

40 Conclusion and recommendations

40.1 Introduction

The proposed Western Sydney Airport would be developed progressively as demand increases beyond the scope of the Stage 1 development. Additional aviation infrastructure and support services such as taxiways, aprons, terminals and support facilities would be required to service the growing demand. A second runway is forecast to be required by around 2050 and would be located parallel to the first runway with a centre line separation distance of approximately 1,900 metres. The indicative long term airport concept considered in this EIS is forecast to service approximately 82 million annual passengers which is equivalent to approximately 370,000 air traffic movements per year. This is expected to occur around 2063.

It is recognised that implementation of the Stage 1 development would facilitate future growth in the aviation capacity at the proposed airport; in this regard a strategic assessment of the indicative long term development is considered appropriate.

The high-level strategic assessment recognises the uncertainty in predicting impacts which may occur nearly 50 years into the future and the additional approval and consultation requirements for all future development. The staged assessment approach provides flexibility in the master planning process for the airport site to allow land use changes, technological improvements and changes in operational practices to be reflected in future development scenarios.

40.2 Key environmental impacts

The focus of the strategic assessment for the potential long term development centres on potential impacts of the expanded operations on the amenity of the surrounding community. Key issues considered in the assessment of the long term operation of the proposed airport include noise, air quality, human health, traffic and transport, landscape and visual amenity, and socio-economic impacts. To the extent possible direct physical impacts are also discussed, including those associated with biodiversity, water resources, heritage and planning and land use. A summary of the key findings of the assessment of the long term development are outlined below.

40.2.1 Noise

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, aircraft noise impacts were considered for a 2050 scenario in which the single runway is operating close to capacity and for a long term scenario (around 2063) in which the airport layout incorporates two runways.

The assessment of noise impacts associated with the long term development of the proposed airport considers aircraft noise (based on indicative flight paths) and ground-based noise.

For the loudest aircraft operations (long-range departures by Boeing 747 aircraft or equivalent), maximum noise levels over 85 dBA would be experienced at residential locations closest to the airport site, such as Badgerys Creek. Maximum noise levels of 75 to 80 dBA are predicted for built-up areas in St Marys and Erskine Park under these worst case operating conditions. Maximum noise levels due to more common aircraft types such as the Airbus A320 or equivalent are predicted to be 60 to 70 dBA in built-up areas around St Marys and Erskine Park, and above 70 dBA in some adjacent areas to the south-west of the airport site, including Greendale.

The extent to which particular areas would be potentially exposed to aircraft noise would be strongly influenced by the airport operating strategies especially when operating a single runway at maximum capacity (around 2050). In terms of total population, the Prefer 05 operating strategy (which gives preference to approaches and departures in a south-west to north-east direction) is predicted to have a greater impact on existing residential areas than the Prefer 23 operating strategy, in which the opposite direction is preferred. Most residents that would be affected under the Prefer 05 strategy are in suburbs to the north of the airport site, including St Marys and Erskine Park. The less populated, predominantly rural-residential areas to the south-west, including Greendale and parts of Silverdale would be most affected under the Prefer 23 strategy. Adoption of 'head-to-head' operations would reduce the number of residents affected when aircraft movements are low and weather conditions permit.

For night-time operations in around 2050, the operating strategy with least impact is Prefer 23 with head-to-head. Other operating strategies are predicted to result in substantially greater numbers of residents being affected by night-time noise, and in particular, a Prefer 05 strategy is predicted to result in large parts of St Marys experiencing more than 20 aircraft noise events per night, on average above 60 dBA.

The operating strategies would have less influence following the implementation of operations on the second runway. Despite the forecast number of movements at the airport approximately doubling between 2050 and 2063, there are fewer densely populated areas located within the noise affected areas for the indicative flight path design, particularly under the Prefer 23 operating strategy. This is because movements can be spread between two runways and the locations of flight paths are less constrained in the two runway scenario. The continuation of existing land use planning controls will limit the potential for new residential development to be impacted by a progressive increase in airport operations. The modelled 2063 Australian Noise Exposure Concept (ANEC) contours are generally comparable to the 1985 ANEC with slight extensions to the north and the south-west. These differences primarily reflect revised modelling assumptions including updated forecasts for the number of aircraft movements, new indicative flight paths and changes in the assignment of aircraft to particular flight paths.

The existing planning controls based on the 1985 ANEC contours have restricted development within the majority of the land area covered by the modelled 2063 ANEC contours.

Approaches to mitigating aircraft overflight and runway noise would generally focus on reducing noise emissions from the aircraft themselves, adjusting flight paths and airport operating modes, and developing land use planning or other controls to ensure that future noise-sensitive uses are not located in noise-affected areas.

