

29. Conclusion

29.1. Introduction

This chapter summarises the justification for the proposed airport and potential environmental impacts, including anticipated benefits and the consequences of not proceeding.

29.2. Justification of the proposal

Airports are key international gateways for passenger and freight transport, taking on an increasingly important economic role in a globalised economy. Sydney in particular is reliant on the aviation system to maintain its status as a global city, tourist destination and major financial and services centre in the Asia Pacific region.

The need for a second airport in Sydney is driven principally by the increasing demand for aviation services in both Western Sydney and the Sydney region in general, and the limited capacity of existing airports to accommodate the predicted growth.

Strategic alternatives to the development of a new airport in Western Sydney have been considered over a number of decades. Commonly referenced alternatives include increasing the capacity of Sydney (Kingsford Smith) Airport or other existing airport facilities, establishing a new airport outside the Sydney basin, or developing a regional high speed rail network. 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 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.

Western Sydney is identified as the source of many of Sydney's greatest opportunities for economic and employment growth in the NSW Government's *A Plan for Growing Sydney* (DP&E 2014). It is also a region in which several of Sydney's challenges are most pressing, such as ageing infrastructure, housing demand, growth and access to employment.

Development of the proposed Western Sydney Airport would be a catalyst for investment and job creation in the region by accelerating the delivery of vitally important infrastructure and the release of employment and housing land, and providing a long term and diverse source of local jobs and economic activity. Additionally, the proposed airport would improve access to aviation services for the growing population of Western Sydney.

29.2.1. Summary of benefits of the proposal

Proceeding with the proposal would provide the following key benefits:

- Additional aviation capacity for Sydney – existing airports in the Sydney basin do not have the capacity to absorb future aviation demand. The proposed airport would provide the additional capacity to meet increases in demand over the long term.
- Access to aviation for Western Sydney – providing Western Sydney with better access to aviation services and accelerating critical infrastructure and urban development in the region.
- Economic benefits – Generating opportunities for employment growth and increased economic development in the Western Sydney Region.

29.2.2. Alternatives considered

The development of a new airport at Badgerys Creek has consistently been found to be the most effective solution to address long term aviation demand in the Sydney region, a position confirmed by the Joint Study on aviation capacity in the Sydney region (Department of Infrastructure and Transport 2012). In coming to this conclusion, the Joint Study provided a re-evaluation and broad consideration of a number of strategic alternatives to the development of a new airport, including:

- expanding Sydney Airport to meet increased demand;
- reviewing the policy settings and operational restrictions to optimise the use of Sydney Airport;
- optimising the use of other existing airports in the Sydney region;
- using high speed rail to reduce demand for aviation services; and
- developing other new airports.

While the Joint Study acknowledged that some of the options had potential to provide marginal capacity benefits, such as amending cap and curfew arrangements at Sydney Airport, they were considered short term solutions that would not address Sydney's long term aviation capacity requirements. Other proposals, such as expanding Sydney Airport or developing a high speed rail link to Canberra or Newcastle airports, were found to require significant capital investment and would not necessarily address the underlying key drivers of aviation demand growth such as demand for international services.

The Joint Study identified that a major new airport in the Sydney basin would be required before the end of 2030 and that development of the airport site at Badgerys Creek would be best placed to meet this growing demand.

29.2.3. Consequences of not proceeding

The consequences of not proceeding with the proposed airport would include:

- long term operational constraints at Sydney Airport would not be resolved and there would be increased congestion of existing facilities and reduced efficiency of aviation services in the Sydney region; and
- the regional economic benefits expected to be generated by the proposed airport, such as new employment, industry expansion and training opportunities would not be realised.

29.3. Environmental impacts

Potential environmental impacts associated with construction and operation of Stage 1 of the proposed airport, as well as mitigation measures identified to reduce and manage these potential impacts, are documented in this volume of the draft EIS. Consideration of the long term operation of the proposed airport is provided in Volume 3. A summary of the potential key environmental impacts associated with Stage 1 is provided in Table 29–1.

