local government air quality toolkit administered by the NSW Environment Protection Authority.</p>	<p>As outlined in Chapter 28 (Volume 2b) an Air Quality CEMP will be developed to mitigate and manage air quality impacts during construction. The CEMP will include the preparation of a dust management plan to control air quality impacts during construction. The plan would be developed with due consideration to all relevant legislation and guidance – including the NSW Environment Protection Authority local government air quality toolkit.</p>

Theme	Stakeholders	Summary of issue	Response
Air quality and greenhouse gases	NSW Government	<p>Management of regional impacts</p> <p>The NSW Government recommended cooperation between the NSW Government and the Australian Government in implementing a joint air quality management plan including regional air quality targets.</p>	<p>The development of a regional air quality management plan is a matter which is beyond the scope of this EIS. To the extent that such a plan is developed, it would be considered in the preparation and implementation of the Air Quality CEMP and Air Quality OEMP as outlined in Chapter 28 (Volume 2b).</p> <p>It is noted that the Australian Government and NSW Government have existing arrangements established for the implementation of national air quality targets. The Commonwealth <i>National Environment Protection Council Act 1994</i> and complementary State and Territory legislation allow the National Environment Protection Council to make National Environment Protection Measures (NEPMs). NEPMs are a special set of national objectives designed to assist in protecting or managing particular aspects of the environment. NEPMs are implemented separately by governments in each jurisdiction. At the Commonwealth level this regulatory framework is administered by the Department of the Environment and Energy.</p>
Air quality and greenhouse gases	NSW Government	<p>Management of diesel emissions</p> <p>The NSW Government submission stated that emissions standards for diesel equipment would need to meet or exceed the emission standards in the NSW Government Resource Efficiency Policy.</p>	<p>As outlined in the Environmental Management Framework in Chapter 28 (Volume 2b), the proposed airport will be required to comply with air quality emissions standards as set out in the AEPR. Chapter 12 (Volume 2a) states the operation of the Stage 1 development is not expected to result in exceedances of the air quality guidelines at any of the identified receptors outside the airport site.</p>
Air quality and greenhouse gases	NSW Government	<p>Assessment of Stage 1 following detailed design</p> <p>The NSW Government submission recommended the preparation of a revised assessment based on the detailed design of the proposed airport including incorporation of contemporary data, methods and standards in place at that time.</p>	<p>The air quality assessment presented in Appendix F1 (Volume 4) is considered to adequately assess the potential air quality impacts of the proposed airport. Developments beyond the proposed Stage 1 development would be subject to separate assessment and approval processes in accord with the requirements of the Airports Act.</p>
Human health	Local councils	<p>Development of a health management plan</p> <p>Submissions requested that an outline of specific health impact mitigation measures be presented with an explanation of how and to what extent they would mitigate the identified issues.</p> <p>There were suggestions that a health management plan be included among the mitigation measures proposed and that it include measures aimed at addressing impacts on vulnerable groups and sensitive social infrastructure as well as opportunities where health can be improved and equity enhanced.</p>	<p>The health risk assessment found that predicted health risks from air quality, noise and water quality would largely be within Australian and international guidelines. These risks are based on expected environmental impacts before mitigation measures are implemented. The implementation of mitigation measures for aircraft overflight noise, ground-based noise, air quality, and water as outlined in Chapter 28 (Volume 2b) would further reduce these health risks.</p> <p>Impacts to community health will also be managed through the Community and Stakeholder Plans which will establish a process for the community to register complaints about environmental impacts during construction and operation. Under the plans the ALC will be required to log all complaints, undertake investigations and implement corrective action where necessary.</p>

Theme	Stakeholders	Summary of issue	Response
Human health	Local councils Residents	<p>Mitigation measures</p> <p>Submissions raised concerns that there is no discussion on mitigation measures and the extent to which any measures will mitigate the identified health impacts.</p>	<p>As stated in Section 13.11 (Volume 2a), health risks were derived from speciality noise, air quality and water quality impact assessments. These assessments were presented separately in Chapters 10, 11, 12 and 18 (Volume 2a). Chapter 28 (Volume 2b) provides a comprehensive framework of measures to mitigate and manage impacts in each of the areas identified by the health risk assessment, including air quality, noise and water. As outlined in the health risk assessment, by mitigating and managing these impacts, the measures would also effectively mitigate and manage the identified health risks.</p>
Hazard and Risk	Residents Aviation industry NSW Government Local councils	<p>Fuel pipeline</p> <p>A large number of submissions suggested that risks associated with the transportation of aviation fuel by road should be mitigated by the inclusion of a fuel pipeline as part of the Stage 1 development.</p> <p>A number of submissions also suggested that this measure would be more efficient, reduce air quality and traffic impacts, improve competition for fuel suppliers and provide operational benefits to the proposed airport and its users.</p> <p>Some submissions suggested that a fuel pipeline alignment should be identified and protected in statutory instruments prior to commencement of operations. Submissions suggested that this was necessary to maintain construction viability of the pipeline and to avoid long term reliance on the road system to transport aviation fuel. A number of submissions noted that any proposal to develop a fuel pipeline or reserve a corridor will require consultation with the community and stakeholders.</p> <p>A number of suggestions were made for the alignment of a fuel pipeline. These included:</p> <ul style="list-style-type: none"> • utilising fuel storage capacity at RAAF Base Richmond and piping fuel south to the airport site; and • aligning the fuel pipeline along the M5 corridor. 	<p>Fuel delivery for the Stage 1 development is expected to be undertaken by fuel tanker.</p> <p>A fuel supply pipeline is likely to be established in response to increasing demand beyond Stage 1 and will be a commercial decision between the ALC and the fuel industry.</p> <p>The NSW Government has commenced initial investigations to identify a potential fuel pipeline corridor, with a view to reserving the required land. The reservation of a corridor and subsequent construction is outside the scope of this EIS. Construction of a fuel supply line will be subject to a separate assessment and approval process under NSW legislation. This also includes obtaining permits providing the right to operate the pipeline.</p>