40.2.2 Air quality

Operation of the long term development would result in an increase in emissions of nitrogen dioxide, PM₁₀, PM_{2.5}, carbon monoxide, sulfur dioxide and air toxics. Given the uncertainty regarding the future reduction in ground vehicle and aircraft engine emissions, and the anticipated general reduction in background emissions over time, ground level concentration predictions were assessed only for the key criteria pollutants (NO_x, PM₁₀, and PM_{2.5}) for the long term development. Several exceedances were predicted at sensitive receptors for these indicators.

The progressive increase in aircraft movements and site based activities would increase the level of emissions during the long term operations. However, no improvement in aircraft emissions, either due to improvements in fuel or engine emissions was incorporated into the modelling. As a result, actual air emissions from the operating long term development may be lower than predicted given the use of mains powered auxiliary power units at the airport gates (instead of on-board auxiliary power units), increased use and optimisation of proposed rail connections (instead of motor vehicles) and progressive improvements in aircraft technology.

40.2.3 Surface water and groundwater

The long term development would represent a continuation of the impacts identified for the Stage 1 development with regards to water resources. By transforming the southern portion of the airport site to an essentially built environment, the airport development would alter the catchment areas within the airport site over the long term. This would alter the permeability of the ground surface, which in turn would alter the duration, volume and velocity of surface water flow.

Hydrologic and hydraulic modelling of the airport site indicates the drainage system is generally effective at mitigating watercourse and flooding impacts. Refinement of the modelled water management system would be required to occur during the detailed design stage.

Minor alterations to local groundwater recharge and drawdown are anticipated to occur at the airport site, along with the need for minor dewatering as a result of the establishment of building basements or station cavities. Changes to groundwater conditions at the site are anticipated to be minimal and are not expected to impact any sensitive ecological receptors or beneficial uses of the groundwater system.

Baseline and ongoing monitoring of surface water and groundwater would be undertaken to characterise any residual impacts and prompt corrective action where necessary.

40.2.4 Traffic

The long term development is expected to result in around 103,000 additional vehicle trips to and from the airport each day by 2063. These additional trips would be generated in the context of substantial urban growth in Western Sydney, particularly the development of the Greater Macarthur Land Release Investigation Area. Travel demand generated by the proposed airport and the substantial forecast development growth in Western Sydney would have a significant combined effect on the road and public transport systems.



Significant road improvement works, including a new M12 Motorway, are being delivered as part of the Western Sydney Infrastructure Plan to cater for this demand. The long term development is also likely to require additional transport infrastructure. To this end, the Australian Government and NSW governments are undertaking 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.

40.2.5 Socio-economic

Continued development of the proposed Western Sydney Airport over the long term would result in significant opportunities for regional and wider economic benefits through direct, indirect and induced spending. Benefits will be accrued beyond the aviation industry, and extend to such industries as construction, utilities, trade, transport, accommodation, retail professional services and administration.

When considered with other employment initiatives taking place in the region, the opportunities for positive change and improved socio-economic outcomes for Western Sydney are significant. The proposed airport would also create better business development opportunities in Western Sydney as businesses will have access to a large labour pool and proximity to markets and supporting businesses. There would be relatively higher employment densities in Western Sydney, particularly in areas like Penrith and Blacktown, but also in Liverpool, Fairfield and Camden and across the rest of Sydney's West.

At the same time the long term development would have impacts on the social amenity and lifestyle of communities and recreational areas in proximity to the airport and those within the flight paths. Increases in aircraft overflights and ground based airport operations would generate noise and visual impacts from overflights that would potentially reduce the amenity of places where people live, work or visit for recreation.

40.2.6 Planning and land use

Construction and operation of the proposed airport would change the rural residential character of the airport site and surrounding land uses. This land use outcome has been anticipated in state and local government strategic planning for the area over a number of decades.

The proposed airport would support the continued growth of regional centres and priority growth areas.

40.2.7 Visual

Future development of the areas surrounding the airport site, under provisions of the Western Sydney Employment Area, Western Sydney Priority Growth Area and the South West Priority Land Release Area, would lead to a significant transition from an environment that is predominantly rural in character to one that has a more urban form. In general terms, this is expected to reduce the visual impact of the proposed airport development, including night-time lighting effects, as the proposed airport is integrated into the changing urban visual character of the area.

40.2.8 Greater Blue Mountains World Heritage Area

The Greater Blue Mountains World Heritage Area (GBMWhA) covers 1.03 million hectares of sandstone plateaus, escarpments and gorges dominated by temperate eucalypt forest. The boundary of the GBMWhA is approximately seven kilometres from the proposed airport at its closest point. The area is one of the largest and most intact tracts of protected bushland in Australia and is noted for its representation of the evolutionary adaptation and diversification of eucalypts in post-Gondwana isolation on the Australian continent.