Table 29–1 – Summary of key environmental impacts

Issue	Key environmental issues
Noise – aircraft	<ul style="list-style-type: none"> • Maximum noise levels of over 85 dBA would be experienced at a small number of residential locations close to the airport site in the area of Badgerys Creek; and levels of 70 to 75 dBA within built-up areas in St Marys and Erskine Park due to worst case loudest aircraft operations (such as Boeing 747). • Maximum noise levels of over 70 dBA would be experienced in some areas adjacent to the south west of the airport, notably the area of Luddenham and Greendale; and levels of 60 to 70 dBA in built-up areas around St Marys and Erskine Park due to more common aircraft types (such as Airbus A320 or equivalent). • About 1,500 people would experience five or more aircraft noise events per day above 70 dBA during the day. None of these are in built-up residential areas. • An estimated 48,000 people would experience more than five events above 60 dBA at night under the 'Prefer 05' operating strategy (approach and depart the airport in a south west to north east direction). • Approximately 6,000 people would experience more than five events above 60 dBA at night under the 'Prefer 23' operating strategy (opposite direction to 'Prefer 05'). • Approximately 4,000 people would experience more than five events above 60 dBA at night under the 'Head to Head' operations (both approach from and depart to the south west). • Most recreational areas would not be subject to aircraft overflight noise events with maximum levels exceeding 70 dBA – or their exposure will be less than one event per day. • The predicted Australian Noise Exposure Concept (ANEC) 20 contour presented in this draft EIS is largely contained within the 1985 EIS ANEC 20 contour used since this time by surrounding councils for land use planning. • The ANEC contours presented in this draft EIS would lead to the final Australian Noise Exposure Forecast (ANEF) contours once flight paths and operating modes are finalised and approved.
Noise – ground operations, construction and road traffic	<ul style="list-style-type: none"> • Construction noise would be largely confined to within the airport boundary, although there would also be impacts on parts of Luddenham and Badgerys Creek outside of the airport site. • Ground-based operational noise would be generated by aircraft engine run-up and taxiing. • Noise above the adopted criteria associated with aircraft engine run-up under worst case meteorological conditions would potentially affect Luddenham, Badgerys Creek, Bringelly, Wallacia and Greendale. • Noise impacts from taxiing would primarily affect Luddenham.

Issue

Key environmental issues

Air quality and greenhouse gasses

- Dust emissions would be generated during construction by both the bulk earthworks and the aviation infrastructure works.
- Operation of an asphalt batching plant is required to facilitate construction of the aviation infrastructure would potentially result in minor odour emissions.
- Operation of Stage 1 would result in an increase in emissions of nitrogen dioxide (NO₂), particulate matter (as PM₁₀ and PM_{2.5}), carbon monoxide (CO), sulphur dioxide (SO₂) and air toxics.
- There would be odour emissions from exhaust and from the on-site wastewater treatment plant.
- Marginal ozone impacts would result from the operation of Stage 1 and greenhouse gas emissions are not expected to be material in terms of the regional air-shed.

Human health

Air Quality

- Levels of airborne particulates generated by construction would be low overall and within the NEPM Advisory Reporting Standards. The highest concentrations are predicted at Badgerys Creek, Greendale and Rossmore.
- Levels of health risk as a result of exposure to diesel during construction would be within levels considered acceptable by regulatory agencies.
- Risks from particulate exposure during airport operation would be very low with the highest risk for all-cause mortality and cardiopulmonary mortality between one additional death every 1,000 years and six additional deaths every 100 years.
- Exposure to nitrogen dioxide would be the highest risk category resulting from airport operation, with between six additional deaths every 100 years and six additional deaths every 10 years in people over 30 years of age. If traffic on roads external to the airport is excluded, this risk would reduce to four additional deaths every 10 years.
- Exposure to sulphur dioxide from the airport operations would be very low. The highest risk is for hospital admissions from respiratory causes with approximately three additional admissions per 1,000 years.
- The health risk arising from exposure to carbon monoxide would be negligible. The highest risk is for hospital admissions for cardiovascular disease in people 65 years of age and older with a maximum of five additional hospital admissions in 1,000 years.
- The risk from exposure to benzene during airport operations would result in a very small increase in health risk which is within levels considered acceptable by regulatory agencies.