Theme	Stakeholders	Summary of issue	Response
Biodiversity	Environmental groups Local councils Community groups NSW Government Members of Parliament and Senators	<p>Conservation zones</p> <p>Submissions raised concerns about the protection of areas zoned for environmental conservation on the airport site and the need for further information including:</p> <ul style="list-style-type: none"> • legal measures to protect areas zoned for conservation; • measures to manage areas zoned for environmental conservation; • preparation of a vegetation management plan prior to construction; and • consideration of impacts of The Northern Road realignment. <p>Submissions noted that the Environmental Conservation Zone (ECZ) around Badgerys Creek was presented inconsistently between the biodiversity assessment and other chapters of the draft EIS. It was recommended that the ECZ presented in the biodiversity assessment be extended to include areas adjacent to The Northern Road, as presented in other chapters of the draft EIS.</p> <p>Submissions stated that the environmental conservation area to the north-west of the airport site was not adequate to protect Cumberland Plain Woodland. An extension of the conservation area at the north-west of the airport site was recommended to include a large patch of Cumberland Plain Woodland within the airport site. It was also stated that the potential transport corridor mapped in this area further reduced its value.</p> <p>Submissions identified confusion over how conservation areas will be protected. It is noted that the realigned The Northern Road would traverse an identified conservation area and this linked impact will need to be assessed in the final EIS.</p>	<p>The Environmental Conservation Zone (ECZ) will be established by the Land Use Plan in the Airport Plan. The revised draft Airport Plan sets the location of the ECZ on the airport site, the objectives for the zone, and identifies the permissible uses that may occur in this zone. As outlined in Chapter 3 (Volume 1), the Airport Plan is a statutory document which would be determined under the Airports Act. The ALC would be required to comply with the obligations set out in the Airport Plan.</p> <p>As outlined in Chapter 28 (Volume 2b), the ECZ and other significant vegetation at the airport site will be managed under the Biodiversity, Land and Safety CEMP and the Biodiversity, Land and Safety OEMP. Developments beyond the scope of Stage 1 would be subject to further approval processes under the Airports Act. This would include developments outside of the Stage 1 construction impact zone which may affect the ECZ or other retained vegetation.</p> <p>The ECZ is not proposed as a formal biodiversity offset site. For this reason, the conservation area has not been included in the biodiversity offset. Biodiversity values will be managed and protected at offset sites where secure conservation covenants are more appropriate.</p> <p>It is recognised that the environmental conservation area to the north-west of the airport site may not be adequate to protect Cumberland Plain Woodland and that the proposed airport would result in a significant impact on this ecological community. The engineering, safety and logistics constraints to the airport concept design mean that it is not possible to conserve a greater area of Cumberland Plain Woodland at the airport site. This has been addressed in the biodiversity assessment in Appendices K1 and K2 (Volume 4) and in Chapter 16 (Volume 2a).</p> <p>The ECZ in this part of the airport site will be located entirely to the west of the relocated The Northern Road. A detailed assessment of cumulative impacts is provided in Section 7 of the biodiversity assessment in Appendix K1 and Chapter 27 (Volume 2a) of the EIS. It is not practical to include a thin sliver of retained vegetation between The Northern Road and the Stage 1 runway in a conservation area.</p>

Theme	Stakeholders	Summary of issue	Response
Traffic, transport and access	Local councils NSW Government	<p>Construction Traffic Management Plan</p> <p>A number of submissions noted that the draft EIS proposes to manage construction traffic impacts through the development of the Construction Traffic Management Plan. Submissions stated that this approach is consistent with industry standards and best practice and is fit for purpose in the EIS.</p> <p>The NSW Government submission stated that if Elizabeth Drive was to remain as the preferred access road during construction, consideration should be given to a comprehensive independent road safety audit to identify remedial measures.</p>	<p>Support for the development of a Traffic and Access CEMP is acknowledged. Chapter 28 in Volume 2b has been updated to provide further information on objectives and mitigation measures to be contained within the CEMP. .</p> <p>The identification of preferred access routes and access points to the airport site for construction traffic would be a key consideration for the Traffic and Access CEMP. The CEMP will be developed in consultation with relevant State and local government agencies.</p>
Traffic, transport and access	Local councils Large land owners	<p>Ground Transport Operational Environmental Management Plan</p> <p>A number of submissions noted that the draft EIS proposes that mitigation and management measures to reduce Stage 1 traffic and transport impacts will be delivered through the Ground Transport Plan. Submissions noted that, in general, this approach could be considered in accordance with industry standards.</p> <p>Some submissions noted that requirements for the Ground Transport Plan are embedded in the requirements for an airport plan under the Airports Act. Concerns were raised over the lack of enforceable timeframe for delivery of the Ground Transport Plan and that it does not require any stakeholder consultation. Given the impacts associated with construction of associated transport infrastructure, as well as ongoing operational impacts from traffic, it was highlighted that ongoing stakeholder engagement was necessary.</p>	<p>Support for the development of a ground transport plan is acknowledged. As stated in Chapter 28 (Volume 2b), a Ground Transport OEMP will be prepared prior to the operation of the proposed airport. The timeframe for the preparation of the OEMP will be specified through conditions attached to the determination of the Airport Plan. The Ground Transport OEMP will be developed in consultation with relevant government agencies.</p>

Theme	Stakeholders	Summary of issue	Response
Traffic, transport and access	Local councils	<p>Mitigation measure – road condition post construction</p> <p>Some submissions indicated that additional funding will be required to upgrade other roads local to the airport site that were not included in recently announced funding packages and that ongoing funding was needed to keep pace with the growth of the airport.</p> <p>Suggestions were provided that road safety audits and dilapidation surveys would be needed pre- and post-construction to ensure local roads were returned to a similar condition once construction was complete.</p>	<p>As outlined in Chapter 28 (Volume 2b), the Traffic and Access CEMP will collate measures to mitigate and manage potential traffic impacts, road condition and road safety issues generated by the use of the road network during construction.</p> <p>The CEMP would provide the overall plan and staging for managing traffic through and around each work site and would be prepared in accordance with the Roads and Maritime's <i>Road Design Guide</i>, the Roads and Maritime Services <i>Traffic Control at Work Sites</i> manual and AS 1742.3 <i>Manual of Uniform Traffic Control Devices – Traffic control for works on roads</i>, and any other relevant standard, guide or manual. The CEMP will be prepared in consultation with relevant stakeholders including Transport for NSW, Roads and Maritime Services and affected local councils. This process will ensure that construction traffic is managed in the most efficient way and minimises safety risks and disruption to other road users.</p>
Topography, geology and soils	Residents	<p>Environmental management plan</p> <p>Some submissions stated that the EIS should contain more detail about the environmental management plan which will be designed to manage and mitigate impacts to topography, geology and soils.</p>	<p>Impacts on topography, geology and soils will be addressed through the Soil and Water CEMP and the Soil and Water OEMP, as outlined in Chapter 28 (Volume 2b).</p> <p>As noted earlier, following publication of the draft EIS, the environmental management framework was reworked to provide clearer objectives for the environmental management plans, including those relating to topography, geology and soils. Mitigation and management measures to address topography, geology and soils impacts were also updated to provide further clarity to commitments and responsibilities.</p>

Theme	Stakeholders	Summary of issue	Response
Surface water and groundwater	Local councils	<p>Clarity of mitigation measures</p> <p>Submissions criticised the clarity of mitigation measures in the draft EIS and stated that mitigation should be provided to address:</p> <ul style="list-style-type: none"> • localised increases in flood depths; • localised increases in shear stress and erosion; and • increased pollutant loads. <p>Submissions also noted that management of potential water quality impacts should include a failsafe system in operation at all times.</p>	<p>Chapter 28 (Volume 2b) has been revised since the draft EIS to provide more detail and clarity on mitigation and management measures.</p> <p>The principal mitigation measure with regards to water quality will be delivered through the continued development of the water management system through the detailed design of the proposed airport. The scheme as currently developed includes a series of grassed swales to convey runoff from the developed areas within the airport site, and a series of bio-retention and flood detention basins to manage quality and quantity prior to discharge to the receiving waters. Low flows are diverted to the bio-retention system for water quality treatment, while the higher flows are designed to bypass the system and discharge directly into the flood detention basins. The flood detention basins provide controlled release to the receiving waters in a way that mimics natural flows as closely as possible over a range of storm durations and magnitudes. The installation of bunding, interceptor systems and oil water separators around fuel storage and refuelling areas will minimise the potential for total petroleum hydrocarbons to be discharged to receiving waters.</p>