Potential impacts on the World Heritage, National Heritage and other values of the Greater Blue Mountains Area from the construction and operation of the proposed airport were assessed against the *Significant Impact Guidelines 1.1 – Matters of National Environmental Significance* (DoE 2013a). The assessment found that there would be no direct impacts on the values of the GBMWhA associated with the construction of the airport. Indirect noise, air quality and visual amenity impacts on the GBMWhA are predicted from aircraft overflights. Stage 1 operations are not expected to have an adverse impact on the World Heritage values or integrity of the GBMWhA.

Mitigation and management of potential noise impacts on the GBMWhA would be achieved through the planning and implementation of appropriate airspace and flight paths, airspace design and airport operating procedures to support long term operations. A future design process would include consideration of noise abatement opportunities and would require extensive consultation with airlines, the community and other stakeholders as part of a separate regulatory approvals process under the Airspace Act 2007 (see Chapter 7 (Volume 1)).

The current assessment, based on indicative long term airspace management arrangements, shows that the impacts of an airport at Badgerys Creek on the Greater Blue Mountains, including the World Heritage and other values of the GBMWhA, are not likely to be significant. Opportunities to further reduce the noise and visual impact from aircraft flying over wilderness and other areas of the GBMWhA would be considered in finalising formal airspace and operational arrangements.

40.2.9 Other environmental matters

There is potential for a range of direct physical impacts to arise from the expansion of the development footprint within the airport site. Impacts upon biodiversity, topography, Aboriginal heritage and European heritage would typically form a continuation of the disturbance footprint associated with the proposed Stage 1 development. These would be considered as part of the future approval requirements for the site.

The health risk assessment considers the likely health impacts of the long term development of the proposed airport. While there are limitations in undertaking an assessment of predicted health risk so far into the future, overall the assessment found that the predicted health risk associated with the long term development would increase from the Stage 1 development. Implementation of the mitigation measures outlined in Chapter 28 (Volume 2b) relating to air quality impacts will lead to improvements in ozone precursors and reduce the risk posed by ozone on peak ozone days. It should be noted that a large component of predicted ozone concentrations, and therefore health risk, is attributable to background ozone concentrations from sources other than the proposed airport such as background industrial activities and road traffic

40.3 Future environmental assessment approval process

Part 5 of the *Airports Act 1996* 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 would 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 allowed by the Infrastructure Minister. Following approval, the master plan would be required to be updated every 5 years.

The ALC would also be required to prepare major development plans for future major airport developments that are not authorised by the Airport Plan. Major developments are defined in section 89 of the *Airports Act* to include items such as constructing or modifying runways, certain buildings, taxiways, transport links or any development that is likely to have significant environmental or community impacts. The Infrastructure Minister is required to seek the advice of the Environment Minister before deciding to approve a draft major development plan.

Most future building activities on the airport site, including those authorised by Part 3 of the Airport Plan, require building approval and certification under the *Airports (Building Control) Regulations 1996* once an airport lease is granted. Approval and certification is given by the airport building controller and must be consistent with the relevant planning instrument (for example, the Airport Plan, master plan or major development plan).

The *Airports Act* and the *Airports (Environment Protection) Regulations 1997* set out the framework for the regulation and management of activities at airports that have potential to cause environmental harm. The ALC for the proposed airport will be responsible for seeking approval for future airport expansion and for environmental management including the responsibilities listed under Part 6 of the *Airports Act*.

40.4 Summary

Ongoing development of the proposed Western Sydney Airport would act as a catalyst for investment and job creation in the region by accelerating the delivery of 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 and ease existing aviation capacity constraints within the broader Sydney region.

This EIS has been prepared in accordance with Part 3 of the *Environment Protection and Biodiversity Conservation Act 1999* and the Department of the Environment guidelines for the assessment of the airport proposal (EPBC 2014/7391). This EIS will inform the determination of the Airport Plan.

An Airport Plan will provide the strategic direction for development of the proposed airport, forming the basis of the authorisation for the project under the *Airports Act*. The revised draft Airport Plan includes a specific proposal for Stage 1 to establish the proposed airport with a single 3,700 metre runway on a north-east/south-west orientation and aviation support facilities to provide an operational capacity of approximately 10 million annual passengers as well as freight traffic.



The revised draft Airport Plan also refers to the potential long term development of the proposed airport. As aviation demand increases beyond 10 million annual passengers, additional aviation infrastructure and aviation support precincts would be developed as required. It is anticipated that the proposed airport may eventually expand to include a second parallel runway on the same north-east/south-west orientation as the Stage 1 runway, with associated expansion in aviation support facilities. A second runway is expected to be required when the operational capacity approaches 37 million annual passengers, which is forecast to occur around 2050. Following development of the second runway, additional infrastructure, such as taxiways and increased terminal capacity, would be developed to service the long term passenger demand of approximately 82 million annual passengers, expected to occur around 2063.

The design and operation of Western Sydney Airport over the longer term would be considered as part of the airport master planning process and would be subject to approval requirements under the Airports Act. This strategic assessment has identified a number of environmental and social issues that would need to be addressed as part of any such future approval processes.



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