Noise

- The results for the health risk assessment for noise shows that airport operations would lead to an increase in sleep disturbance (assessed as awakenings), increases in risk of cardiovascular disease and delays in childhood learning and cognitive development. These effects are predicted for suburbs close to the airport site.
- Further work would be undertaken by the Department of Infrastructure and Regional Development, Airservices Australia and the airport lessee company to identify feasible noise amelioration measures that would reduce these impacts.

Water

- While there are potential risks to surface and groundwater resources from construction and operation of the airport site, most of these are not specific to airport developments and a range of standard industry design and precautionary measures would be implemented to reduce these risks.
- It is considered unlikely that emergency fuel jettisoning would result in impacts to surface water bodies including potable water storages given the rarity of its occurrence and restrictions on where it can be undertaken.

Issue

Key environmental issues

Hazard and risk

- With the completion of the necessary design studies for Civil Aviation Safety Authority aerodrome certification, as well as implementation of the requirements of the existing regulatory framework, no insurmountable risks associated with Stage 1 would be likely.
- Key issues that would be finalised prior to the operation of the airport include:
 - resolution of off-site risks associated with jet fuel storage;
 - reservation of a pipeline corridor to secure future fuel supply by means other than road transport in conjunction with NSW Department of Planning and Environment;
 - additional bird and bat surveys to confirm the preliminary risk identified;
 - completion of a study to identify stack emissions in the proposed airspace; and
 - implementation of development controls on public safety zones outside Commonwealth land.
- Prior to operations commencing at the airport, a safety review would need to be undertaken in accordance with the requirements of the applicable work, health and safety legislation.

Traffic, transport and access

- There would be an estimated 1,254 additional vehicle movements per day on the surrounding road network during construction. This includes 314 peak vehicle movements per hour during the AM peak period.
- During operation there would be approximately 41,858 vehicles entering and leaving the airport site each day by 2030.
- With the introduction of the M12 Motorway, this additional traffic would not likely significantly affect the operation of the surrounding road network but is expected to result in a small increase in congestion at The Northern Road/M4 intersection and a small increase in congestion on Mamre Road.

Biodiversity

- The proposed airport would result in the removal of approximately 1,065 hectares of vegetation during construction, including about 280.8 hectares of native vegetation.
- Removal of vegetation would result in the loss of fauna foraging, breeding, roosting, sheltering and/or dispersal habitat.
- Threatened species, populations and ecological communities listed under both the *Environment Protection and Biodiversity Conservation Act 1999* (Cth) (EPBC Act) and the *Threatened Species Conservation Act 1995* (NSW) (TSC Act) would be affected by Stage 1.
- There is an associated risk of fauna strike from contact with aircraft and ground transportation vehicles both on and surrounding the airport site.
- Indirect impacts would be associated with light, noise and vibration and the introduction of exotic species.
- Offset package prepared to compensate for the removal of approximately 90.8 hectares of Cumberland Plain Woodland, the removal of about 120.6 hectares of foraging habitat for the Grey-headed Flying-fox, and impacts on other features of the natural environment including plant populations, fauna populations and several species and communities listed under NSW legislation.

Issue

Key environmental issues

Topography, geology and soils

- The topography of the site would change as a result of a major bulk earthworks programme involving the redistribution of about 22 million cubic metres of soil and rock across a construction impact zone covering about 60 per cent of the airport site.
- Storage, treatment and handling of fuel, sewage and other chemicals with potential to contaminate land required for construction and operation.
- Potential contaminated land associated with prior activities at the airport site including agriculture, light commercial and building demolition.
- Potential impacts during operation are typical of a large scale infrastructure project and would be managed with the implementation of stormwater, erosion and dust controls and adherence to industry standards for the storage and handling of chemicals.

Surface water and groundwater

- Changes to catchment areas within the airport site and the permeability of the ground surface, would alter the duration, volume and velocity of surface water flow.
- Bulk earthworks and excavations at the airport site would likely to receive some groundwater inflows.
- An estimated 1.36 ML of water would be required per day for site preparation works. For the purposes of this draft EIS it has been assumed that to meet this requirement 8,600 litres (0.0086ML) of potable water would be sourced from existing assets operated by Sydney Water per day and the remaining water supplied through stormwater runoff captured in sediment dams or existing farm dams.
- An estimated 2.5 ML wastewater generated during operation would be treated and recycled (as grey water) or irrigated on site.