Theme	Stakeholders	Summary of issue	Response
Surface water and groundwater	NSW Government Local councils Residents	<p>Groundwater mitigation and management</p> <p>Submissions requested further information regarding mitigation and management of potential groundwater impacts. Particular matters included:</p> <ul style="list-style-type: none"> • baseline monitoring to develop a stronger understanding of connectivity of Bringelly Shale, weathered rock and alluvial aquifers; • baseline monitoring to develop a more detailed characterisation of weather rock aquifer including composition, thickness, distribution and saturation; • review of potential impacts to groundwater in light of baseline data; • consideration of a groundwater recharge scheme to mitigate potential impacts to groundwater levels and groundwater dependent ecosystems, if needed; • ongoing groundwater monitoring geared toward analyses relevant to irrigation to detect any inflows and water quality impacts; • ongoing monitoring of base flow in creeks and groundwater dependent ecosystems; and • treatment of captured groundwater inflow prior to reuse or release. 	<p>The groundwater assessment (Appendix L3 (Volume 4)) finds that the overall risk to groundwater resources from groundwater drawdown and groundwater quality from the Stage 1 development is considered to be minor. The EIS outlines a number of mitigation measures which would further limit these impacts. These include:</p> <ul style="list-style-type: none"> • continual monitoring of groundwater seepage and appropriate corrective actions where necessary; • implementation of measures to reduce the risk of accidents and spills which may contaminate groundwater; and • the capture and treatment of groundwater seepage prior to reuse or release. <p>A comprehensive groundwater monitoring programme has also been proposed in Chapter 28 (Volume 2b). The monitoring programme would include baseline monitoring for determining existing conditions on which the emergence of impacts could be identified. This will allow for the early identification of any potential changes to groundwater levels or groundwater quality that would have potential to impact upon sensitive receptors, including groundwater dependent ecosystems.</p>

Theme	Stakeholders	Summary of issue	Response
Surface water and groundwater	NSW Government Community groups	<p>Mitigation measures</p> <p>Submissions stated that the EIS should more clearly demonstrate that measures have been put in place to ensure water quality standards are met. The NSW Government submission stated that the proposed airport should not exacerbate or prevent the future improvement of the current condition of South Creek or the main stem of the Hawkesbury Nepean.</p>	<p>It is recognised that water quality in the South Creek catchment is generally poor, with elevated nutrient levels in particular impacting upon the environmental values of the receiving waters. The water management system has included a series of bio-retention basins developed with an aim of satisfying pollution reduction targets in the Western Sydney Urban Design Guidelines (WSUD Guidelines). The WSUD Guidelines specify pollutant reduction targets as a practical way of treating urban stormwater quality, with targets of 80 per cent of suspended solids, 45 per cent of total phosphorus, and 45 per cent of total nitrogen to be retained on the airport site. The civil design of the bio-retention basins has additional buffer areas available to provide flexibility to increase the level of treatment in the future.</p> <p>While the Stage 1 development will generally result in improvements in pollutant concentrations locally and regionally, the improvements would not be sufficient to meet the default ANZECC guideline objectives as a result of the degraded nature of the existing catchment. Nevertheless, it is noted that the proposed airport does not preclude the opportunity to make further improvements in downstream water quality in South Creek in the future, to work towards satisfying the NSW Water Quality Objectives.</p> <p>As outlined in Chapter 28 (Volume 2b), due to the existing degradation of water bodies in and around the airport site, local standards for water quality will be developed for the proposed airport, consistent with Part 5 of the AEPR.</p>
Surface water and groundwater	Community groups	<p>NSW Regulations</p> <p>A submission asked whether an Environment Protection Licence would be issued by the NSW Environment Protection Authority to monitor the likely water pollutants produced on the site.</p>	<p>The operation of the airport will be undertaken in accordance with a Commonwealth regulatory process in accordance with the Airports Act and associated regulations such as the AEPR. An Environment Protection Licence from the NSW Environment Protection Authority will not be required for the proposed development.</p>

Theme	Stakeholders	Summary of issue	Response
Surface water and groundwater	NSW Government	<p>Hawkesbury-Nepean River and South Creek – Elevated nutrient loads</p> <p>The NSW Government commented that elevated nutrient loads are a significant issue for the Hawkesbury-Nepean River and in particular for South Creek. The submission noted the findings from the draft EIS that the concentrations of nutrients will generally decrease in response to Stage 1 of the development and that there will be an increase in the annual load of nutrients to receiving waters.</p> <p>The NSW Government suggested that the EIS should demonstrate more clearly that all measures have been put in place to ensure that the proposal does not exacerbate the current condition of South Creek or the main stem of the Hawkesbury Nepean or prevent improvement in the future through other catchment actions.</p>	<p>As outlined in Chapter 28 (Volume 2b), water quality at airports is regulated by the AEPR which sets enforceable water quality criteria based on the ANZECC Guidelines.</p> <p>To take into account existing water quality issues, particularly in the South Creek catchment, it is proposed that local standards would be developed for the airport site under Part 5 of the AEPR. Local standards may be proposed by an ALC and would be approved by the Infrastructure Minister following a period of consultation undertaken by the ALC with relevant authorities, stakeholders and the broader public. This would include consultation with the NSW Government on existing water quality issues in the region.</p> <p>Because the AEPR does not provide any technical guidance on how a local standard should be derived it is proposed that the development local standards would be guided by the ANZECC (2000) process for developing site specific trigger levels, including the collection of 24 months of water quality data. The data collection process is currently underway.</p>
Surface water and groundwater	NSW Government	<p>Further groundwater monitoring and assessment</p> <p>Submissions stated that the assessment of the construction and operation of Western Sydney Airport on groundwater was limited and suggested that further monitoring and assessment be undertaken. Identification and estimation of the quality and quantity of all pollutants that may be introduced into the water cycle is needed, by source and discharge point for both the construction and operation phase. This would need to describe the nature and degree of impact that any discharge(s) may have on the receiving environment, including consideration of all pollutants that pose a risk of non-trivial harm to human health and the environment.</p>	<p>The Groundwater Assessment (Appendix L3) in the EIS finds that the overall risk to groundwater resources from groundwater drawdown and groundwater quality from the Stage 1 development is considered to be minor. The EIS outlines a number of mitigation measures which would further limit these impacts. These include:</p> <ul style="list-style-type: none"> • continual monitoring of groundwater seepage and appropriate corrective actions where necessary; • implementation of measures to reduce the risk of accidents and spill which may contaminate groundwater; and • the capture and treatment of groundwater seepage prior to reuse or release. <p>A comprehensive groundwater monitoring programme has also been proposed as outlined in the Soil and Water CEMP in Chapter 28 (Volume 2b). The monitoring programme would include baseline monitoring for determining existing conditions on which the emergence of impacts could be identified. This will allow for the early identification of any potential changes to groundwater levels or groundwater quality that would have potential to impact upon sensitive receptors, including groundwater dependent ecosystems.</p>

