Australian Government

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

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

Draft Environmental Impact Statement

Part B: The project

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Director – Creative Services
Communication Branch
Department of Infrastructure, Transport, Regional Development, Communications and the Arts
GPO Box 594
Canberra ACT 2601
Australia

Email: WSIflightpaths@infrastructure.gov.au

Website: www.WSIflightpaths.gov.au

Draft EIS guide

Summary	Outlines the key findings of the Draft EIS for the project. The summary also describes the project and its development to date, including its legislative framework and the outcomes of public consultation.

Part A	Background
	Terms and acronyms
Chapter 1	Introduction
Chapter 2	Strategic context and need
Chapter 3	Introduction to airspace
Chapter 4	Project setting
Chapter 5	Statutory context

Part B	The project
Chapter 6	Project development and alternatives
Chapter 7	The project
Chapter 8	Facilitated changes
Chapter 9	Community and stakeholder engagement

Part C	Environmental impact assessment
Chapter 10	Approach to impact assessment
Chapter 11	Aircraft noise
Chapter 12	Air quality and greenhouse gas
Chapter 13	Aircraft hazard and risk
Chapter 14	Land use
Chapter 15	Landscape and visual amenity
Chapter 16	Biodiversity
Chapter 17	Heritage
Chapter 18	Social
Chapter 19	Economic
Chapter 20	Human health
Chapter 21	Facilitated impacts
Chapter 22	Cumulative impacts
Chapter 23	Matters of National Environmental Significance

Part D	EIS synthesis
Chapter 24	Mitigation and management
Chapter 25	Conclusion
Chapter 26	References
Appendices	
Appendix A	Proponent details and environmental record
Appendix B	EIS team
Appendix C	EIS Guidelines
Appendix D	List of persons and agencies consulted during the preparation of the Draft EIS
Appendix E	Project coordinates
Appendix F	Background to the draft Western Sydney International noise insulation and property acquisition policy

Technical papers	
Technical paper 1	Aircraft noise
Technical paper 2	Air quality
Technical paper 3	Greenhouse gas emissions
Technical paper 4	Hazard and risk
Technical paper 5	Wildlife strike risk
Technical paper 6	Land use and planning
Technical paper 7	Landscape and visual amenity
Technical paper 8	Biodiversity
Technical paper 9	Heritage
Technical paper 10	Social
Technical paper 11	Economic
Technical paper 12	Human health
Technical paper 13	Facilitated changes
Technical paper 14	Greater Blue Mountains World Heritage Area

Contents

Chapter 6 Project development and alternatives 6-1

6.1 Background to flight path development 6-1
6.1.1 The 2016 EIS airspace concept 6-1
6.1.2 Airport Plan 6-3
6.1.3 'No action' consideration and infrastructure constraints 6-6
6.2 Airspace and flight path design process 6-6
6.2.1 Overview 6-6
6.2.2 Airspace design process 6-7
6.3 Development of the proposed airspace and flight paths for WSI 6-9
6.3.1 Planning phase 6-9
6.3.2 Preliminary airspace design and environmental assessment 6-22
6.4 Future phases 6-31
6.4.1 Detailed design phase 6-31
6.4.2 Implementation of the flight path design 6-31
6.4.3 Post-implementation review 6-32

Chapter 7 The project 7-1

7.1 Project overview 7-1
7.2 Volume of aircraft traffic 7-2
7.2.1 Forecast schedules 7-3
7.2.2 Number of flights 7-4
7.3 Air traffic control procedures for WSI 7-6
7.3.1 Aeronautical Information Package 7-7
7.3.2 STARs and SIDs 7-7
7.3.3 Standard clearances and coordination 7-9
7.3.4 Weather criteria for visual and instrument landings 7-9
7.3.5 Noise abatement procedures 7-9
7.3.6 Nominated runway 7-10
7.3.7 Aircraft separation and sequencing 7-11
7.3.8 Intersection departures 7-11
7.4 Runway modes of operation 7-12
7.4.1 Description of runway modes of operation 7-12
7.4.2 Preferred runway modes of operation 7-14
7.4.3 Influence of meteorological conditions 7-14

Contents (continued)

7.5 Flight paths 7-15
7.5.1 Connection to enroute flight paths 7-15
7.5.2 Flight altitude 7-16
7.5.3 Air traffic management 7-16
7.5.4 Day (5:30 am to 11 pm) flight paths 7-18
7.5.5 Night (11 pm to 5:30 am) flight paths 7-26
7.5.6 RRO – Night (11 pm to 5:30 am flight paths) 7-32
7.5.7 Off-procedure manoeuvring operations 7-35
7.5.8 Missed approach procedures – go-arounds 7-38
7.6 Airspace classification 7-39