Aboriginal heritage

- Construction would affect around 39 sites recorded at the airport site, all of which comprise artefact occurrences.
- Construction activities would also impact approximately 501 hectares of archaeologically sensitive landforms.
- Impacts during operation would be limited to indirect impacts on adjacent and nearby sites. The heritage values of these sites are unlikely to be vulnerable to indirect impacts such as loss of context.

European heritage

- Removal of up to 19 European heritage items from the airport site would not be able to be preserved in situ due to the large-scale clearing and earthworks required.

Planning and land use

- The proposed airport would result in the removal of existing rural residential, agricultural, recreational, community and extractive industry land uses on the airport site.
 - Surrounding land uses would be expected to transition from rural to urban land uses both as a result of airport operations, and as strategic land use planning under the Western Sydney Employment Area and the South West Priority Growth Area take effect. Infrastructure improvements to main roads and railways would also facilitate land use change in the region.
 - The successful implementation of measures to manage land use and planning impacts, including mitigation measures for employment land use conflict, zoning rationalisation, operational airspace controls, aircraft noise and infrastructure corridor protection, the proposed airport and its surrounds would become a focus for employment generating land uses in Western Sydney, creating jobs for the new residents of the South West Priority Area and Greater Western Sydney.
-

Issue

Key environmental issues

Landscape and visual amenity

- The proposed airport would result in temporary visual impacts during construction for the nearest sensitive receivers in Luddenham and Bringelly due to earthworks and the presence of construction plant, equipment, stockpiling areas and storage areas.
- Potential moderate to high visual impacts during operation would result from overflights in Luddenham, Elizabeth Drive, Lawson Road and Mount Vernon.
- Lower level impacts as a result of overflights would be likely for areas to the south of the airport site including Silverdale Road, Bents Basin State Conservation Area and Dwyer Road.
- Operational lighting would likely have low impacts on sensitive receivers due to topography, existing vegetation, building design, lighting design and runway configuration.

Social

- The proposed airport would increase employment and population growth for Western Sydney, and Greater Sydney more broadly.
- Significant benefits to the people and economy of Western Sydney would be related to economic development and employment opportunities.
- Creation of jobs for many types of workers of various skills and qualifications, which would contribute to increased incomes across the Western Sydney region.
- Stimulation of further development in regional and local centres, providing better quality social infrastructure, such as shops, health services, recreation and leisure services.
- Development of training opportunities in the region undertaken by the state government and local governments will encourage innovation to create new small and large businesses supporting the proposed Western Sydney Airport development.
- Varying amenity and lifestyle impacts in the Western Sydney region depending on proximity to the airport, and location with respect to flight paths.

Economic

- Up to 758 new full-time equivalent jobs are expected on the airport site, which would employ up to a further 2,660 people in Western Sydney during the busiest periods of construction.
- In addition, up to 520 jobs would be created across the rest of the Sydney region in 2022 due to the multiplier effect.
- Estimated economic footprint of \$1.9 billion (in terms of value add) is expected to be generated during the construction period, with a further \$400 million generated across the rest of Sydney.
- In 2031 the Stage 1 development would facilitate an increase of 6,930 FTE jobs in Western Sydney (above natural growth expected without the development of the proposed airport).
- Increases in employment in Western Sydney would be driven by increased access to workers and other businesses.

Resources and waste

- Estimated 202,500 tonnes of waste vegetation and construction materials such as concrete and timber would be generated during construction.
- Estimated 5,251 tonnes of waste would be generated each year during initial operations, including general waste, food, packaging waste from terminals and waste oils, paints and cleaners from maintenance activities.