Theme	Stakeholders	Summary of issue	Response
Surface water and groundwater	Local councils	<p>Management of surface water and groundwater impacts</p> <p>Submissions stated that appropriate mitigation measures must be implemented during construction and operation of the airport as per the recommendations in the draft EIS.</p>	<p>Mitigations measures for surface water and groundwater impacts associated with the Stage 1 development are outlined in the Soil and Water CEMP and Soil and Water OEMP in Chapter 28 (Volume 2b). In particular, the CEMP and OEMP will require the ALC to comply with the surface water and groundwater mitigations measures and provides a process for ongoing monitoring and reporting, consistent with existing water quality obligations established under the AEPR.</p> <p>As outlined in Chapter 28, due to the existing degradation of water bodies in and around the airport site, local standards for water quality will be developed for the proposed airport, consistent with Part 5 of the AEPR.</p>
Aboriginal heritage	Heritage groups Community groups	<p>Significance assessment</p> <p>Submissions commented that the significance assessment was high against all nine of the Commonwealth Heritage criteria and as such proposed measures need to consider further scope for conservation apart from the riparian corridor. Submissions also stated that possible information that would contribute to Australia's cultural history (Criterion c) is not addressed.</p>	<p>The Commonwealth Heritage criteria are specified in the EPBC Act and were developed for the purpose of determining Commonwealth Heritage value. Guidelines prepared by the Australian Heritage Council for Commonwealth agencies on the identification of Commonwealth Heritage values, state that 'the threshold for inclusion on the Commonwealth Heritage List is local heritage significance' (AHC 2010).</p> <p>It follows from the application of this local threshold value, that significance according to one or more of the Commonwealth Heritage criteria need not necessarily infer a level of significance that would strongly support <i>in situ</i> conservation, such as a state or national level of significance. It is noted that the two individual sites with a significant level of assessed rarity (Criterion b), the possible Aboriginal scarred tree (B40) and the grinding grooves (B120) would be both managed <i>in situ</i> in the proposed context of the airport development.</p> <p>Criterion c relates to significance derived from a potential to yield information that would contribute to an understanding of Australia's cultural history. The EIS includes a suite of mitigation measures designed to address this potential by the recovery of information and objects through the conduct of a surface and subsurface salvage programme, the analysis and curation of finds that are not repatriated onsite, and the recording of oral history (see mitigation measures in Chapter 28 (Volume 2b)).</p>

Theme	Stakeholders	Summary of issue	Response
Aboriginal heritage	Local Council Heritage groups	<p>Significant sites</p> <p>Submissions noted that all identified archaeological sites are significant and require acknowledgement, conservation and/or mitigation measures.</p>	<p>The Aboriginal Cultural Heritage CEMP will include a range of measures that are considered appropriate to mitigate and manage the potential impacts of the proposed airport on Aboriginal heritage (see Chapter 28 (Volume 2b)).</p> <p>Although the nature of the proposed airport largely limits scope for <i>in situ</i> conservation, the Environmental Conservation Zone at the airport site would be managed with a principal objective being the conservation of Aboriginal heritage. This would provide for the <i>in situ</i> conservation of some of the more highly valued examples of Aboriginal heritage at the airport site – being a possible scarred tree and grinding grooves close to Badgerys Creek.</p> <p>Where proposed construction impact excludes the possibility of <i>in situ</i> conservation, the CEMP provides for a range of management actions. These include:</p> <ul style="list-style-type: none"> • development of a protocol for the onsite and culturally appropriate management of topsoil containing relatively high densities of artefacts; • conduct of a salvage programme with the aim of recovering and analysing a representative sample of surface and subsurface archaeological material; • commemoration and interpretation of local Aboriginal cultural heritage values such as through displays, art, and the naming and dedication of spaces; and • appropriate archiving, long term storage and repatriation of salvaged Aboriginal heritage material.
Aboriginal heritage	Local councils	<p>Support for mitigation measures</p> <p>Submissions expressed support for the proposed mitigation measures and requested that councils and local Aboriginal groups be consulted on management plans before their finalisation.</p>	<p>The proposed measures and strategies for mitigating impacts on Aboriginal heritage values will be contained in an Aboriginal Cultural Heritage CEMP. This CEMP will be developed in consultation with Aboriginal stakeholders and relevant government agencies. The CEMP will include both short and long term strategies, and address actions required prior to, during and after construction.</p> <p>The mitigation measures, detailed in Chapter 28 (Volume 2b), include the conduct of continued Aboriginal consultation, the nature and frequency of which would be specified by an Aboriginal stakeholder consultation plan, and which would be conducted throughout the design and construction phases of the airport. This would be paired with the provision to Aboriginal stakeholders of opportunities to participate in field actions involving the mitigation and management of Aboriginal cultural values.</p>

Theme	Stakeholders	Summary of issue	Response
Aboriginal heritage	Heritage groups	<p>Conditions of proposed mitigation measures</p> <p>One submission stated that the proposed management measures are acceptable provided that:</p> <ul style="list-style-type: none"> the land where cultural material is to be reburied or placed is easily accessible to Aboriginal people; and information boards are placed throughout the airport so that visitors are made aware that the land is significant to Aboriginal people. 	<p>The EIS mitigation measures for Aboriginal Heritage have the objective of establishing two forms of long term storage for recovered Aboriginal cultural material from the airport site (detailed in Chapter 28 in Volume 2b). These comprise: an area, or areas, for the onsite reposition or reburial of items; and a possible offsite 'keeping place' for the above ground storage and curation of materials. The location and degree of required access by Aboriginal people to the onsite area or areas would be the subject of further consultation with Aboriginal stakeholders. Continued Aboriginal stakeholder access to materials within a 'keeping place' facility is anticipated to be an integral function of such a facility and would be the subject of further consultation with Aboriginal stakeholders.</p> <p>The EIS specifies a mitigation measure that the Aboriginal cultural heritage values of the airport site should be commemorated and interpreted as part of the airport development and its infrastructure. This measure is purposefully non-prescriptive regarding the means that this should be achieved so that all current and future options can be reasonably considered. The measure does, however, itemise a number of options including the dedication of various spaces and places for the placement of art and interpretive elements. The category of 'interpretive elements' is certainly understood to include the delivery of information in text and image form. This could be in the form of information boards but may also employ alternative media.</p>
Aboriginal heritage	Heritage groups Local councils	<p>Need for more site surveys</p> <p>Submissions stated that further and more comprehensive site survey activities and subsurface excavation should be conducted after thorough and culturally appropriate additional community consultation.</p>	<p>The mitigation measures in the EIS include the conduct of continued Aboriginal consultation, the nature and frequency of which would be specified by an Aboriginal stakeholder consultation plan, and which would be conducted throughout the design and construction phases of the airport (as detailed in Chapter 28 (Volume 2b)). This would be paired with the provision to Aboriginal stakeholders of opportunities to participate in field actions involving the mitigation and management of Aboriginal cultural values.</p> <p>The mitigation measures in the EIS also include the conduct of further and more comprehensive surface archaeological survey and excavation as part of the EIS mitigation measures. The conduct of these strategies would form the core actions of a salvage programme.</p>
Aboriginal heritage	Heritage groups Local councils	<p>In situ conservation</p> <p>Submissions expressed support for <i>in situ</i> conservation, particularly of the grinding groove and scarred tree.</p>	<p>The grinding grooves and possible scarred tree sites will be conserved <i>in situ</i> within the proposed Environmental Conservation Zone. A number of the Stage 1 management strategies included as mitigation measures in Chapter 28 (Volume 2b) relate directly or indirectly to the management of these sites and would establish a future regime for their care, conservation, and interpretation.</p>