Chapter 8 Facilitated changes 8-1

8.1 Overview 8-1
8.1.1 Aircraft separation 8-3
8.2 Sydney (Kingsford Smith) Airport 8-3
8.2.1 SIDs 8-3
8.2.2 STARs 8-15
8.3 Bankstown Airport 8-18
8.3.1 Current 8-18
8.3.2 Proposed 8-19
8.4 Camden Airport 8-23
8.4.1 Current 8-23
8.4.2 Proposed 8-23
8.5 RAAF Base Richmond 8-24
8.5.1 Current 8-24
8.5.2 Proposed 8-25
8.6 Low altitude transit flights 8-27
8.6.1 Current 8-27
8.6.2 Proposed 8-27
8.7 Visual Flight Rule aircraft changes 8-29
8.7.1 Current 8-29
8.7.2 Proposed 8-31
8.8 Summary of changes 8-35

Contents (continued)

Chapter 9 Community and stakeholder engagement 9-1

9.1 Minister's EIS guidelines 9-1
9.2 Engagement Plan for the Draft EIS 9-2
9.2.1 Engagement principles 9-3
9.2.2 Engagement objectives 9-3
9.2.3 Engagement phases 9-4
9.2.4 Phases 1, 2 and 3 – pre-exhibition engagement 9-5
9.2.5 Stakeholder identification 9-5
9.2.6 Stakeholders and engagement tools 9-6
9.2.7 Consultation activities 9-11
9.3 Summary of issues raised and responses to feedback received 9-16
9.4 Release of the preliminary flight paths 9-51
9.4.1 Aircraft Overflight Noise Tool 9-51
9.4.2 Key areas of interest and concern 9-54
9.4.3 Reporting on feedback 9-54
9.5 Continued engagement during the Draft EIS exhibition 9-55
9.6 Assessment and determination engagement 9-57
9.7 Ongoing engagement 9-57

List of tables

Table 6.1	Airspace and flight path design process	6-8
Table 7.1	Total predicted daily aircraft movements at 2033, 2040 and 2055	7-4
Table 7.2	Predicted average daily aircraft movements by aircraft family at 2033 and 2055	7-5
Table 7.3	Runway modes of operation[1]	7-12
Table 7.4	Runway 05 – Day arrivals – description of flight paths	7-18
Table 7.5	Runway 05 – Day departures – description of flight paths	7-19
Table 7.6	Runway 23 – Day arrivals – description of flight paths	7-22
Table 7.7	Runway 23 – Day departures – description of flight paths	7-23
Table 7.8	Runway 05 – Night arrivals – description of flight paths	7-26
Table 7.9	Runway 05 – Night departures – description of flight paths	7-27
Table 7.10	Runway 23 – Night arrivals – description of flight paths	7-29
Table 7.11	Runway 23 – Night departures – description of flight paths	7-30
Table 7.12	RRO arrivals – description of flight paths	7-32
Table 7.13	RRO – Night departures – description of flight paths	7-33
Table 8.1	Changes and their characteristics	8-35
Table 9.1	Stakeholder groups relative to distance from WSI	9-5
Table 9.2	Key stakeholder engagement undertaken during the preparation of the Draft EIS	9-6
Table 9.3	Summary of stakeholder and community engagement activities	9-11
Table 9.4	Summary of issues raised and where addressed in the Draft EIS	9-16
Table 9.5	Aircraft Overflight Noise Tool engagement and communication activities	9-51
Table 9.6	Proposed engagement activities during the exhibition of the Draft EIS	9-55