Issue	Key environmental issues
Greater Blue Mountains World Heritage Area	<ul style="list-style-type: none"> • Indirect operational impacts would be expected in relation to noise, air emissions and visual impact from the overflight of aircraft. • Almost all flights would be at an altitude greater than 5,000 feet and most would be more than 10,000 feet above sea level when passing over the area. At these altitudes, aircraft are likely to be difficult to discern from ground level and are not considered to be visually intrusive. • 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. • Generally minimal incursion of noise levels in excess of 55 dBA would occur. Echo Point at Katoomba would not experience impacts from increased noise levels, and the majority of other sensitive areas are predicted to be impacted only infrequently.
Cumulative impacts	<ul style="list-style-type: none"> • Potential cumulative impacts with other major projects in the region requiring coordination with NSW Government agencies include: <ul style="list-style-type: none"> ▪ Western Sydney Infrastructure Plan; ▪ Western Sydney Employment Area; ▪ South West Priority Growth Area; and ▪ other major projects identified in the region. • Minimal potential for cumulative noise impacts upon sensitive receivers as a result of the distance from other major projects, with the relocation of The Northern Road and construction of the M12 motorway having highest potential for cumulative noise impacts. • Predicted air quality impacts (emissions) would typically be below the respective air quality assessment criteria during construction and operation for both incremental impacts of the airport alone and when considered cumulatively with other surrounding land use and development. • Additional vehicle movements associated with construction and operation are not likely to significantly affect the operation of the surrounding road network.

29.3.1. Mitigation measures

Mitigation measures would be implemented during both construction and operation to reduce potential environmental impacts. Where developments or designs, such as the development of flight paths, are subject to subsequent approval processes, further environmental assessment and consultation would be undertaken as required.

The environmental performance of the proposal would be managed through the implementation of the construction and operational environmental management plans and monitoring programs. This would also aid in compliance with relevant legislation and conditions of approval.

29.4. Consideration of the objects of the EPBC Act

Section 3 of the EPBC Act identifies the following objects:

- a. *to provide for the protection of the environment, especially those aspects of the environment that are matters of national environmental significance;*
- b. *to promote ecologically sustainable development through the conservation and ecologically sustainable use of natural resources;*

- c. *to promote the conservation of biodiversity;*
- d. *to promote a cooperative approach to the protection and management of the environment involving governments, the community, landholders and indigenous peoples; and*
- e. *to promote the use of indigenous peoples' knowledge of biodiversity with the involvement of, and in cooperation with, the owners of the knowledge.*

The proposed airport is consistent with the objectives of the EPBC Act.

This draft EIS assesses the likely impacts of the proposal and provides mitigation measures for protection of the environment. The draft EIS specifically assesses potential impacts on, and triggers to, matters of national environmental significance, including listed species and ecological communities, the Greater Blue Mountains World Heritage Area, Commonwealth land, and Commonwealth actions.

A biodiversity offset is proposed to allow for the conservation of regional biodiversity values in perpetuity.

The environmental impact assessment of the proposed airport has involved extensive consultation with key stakeholders in a cooperative approach to project development. Consultation with key stakeholders and the community would continue through the public exhibition of this draft EIS, post-determination, during construction and following commencement of operations.

The principles of ecologically sustainable development were adopted during the preparation of this draft EIS. An assessment of the proposal against these principles follows below.

29.5. Consideration of the principles of ecologically sustainable development

Section 3A of the EPBC Act adopts the following principles of ecologically sustainable development:

- a. Decision making processes should effectively integrate both long term and short term economic, environmental, social and equitable considerations.
- b. If there are threats of serious or irreversible environmental damage, lack of full scientific certainty should not be used as a reason for postponing measures to prevent environmental degradation.
- c. The principle of inter-generational equity – that the present generation should ensure that the health, diversity and productivity of the environment is maintained or enhanced for the benefit of future generations.
- d. The conservation of biological diversity and ecological integrity should be a fundamental consideration in decision making.
- e. Improved valuation, pricing and incentive mechanisms should be promoted.

An assessment of the proposal against these principles is provided below

29.5.1. Consideration of long term and short term

The proposed airport would be consistent with the objective of effectively integrating both long term and short term economic, environmental, social and equitable considerations in decision making.

This draft EIS has considered the environmental impacts of the construction phase, and both the short term (Stage 1) and long term operation phases of the proposed airport. The proposed airport would provide both short and long term benefits in terms of job creation and provision of accessibility to aviation services. The airport would also address the long term aviation capacity requirements of the Sydney region.