Theme	Stakeholders	Summary of issue	Response
Aboriginal heritage	Heritage groups	<p>Aboriginal Cultural Heritage Management Plan</p> <p>Submissions stated that the remaining sites of Aboriginal cultural heritage need to be managed through a cultural heritage management plan that requires extensive consultation.</p>	<p>The management of all Aboriginal sites that remain onsite following initial construction impacts would be the subject of an Aboriginal Cultural Heritage CEMP. The mitigation measures in Chapter 28 (Volume 2b) specifically deal with sites within the Environmental Conservation Zone. The measures specify that the Aboriginal Cultural Heritage CEMP will be prepared in consultation with Aboriginal stakeholders, the NSW Office of Environment and Heritage and other relevant Australian and local government bodies.</p>
Aboriginal heritage	Heritage groups Community groups	<p>Artefact salvage programme</p> <p>Submissions stated that the proposed artefact salvage programme would be inadequate if limited to a representative sample, given the large size of the airport site.</p>	<p>Mitigation measures in the EIS include conducting further targeted archaeological surface survey of that portion of the Stage 1 construction impact zone not previously subject to surface survey (detailed in Chapter 28 (Volume 2b)). The aims of the programme include, but are not limited to, the recovery and analysis of a representative sample of surface and subsurface archaeological material from the areas subject to Stage 1 construction impact.</p> <p>In addition to the representative sample, a further aim is to recover additional archaeological material from areas with assessed relatively higher archaeological value. The objective of this measure is to provide a large enough artefact population for statistical analysis and from which robust results can be derived. This will ensure that comprehensive surface archaeological survey of all directly impacted areas will be completed prior to construction, and that an opportunity will be provided to salvage known surface artefacts.</p> <p>The conduct of an archaeological salvage and excavation programme across the Stage 1 construction impact zone would provide a further and substantial opportunity to recover archaeological and cultural items from the project area, and to learn about the area's Aboriginal occupation and history.</p>

Theme	Stakeholders	Summary of issue	Response
Aboriginal heritage	Heritage groups	<p>Protocol for managing and tracking topsoil</p> <p>Submissions considered that the proposed protocol for managing and tracking topsoil from areas of predicted high archaeological artefact density would be impracticable.</p>	<p>While the volumes of soil to be excavated and moved during airport construction would be very large, it is envisaged that the material which would be subject to the protocol would constitute a small minority of this volume. This is because most of the material would consist of topsoil (which is likely to be stockpiled for future spreading in any case), and be limited to contexts where there was a known or predicted relatively high incidence of subsurface artefacts.</p> <p>Given that the resources made available for pre-construction salvage programmes are always limited, and that archaeological programmes of salvage are always sample-based, it is a usual expectation in broad area developments that a substantial proportion of the archaeological resource will still be present within impact zones after salvage completion. Except in exceptional cases of 100 per cent salvage (which, when feasible, are mostly limited to small development areas), it is proposed that the conduct of a protocol for the onsite construction management of spoil containing a relatively high density of artefacts would provide a useful and additional strategy for reducing impact to Aboriginal heritage values (detailed in Chapter 28 (Volume 2b)). This mitigation measure has been defined specifically to address concerns expressed by many Aboriginal stakeholders that the cultural values associated with artefacts which remain in construction areas have, in the past, typically been ignored in the conduct of post-salvage construction practices.</p>
Aboriginal heritage	NSW Government	<p>Management of Aboriginal heritage impacts</p> <p>It was recommended that mitigation and management measures include:</p> <ul style="list-style-type: none"> • <i>in situ</i> conservation of at least two Aboriginal heritage sites • conservation of a representative sample of an archaeological landscape, if possible; and • use of the Aboriginal Sites Decision Support Tool in rating potential offset sites. 	<p>As committed in the draft EIS, the Environmental Conservation Zone at the airport site would be managed with a principal objective being the conservation of Aboriginal heritage values. This would provide for the <i>in situ</i> conservation of some of the more highly valued examples of Aboriginal heritage at the airport site – being a scarred tree and grinding grooves near Badgerys Creek.</p> <p>Thirteen previously recorded Aboriginal sites, and portions of three others, would be conserved <i>in situ</i> within proposed Environmental Conservation Zone.</p> <p>The nature of the proposed airport and the boundaries of the airport site mean that the proposed measure of conserving a representative sample of an archaeological landscape cannot be achieved within the confines of the site.</p> <p>There is potential for Aboriginal cultural heritage values to be conserved on properties identified for the in perpetuity protection of biodiversity offsets. Where practicable, any future evaluation of potential offset properties would incorporate the Aboriginal Sites Decision Support Tool as an aid in evaluating both representativeness and the predicted archaeological resource.</p>

Theme	Stakeholders	Summary of issue	Response
European heritage	Community group Residents	<p>Retain local heritage items</p> <p>Submissions questioned whether recommendations to retain or relocate the Badgerys Creek Public School, Gardiner Road farm complex and Vicary's Winery heritage places would be carried out. Submissions stated that moveable heritage items should be retained in the Luddenham area and preserved under best practice models.</p>	<p>As stated in Chapter 20 (Volume 2a), all buildings or structures associated with identified European heritage sites are proposed to be removed as part of the Stage 1 development. The feasibility of relocating specific heritage structures to offsite locations, including within the local area, will be investigated.</p> <p>As described in the outline for the European and Other Heritage CEMP, mitigation measures that will apply to the three heritage places mentioned include archival recording, staged demolition and the preparation of an inventory of moveable heritage items. The objective of these measures is to gain additional information about identified heritage items and to ensure that any new information is appropriately recorded and archived for future reference and research.</p>
Planning and land use	Peak body groups	<p>Mitigation measures</p> <p>Submissions did not support the creation of a consultation forum for the noise management plan. The forum was construed as a new and unjustified national planning body.</p>	<p>The Australian Government expects all Federally-leased airports to establish a Community Aviation Advisory Group (CACG) to ensure appropriate community engagement on matters relating to airport planning and operations. These are permanent bodies that enable concerns to be raised and taken into account by an ALC. The CACG is not an arbitration or decision making body.</p> <p>Once appointed, the ALC of the proposed airport will be expected to establish a CACG prior to the commencement of operations. In the meantime, the Department of Infrastructure and Regional Development will lead a detailed airspace and flight path design process for the proposed airport. The Department intends to establish a community and stakeholder reference group to facilitate community and other input into the planning, design and assessment of airspace concepts prior to implementation of a final design. Similar to the purpose of CACGs, this reference group will not be a decision making body, but will play a critical role in bringing community and stakeholder views and concerns to the attention of the expert steering group overseeing the airspace and flight path design process.</p>
Planning and land use	Residents	<p>Planning controls</p> <p>Submissions stated that there is a need for strict planning controls around the proposed site to maximise the use of available land and associated economic benefits. Suggestions from community members included considerations for long term planning efforts such as underground high voltage powerlines, shopping precincts, and business parks.</p>	<p>The Australian Government will continue to work closely with State government agencies and local councils to ensure regional and local land use planning and other major development schemes complement the future operation of the proposed airport. This will include consideration of the need for future easements for utility requirements.</p>

Theme	Stakeholders	Summary of issue	Response
Planning and land use	NSW Government Major adjacent landowners	<p>Land acquisition</p> <p>Submissions raised issues regarding the potential acquisition of properties and easements adjacent or close to the airport site. Submissions from some landholders noted that formal consultation had not taken place with regard to potential acquisition of adjoining land and requested that this consultation take place.</p> <p>Submissions stated that consultation would be required to explain the need for acquisition or development restrictions, and potentially align the development with the intentions of the adjoining landholders including identification of opportunities for complementary development.</p> <p>Submissions stated that consultation was required about the following matters:</p> <ul style="list-style-type: none"> • allowance for ready access and control of infrastructure corridors by the NSW Government, including the future rail corridor traversing the airport site; • avoidance or limitation of acquisition on Lot 102 on DP 812653 through relocation of the proposed drainage basin or acquisition of an easement; • clarification on the potential for the acquisition of Lot 11 DP1092165 to obstruct neighbouring agricultural land uses; • clarification of the need to extend Lot 11 DP1092165 to accommodate for the high intensity approach lighting system; and • clarification of the need part of Lot 101 DP848215 and future tenure arrangements. 	<p>Acquisition of any additional land outside of the airport site would be undertaken in accordance with the <i>Lands Acquisition Act 1989</i>, which contains a framework for acquisition of land including compensation arrangements.</p> <p>Formal consultation would be undertaken with landholders affected by additional acquisitions or development restrictions.</p> <p>Particular matters raised regarding affected parcels of land and access provisions would be discussed directly with affected landholders.</p>

Theme	Stakeholders	Summary of issue	Response
Landscape and visual amenity		<p>Visual impact mitigation</p> <p>Submissions made a number of recommendations to mitigate visual impacts. Particular measures that were recommended include:</p> <ul style="list-style-type: none"> • retention of existing trees at the airport site; • screening planting along airport site perimeter fencing; • planting of locally endemic tree species at the airport site; • avoidance of severe or unnatural grade transitions or barriers; • retention and embellishment of natural areas at the airport site; and • low angle, cut off fittings to mitigate lighting impacts. 	<p>As stated in Chapter 28 (Volume 2b), a Visual and Landscape CEMP will be developed. The CEMP will include a range of measures to mitigate visual impacts including tree planting, avoidance of severe cut and fill designs and lighting design.</p>
Social	Residents	<p>Mitigation of impacts on property values</p> <p>Some submissions raised concerns that the proposed airport would negatively impact on property values and that the EIS should include measures to compensate land owners.</p>	<p>A review of the literature analysing property values surrounding other airport developments did not confirm a statistically significant relationship with aircraft noise as discussed in Appendix P2 (Volume 4) and Section 23.5.2.3 (Chapter 25 (Volume 2a)) of the EIS.</p> <p>An analysis of housing prices in Sydney since 1991 found no appreciable difference in housing price growth in areas affected by aircraft noise and areas not affected by aircraft noise.</p> <p>Following the formal announcement of the proposed airport, house prices have in fact increased in suburbs close to the airport site.</p> <p>The proposed airport is also expected to bring a range of social and economic benefits to Western Sydney that are likely to have positive flow on effects to property values, including increased investment in infrastructure and businesses on and around the airport site, increased employment growth, and generating job opportunities closer to where people live.</p>
Social	Residents Major land owners Community groups Local councils NSW Government Senators and Members of Parliament	<p>Coordination of Commonwealth, state and local planning and other developments</p> <p>Many submissions identified the need for strong coordination across governments and industry to maximise the economic benefits of the proposed airport, and enhance existing and other proposed developments.</p>	<p>The Australian Government continues to work closely with NSW Government agencies, local government, and stakeholders to ensure land use planning and development is coordinated and complementary to the future operation of the proposed airport.</p>

Theme	Stakeholders	Summary of issue	Response
Resources and waste	Local councils Peak business groups	<p>Review of issues and legislation</p> <p>Submissions noted that the draft EIS provided a comprehensive review of waste and resource issues and legislation in both the development and operational stages of the proposed airport. Stakeholders requested involvement in the development of the waste management plan for the proposed airport. Other submissions raised a concern that a low level of importance had been placed on the assessment of waste in the draft EIS.</p>	<p>The waste assessment was undertaken to a level of detail that was commensurate with project planning and was typical of assessments of other major projects in the planning and approvals phase.</p> <p>As outlined in chapter 28 (Volume 2b), the ALC will be required to consult with relevant stakeholders and authorities when developing environmental management plans, including the Waste and Resources CEMP and Waste and Resources OEMP.</p>
Resources and waste	Local councils Businesses	<p>Detail provided in the assessment</p> <p>Submissions raised concerns with the level of detail provided in the draft EIS, particularly in relation to:</p> <ul style="list-style-type: none"> the practical measures that would be implemented to manage waste; the bin-system for the airport site; the onsite treatment and irrigation of wastewater measures to manage the risk of illegal waste disposal; the resources and waste management plan; and whether licences would be required for the management of waste. 	<p>Specific details of the waste management facilities and processes proposed at the airport site would be subject to detailed design and agreements with waste contractors where relevant. These measures will be outlined in the Waste and Resources CEMP and the Waste and Resources OEMP as outlined in Chapter 28 (Volume 2b).</p> <p>The Environmental Management Framework outlined Chapter 28 will require the ALC to consult with relevant stakeholders and authorities when developing environmental management plans and to comply with all relevant regulations. Chapter 28 also provides detailed information about the overall objectives and performance criteria for mitigation measures as well as monitoring and reporting measures to demonstrate effectiveness over time.</p>

Theme	Stakeholders	Summary of issue	Response
Resources and waste	Local councils	<p>Resource recovery</p> <p>Submissions raised concerns about the how resource recovery issues would be managed and the targets to be set for resource recovery.</p> <p>Submissions noted a lack of information in the draft EIS about the level of resource recovery being targeted during the construction phase.</p> <p>Further, it was noted that operational solid waste recycling, as outlined in Table 25-5 of the draft EIS, would amount to 710 tonnes per year, representing a recycling rate of approximately 15 per cent.</p> <p>It was noted that this recycling rate would fall below the NSW Waste and Resource Recovery Strategy target recycling rate of 70 per cent for commercial and industrial waste.</p> <p>It was recommended that the proposed airport should consider committing to best practice in line with NSW EPA recycling targets of 70 per cent for commercial and industrial waste and 80 per cent for construction and demolition waste. It was noted that high rates of resource recovery will be difficult to achieve without strategic planning.</p>	<p>Chapter 28 (Volume 2b) requires the development of a Waste and Resources CEMP and a Waste and Resources OEMP. The CEMP and OEMP would reflect the waste management hierarchy as per the <i>Waste Avoidance and Resource Recovery Act 2001</i> (NSW) and would therefore give preference to the avoidance and reduction of waste, followed by reuse, recycling, recovery, treatment and finally disposal.</p> <p>As stated in Chapter 28 (Volume 2b), a Sustainability Plan will also be prepared and would include targets to reduce consumption of resources and thereby reduce waste.</p> <p>It is expected that as these plans are developed and their performance is monitored, concrete targets for recovery and other waste management options would be identified as relevant to particular waste streams.</p> <p>Demonstration of the management of consumption and waste would also be required to achieve the various sustainability ratings committed to in the EIS, and administered by the Infrastructure Sustainability Council of Australia and Green Building Council of Australia.</p>
Resources and waste	Local councils	<p>Resource and waste mitigation measures</p> <p>Submissions stated that waste management measures included in the draft EIS were not described in adequate detail. Further information was recommended particular for measures that would promote waste avoidance, reuse and recovery in particular.</p> <p>Submissions also recommended a commitment to recycling 70 per cent of commercial and industrial waste and 80 per cent of commercial and demolition waste in line with the NSW Environment Protection Authority <i>Waste Avoidance and Resource Recovery Strategy</i>.</p>	<p>As stated in Chapter 28 (Volume 2b), a Waste and Resources CEMP and a Waste and Resources OEMP will be developed. The CEMP and OEMP provide further detail on the measures described in the EIS including measures for avoidance, reuse and recovery as well as targets to measure performance.</p> <p>The Sustainability Plan outlined in Chapter 28 (Volume 2b) will require a number of environmental performance targets to be established and implemented by the ALC. This will include targets on recycling, waste and resource use.</p>