29.5.2. Precautionary principle

The precautionary principle states that if there are threats of serious environmental damage, lack of full scientific certainty should not be used as a reason for postponing measures to prevent environmental degradation. In applying the principle, decisions should be guided by careful evaluation to avoid, wherever practicable, serious damage to the environment, including an assessment of the risks associated with various options. The proposed airport would be consistent with the precautionary principle.

Potential environmental impacts associated with the proposed airport have been assessed and documented in this draft EIS to minimise the likelihood of serious damage to the environment, with necessary mitigation measures proposed as required. Conservative approaches in line with the precautionary principle, including contingencies in assumptions such that assessed impacts were likely to be worse than would actually occur, were applied in a number of environmental assessments.

This draft EIS implemented a compliance, risk, and/or significance-based approach to impact assessment (refer to Chapter 9). Higher risk aspects were managed through avoidance or suitable mitigation strategies to an acceptable level of residual risk.

The project would adopt 'leading practice' environmental and community management and monitoring plans to manage, mitigate and monitor impacts identified in this draft EIS. These plans aim to ensure that impacts are within the range predicted in this draft EIS, and to ensure corrective action is taken if unpredicted impacts are identified.

29.5.3. Intergenerational equity

The principle of intergenerational equity states that the present generation should ensure that the health, diversity and productivity of the environment are maintained or enhanced for the benefit of future generations. The proposed airport would be consistent with the principle of intergenerational equity.

Given the alternatives considered (refer to Chapter 2) and the proposed environmental management framework (refer to Chapter 28), the proposed airport would operate to ensure there would be no significant impact that would diminish the health, diversity or productivity of the environment for future generations.



The incremental nature of the long term development of the airport would provide opportunities for intergenerational equity and decision making that takes full advantage of changing conditions and technologies. The proposed airport would also provide a broad range of economic benefits which would continue to increase with time.

29.5.4. Conservation of biodiversity and ecological integrity

The conservation of biological diversity and ecological integrity should be a fundamental consideration of any development proposal. The proposed airport would be consistent with this principle.

Where feasible, the project would minimise impacts on sensitive ecological areas and minimise clearing of native vegetation more generally. An offset package has been prepared to compensate for the removal of approximately 90.8 hectares of Cumberland Plain Woodland, the removal of about 120.6 hectares of foraging habitat for the Grey-headed Flying-fox, and impacts on other features of the natural environment.

29.5.5. Valuation, pricing and incentives

The principle of improved valuation states that environmental factors should be considered in the valuation of assets and services. The principle is implicit in such concepts as ‘polluter pays’, lifecycle costing, and triple bottom line accounting.

The proposed airport would be consistent with this principle as environmental factors were integrated into the environmental impact assessment and cost benefit analysis, including environmental externalities such as traffic congestion and air quality impacts; and the opportunity costs of other uses of the airport site.

29.6. Summary

The proposed airport would be developed on the Commonwealth-owned land at Badgerys Creek in Western Sydney and would cater for ongoing growth in demand for air travel, servicing both domestic and international markets.

A draft Airport Plan has been developed to set out the Australian Government’s requirements for development of the proposed airport, forming the basis of the authorisation for the project under the Airports Act. The draft Airport Plan includes details of the Stage 1 development with a single 3,700 metre runway on a north-east/south-west orientation and aviation support facilities to provide an operational capacity of 10 million annual passengers as well as freight traffic. Stage 1 is designed to cater for the predicted demand for five years following opening around 2025 until around 2030 and forms the basis for the consideration of potential impacts.

This draft EIS has been prepared in accordance with Part 3 of the EPBC Act and the Department of the Environment guidelines for the assessment of the airport proposal (EPBC 2014/7391).

Based on the findings of the environmental investigations undertaken to inform this draft EIS, the proposed airport would result in some adverse impacts on the environment and the community. Mitigation measures have been proposed to reduce these potential impacts during construction and operation.



The environmental performance of the proposal would be managed through the implementation of the construction and operational environmental management plans and monitoring programs. This would aid in ensuring compliance with relevant legislation and conditions of approval.