Theme	Stakeholders	Summary of issue	Response
Environmental management framework	NSW Government Local councils Residents Community groups Environmental groups	<p>Refinement of mitigation measures</p> <p>A number of submissions raised issues regarding the EMF and suggested that further revision of the EMF and mitigation measures was required. In particular, the EIS should:</p> <ul style="list-style-type: none"> • provide more detail of the description of measures; • provide certainty regarding the implementation of measures; • outline metrics to assess the performance of the measures; • outline trigger levels to implement, review or adapt measures; • quantify the costs and effectiveness of measures; • outline a clear policy basis or framework for implementation; • establish hard limits for environmental impacts and provide assurances that acceptable environmental thresholds will not be breached; and • outline more prescriptive mitigation measures to provide greater certainty over the likely future impact. 	<p>Chapter 28 (Volume 2b) describes the environmental management framework (EMF) for the development and implementation of the mitigations measures to address environmental and social impacts associated with the Stage 1 development. The EMF outlines the specific environmental management plans (CEMPs and OEMPs) that will be implemented and the processes for ensuring their effectiveness, including objectives, performance criteria, monitoring, and reporting requirements.</p> <p>Following publication of the draft EIS, Chapter 28 (Volume 2b) was updated and the EMF was reworked to provide clearer objectives for the CEMPs and OEMPs to provide further clarity to commitments and responsibilities. The CEMPs and OEMPs will largely be the responsibility of the ALC. Environmental management will be measured and accounted for through conditions contained within the Airport Plan (including the requirements of the CEMPs and OEMPs), existing planning regulations outlined in the Airports Act and existing environmental performance obligations and reporting requirements outlined in the AEPR. In particular, the AEPR includes a comprehensive regulatory regime for the establishment of environmental performance targets in relation to pollution and excessive ground noise, as well as provisions for monitoring and reporting to ensure compliance with those targets.</p>
Environmental management framework	NSW Government	<p>Identification of sustainability targets</p> <p>The NSW Government submission sought a commitment to specific sustainability targets in the draft EIS, including principles and/or outcomes for the future development of the airport site.</p>	<p>The environmental management framework described in Chapter 28 (Volume 2b) has been updated in finalising the EIS to reflect the Australian Government's commitment to achieving sustainability outcomes for the proposed airport. A Sustainability Plan will be implemented to guide the implementation of sustainability measures throughout construction and operation of the Stage 1 development. These measures include the development of sustainability targets for energy use, resource use, local employment and other factors, as well as the achievement of sustainability ratings with the Infrastructure Sustainability Council of Australia, the Green Building Council of Australia, and NABERS.</p>

Theme	Stakeholders	Summary of issue	Response
Environmental management framework	Local councils Environmental groups Residents	<p>Accountability and management of mitigation measures</p> <p>Submissions received from a range of stakeholders state that the draft EIS did not include discussion on how mitigation measures will be coordinated, resourced, or who would be accountable for ensuring outcomes.</p> <p>Some submissions stated that the final EIS should provide more certainty and definition on the management and mitigation measures that the ALC would be required to enforce.</p>	<p>Following publication of the draft EIS, Chapter 28 (Volume 2b), the Environmental Management Framework was reworked to provide clearer objectives for the environmental management plans and mitigation and management measures were updated to provide further clarity to commitments and responsibilities.</p> <p>Chapter 3 (Volume 1) has also been updated to provide more information around the regulatory framework more broadly, providing more information about responsibility and accountability for the Stage 1 development.</p> <p>Construction and operational environmental management will largely be the responsibility of the ALC and will be measured and accountable through conditions contained within the Airport Plan (including the requirements of the CEMPs and OEMPs), existing controls outlined in the Airports Act and existing environmental performance obligations and reporting requirements outlined in the AEPR.</p>

32 Long Term Development

Volume 3 (Long term development) of the draft EIS provided a strategic level assessment of environmental impacts from the indicative long term development of the proposed airport.

The assessment was outlined in Part G (Volume 3) of the draft EIS which contained the following chapters:

- Chapter 30: Approach to impact assessment
- Chapter 31: Noise
- Chapter 32: Air quality
- Chapter 33: Traffic, transport and access
- Chapter 34: Surface water and groundwater
- Chapter 35: Planning and land use
- Chapter 36: Landscape and visual amenity
- Chapter 37: Social and economic
- Chapter 38: Greater Blue Mountains
- Chapter 39: Other environmental matters

32.1 Summary of submissions

Submissions on the long term development were broadly consistent with submissions made on the Stage 1 development. In particular, submissions raised concerns about the scope of the long term assessment, the methodology used to assess impacts, and environmental management issues.

The key issues from the submissions are summarised under the following themes.

- justification for the proposal;
- approach to impact assessment;
- noise (ground operations, construction, road and rail);
- human health;
- traffic, transport and access; and
- mitigation measures.

32.1.1 Issues and responses

Theme	Stakeholders	Summary of issue	Response
Justification for the proposal	Residents	<p>Long term development</p> <p>Submissions suggested that the draft EIS should have provided an economic assessment of the airport with 54 million passengers and 760,000 tonnes of freight, demonstrating how it performs economically with a curfew and without a curfew.</p>	<p>Volume 3 of the EIS considers the progressive development of the proposed airport as demand increases beyond the Stage 1 development.</p> <p>The long term development is forecast to service approximately 82 million passengers, which is equivalent to approximately 370,000 air traffic movements per year. Chapter 37 (Volume 3) considers the social and economic impacts of the proposed airport in the long term.</p> <p>A curfew at the proposed airport would reduce the average daily capacity, limiting the airport's ability to achieve its objective of increasing aviation capacity in the Sydney basin. A curfew would limit the number of new flights and reduce the airlines' ability to include the proposed airport as a regional hub or part of their aviation network, reducing the benefits to the aviation sector. Furthermore, the airline operators that choose to provide services to the proposed airport may face higher operating costs as a result of the inflexibility that the curfew imposes.</p> <p>The passengers foregone as a result of the curfew can also lead to lost tourism and aeronautical expenditure. The imposition of a curfew is likely to restrict dedicated freight operations that may operate from an airport as well as freight carried in the belly holds of passenger services. Both of these effects are likely to have a significant impact on the regional and Australian economies.</p> <p>Communities and businesses in other states that have curfew-free major airports place significant value on the benefits that come from being able to operate 24 hours a day and the role it plays in supporting growth in local, regional and state economies. In the case of Melbourne Airport, according to analysis undertaken by Melbourne Airport, its curfew-free status allows for the movement of an extra two million passengers a year (MAP) and adds \$590 million to the Victorian economy through visitor spending. By 2033, the value of the curfew-free status to Melbourne Airport is forecast to increase to an additional 5 MAP and an additional \$1.3 billion in visitor spending.</p> <p>The EIS found that the indicative long term development would result in significant economic, employment and social opportunities for the Western Sydney region.</p>

Theme	Stakeholders	Summary of issue	Response
Approach to impact assessment	Local councils NSW Government Community groups Environmental groups Residents	<p>Assessment scenarios</p> <p>Submissions stated that the draft EIS did not consider later stages of the proposed airport's development or that assessment of future development is considered separate to Stage 1.</p> <p>Submissions suggested that, given the Stage 1 development underpins the draft EIS assessment, the likely impacts of the proposed airport will be understated.</p> <p>The NSW Government noted that the assessment scenario is limited to five years and proposed that a 10-year assessment timeframe would provide for a more robust assessment of issues such as noise, air quality and hazard and risk.</p> <p>Submissions suggested that the assessment should consider all stages of development, not just Stage 1, in order to adequately inform the reader regarding the proposed airport's long term impacts. Some stakeholders suggested that the assessment should be based on the extent of development and operational activity at 2050, while others suggested an assessment year of 2045 when the first runway is predicted to be approaching capacity.</p> <p>Other submissions suggested that the EIS should consider impacts up to 2045, which would be approaching full capacity of the single runway infrastructure so that the community and stakeholders have a greater understanding of the impacts of a fully operational single runway airport.</p> <p>In addition, there were a number of submissions that expressed concern over the scenarios and timeframes used for the assessment of specific technical areas, such as noise or human health.</p>	<p>The scale of development adopted for the EIS is the Stage 1 airport development as outlined in the revised draft Airport Plan. The Stage 1 development incorporates a single runway and support facilities to cater for an operational capacity of approximately 10 million annual passengers and approximately 63,000 air traffic movements per year. The Stage 1 development would provide for anticipated demand for the first five years of operation which for the purposes of this EIS is around 2030, although this level of activity could be reached earlier or later than this date depending on many variable factors affecting demand. The assessment of potential environmental impacts in the EIS is based on a particular scale of infrastructure development and a corresponding level of aviation activity.</p> <p>Increasing the capacity of the single runway beyond Stage 1 development would require the construction of additional infrastructure such as buildings, aprons and terminal areas. As detailed in Chapter 3 (Volume 1), major airport developments beyond the scope of the Stage 1 development would be subject to additional approvals in accordance with the Airports Act.</p> <p>The EIS recognises that approval of the Stage 1 development would directly facilitate growth of the proposed airport over time and this has the potential to increase the level of impacts associated with the proposed airport, particularly the impact of aircraft noise exposure on surrounding communities. To provide an overview of the potential impacts over time, a strategic level assessment was undertaken of the impacts arising from the long term development (which could occur around 2063). The EIS acknowledges the uncertainty in predicting impacts that may occur nearly 50 years into the future and therefore notes the additional approval requirements for all future developments.</p> <p>In addition, the EIS recognises that aircraft noise is one of the most sensitive issues associated with the development of the proposed airport and an increase in air traffic movements has the potential to increase the level of noise disturbance experienced by the surrounding community. Taking this into account, the EIS assesses aircraft noise impacts for a scenario where the single runway is operating at or near full capacity of around 37 million annual passengers or approximately 185,000 aircraft movements per year. This scenario allows an assessment of the extent of noise exposure and associated potential impacts from the forecast maximum capacity of the single runway.</p>

Theme	Stakeholders	Summary of issue	Response
Approach to impact assessment	Local councils	<p>Long term planning and impacts</p> <p>Submissions expressed concern that the assessment is largely limited to identifying known development plans, such as the urban development associated with the North West and South West Growth Centres and the Western Sydney Employment Area. Submitters noted that discussion on the long term strategic planning initiatives within the region and the impact these future land uses may have on the airport, and vice versa, is necessary.</p>	<p>The draft EIS was prepared in accordance with the requirements of the EPBC Act and the <i>Guidelines for the Content of a Draft Environmental Impact Statement – Western Sydney Airport</i> (EIS Guidelines) that were issued by the Department of the Environment on 29 January 2015.</p> <p>Future assessment including consideration of the long term strategic planning initiatives within the region and the impact these future land uses may have on the airport will be undertaken through the airport master plan process under the Airports Act once the actual flight tracks are developed and potential impacts can be better defined.</p>
Noise (ground operations, construction, road and rail).	Local councils	<p>Long term assessment of ground-based noise</p> <p>Submissions stated that the draft EIS did not include ground-based noise in the summary or conclusion for the long term development. These submissions recommended that the outcomes of the long term development ground-based noise assessment be included in these sections so that all impacts are clearly presented.</p>	<p>The long term assessment in the final EIS has been updated to include a summary of ground-based noise impacts in the conclusion of the relevant chapter.</p>
Human health	Local councils	<p>Assessment methodology – Odour impacts</p> <p>Submissions noted that odour can cause annoyance and avoidance behaviour (for example, changes in use of outside areas). Odours from exhaust emissions and the onsite wastewater treatment plant are assessed within the Air Quality Assessment. These were assessed to be below detectable levels offsite for Stage 1. Odour was not assessed for the long term scenario.</p>	<p>Appendix F1 in Volume 4 notes the considerable methodological complexities associated with completing the odour assessment for the Stage 1 development. Due to significant uncertainties in future emission levels, an assessment of long term odour impacts was not undertaken. As no new information which resolves these uncertainties has been received since the exhibition of the draft EIS, the finalised EIS does not include an odour assessment of the long term scenario.</p>

Theme	Stakeholders	Summary of issue	Response
Traffic, transport and access	NSW Government Local councils	<p>Modelling scenarios</p> <p>The NSW Government indicated that a 2036 scenario should be assessed in keeping with normal practice for traffic assessments of assessing impacts at the 'opening year plus ten years' horizon. This should also be updated to include traffic estimates for the terminals and the airport commercial development.</p> <p>Submissions questioned the adequacy of the transport analysis and modelling, particularly detailed intersection modelling and the cumulative impact of vehicle traffic generation from land uses in and around the proposed airport.</p>	<p>The EIS assesses the Stage 1 development as described in the revised draft Airport Plan, incorporating a single runway and support facilities to cater for approximately 10 million annual passengers and approximately 63,000 air traffic movements per year, allowing for the anticipated demand for the first five years of operation.</p> <p>There are limitations associated with assessing potential impacts beyond the Stage 1 development outlined in the revised draft Airport Plan as specific planning for future stages of development would be undertaken by the ALC. Major airport developments required to expand the airport beyond Stage 1 would be subject to additional approvals in accordance with Part 5 of the Airports Act.</p> <p>The EIS provides a strategic level of assessment of the long term traffic and transport impacts as it is recognised that approval of the Stage 1 development would directly facilitate growth of the proposed airport over time and this has the potential to increase the level of impacts associated with its future operation.</p>
Mitigation measures	Local councils	<p>Long term mitigation measures</p> <p>Submissions stated that detailed mitigation measures should be proposed for the long term development, in addition to the Stage 1 development.</p>	<p>In light of the unique and complex nature of this project, it is not possible or prudent to develop detailed mitigation plans for the long term development. Such details will be the subject of future airport master plans and major development plans and as necessary, any environmental impact assessments required.</p>

33 Conclusion

The EIS for the proposed airport provides a comprehensive assessment of the environmental and social impacts from the Stage 1 development, as outlined in the revised draft Airport Plan.

The revised draft Airport Plan and draft EIS were on public exhibition from 19 October to 18 December 2015. This provided the community the opportunity to understand both the details of the project and the potential impacts of the airport on the community and the environment.

A total of 4,975 submissions on the draft Airport Plan and draft EIS were received from individuals, community groups, government agencies, organisations and industry. These submissions were collated and considered as part of the process to finalise both documents. This Submissions Report details the issues raised and how they have been addressed in the EIS.

As required under the EPBC Act, copies of all comments received on the draft EIS will be forwarded to the Environment Minister for consideration, along with the finalised EIS.

References Volume 5





References

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