List of figures

Figure 6.1	Conceptual flight paths for the Runway 05 operating mode as presented in the 2016 EIS	6-2
Figure 6.2	Conceptual flight paths for the Runway 23 operating mode as presented in the 2016 EIS	6-2
Figure 6.3	Future airspace design principles	6-5
Figure 6.4	Flight path design pathway	6-7
Figure 6.5	Overview of planning phase airspace development process	6-10
Figure 6.6	One week sample of flight track activity in 2019 in the Sydney Basin	6-12
Figure 6.7	Key airspace constraints within the Sydney Basin	6-13
Figure 6.8	Key environmental and social constraints within the Sydney Basin	6-14
Figure 6.9	Key performance areas	6-16
Figure 6.10	Long list ranking of initial concept design options	6-18
Figure 6.11	Proposed Concept W flight paths (Runway 05 operating mode)	6-20
Figure 6.12	Proposed Concept W flight paths (Runway 23 operating mode)	6-21
Figure 6.13	Comparison of Concept W and preliminary design flight paths (05 arrivals operating mode)	6-27
Figure 6.14	Comparison of Concept W and preliminary design flight paths (05 departures operating mode)	6-28
Figure 6.15	Comparison of Concept W and preliminary design flight paths (23 arrivals operating mode)	6-29
Figure 6.16	Comparison of Concept W and preliminary design flight paths (23 departures operating mode)	6-30
Figure 7.1	Volume of passenger and air traffic movements over single runway operations	7-3
Figure 7.2	Daily predicted aircraft traffic movements over future years 2033, 2040 and 2055	7-6
Figure 7.3	Closed STARs arrivals management system using ILS	7-8
Figure 7.4	Extract from Section 9.1.2 of Aeronautical Information Publication Book ENR 1.5-42 (02 December 2022) (Airservices Australia, 2022a)	7-10
Figure 7.5	WSI Runway 05/23 and connector taxiways schematic layout	7-11
Figure 7.6	WSI runway mode selection	7-13
Figure 7.7	Runway 05 – Day arrivals and departures – flight paths	7-21
Figure 7.8	Runway 23 – Day arrivals and departures – flight paths	7-25
Figure 7.9	Runway 05 – Night arrivals and departures – flight paths	7-28
Figure 7.10	Runway 23 – Night arrivals and departures – flight paths	7-31
Figure 7.11	RRO – Night arrivals and departures flight paths	7-34
Figure 7.12	Runway 05 Day – off-procedure manoeuvring areas (5.30 am to 11 pm)	7-37
Figure 7.13	Runway 23 Day – off-procedure manoeuvring areas (5.30 am to 11 pm)	7-37
Figure 7.14	Missed approach procedure schematic	7-38
Figure 7.15	Current Sydney Basin control area and control zone boundaries including the Lower Level (LL) of controlled airspace	7-39
Figure 7.16	Proposed Sydney Basin control area and control zone boundaries including the Lower Level (LL) of controlled airspace	7-40
Figure 8.1	Sydney (Kingsford Smith) Airport Runway 25 KADOM SID – Current and proposed	8-4
Figure 8.2	Sydney (Kingsford Smith) Airport Runway 25 RICHMOND SID – Current and proposed	8-5
Figure 8.3	Sydney (Kingsford Smith) Airport Runway 25 SHORE SID – Current and proposed	8-6
Figure 8.4	Sydney (Kingsford Smith) Airport Runway 34L KADOM SID – existing and proposed arrangements	8-8

List of figures (continued)

Figure 8.5 Sydney (Kingsford Smith) Airport Runway 34L KADOM to SHORE SID for eastern destinations – existing and proposed 8-9

Figure 8.6 Sydney (Kingsford Smith) Airport Runway 34L RICHMOND SID – current and proposed 8-10

Figure 8.7 Sydney (Kingsford Smith) Airport Runway 07 SIDs – proposed 8-12

Figure 8.8 Sydney (Kingsford Smith) Airport – proposed Runway 07 initial approach fix 8-13

Figure 8.9 Sydney (Kingsford Smith) Airport – existing non-jet radar tracks and proposed non-jet ANKUB SID 8-14

Figure 8.10 Sydney (Kingsford Smith) Airport – current ODALE STAR, current arrival tracks and the new AKMIR STAR 8-16

Figure 8.11 Sydney (Kingsford Smith) Airport – the adjusted RIVET STAR 8-17

Figure 8.12 Sydney (Kingsford Smith) Airport – the adjusted BOREE STAR 8-18

Figure 8.13 Bankstown Airport – current departures (green) and future initial SID tracks 8-19

Figure 8.14 Bankstown Airport – proposed outer SID tracks 8-20

Figure 8.15 Bankstown Airport – proposed STARs and integrated RNP approaches 8-21

Figure 8.16 Bankstown Airport – current and proposed RNP and NDB approaches (with current IFR arrival tracks) versus proposed RNP approaches 8-22

Figure 8.17 Camden Airport – current IFR flight paths to/from Camden Airport and proposed IFR STARs 8-24

Figure 8.18 RAAF Base Richmond – exitsing flight tracks and proposed eastern SID 8-25

Figure 8.19 RAAF Base Richmond – existing radar flight tracks and proposed IFR arrivals 8-26

Figure 8.20 Proposed low altitude transit flight route with suburb overlay 8-28

Figure 8.21 Proposed IFR transit route overhead WSI 8-29

Figure 8.22 Current Sydney Basin – Airspace Control Area and Control Zone boundaries including the Lower Level (LL) of controlled airspace with current VFR departure and arrival routes 8-30

Figure 8.23 Proposed Sydney Basin – Airspace Control Area and Control Zone boundaries including the Lower Level (LL) of controlled airspace with proposed VFR departure and arrival routes 8-32

Figure 8.24 Proposed VFR overflights of WSI 8-34

Figure 9.1 Engagement principles 9-3

Figure 9.2 Engagement phases and approach 9-4

Chapter 6 Project development and alternatives

The introduction of WSI will require changes to the management of the existing airspace within the whole of the broader Sydney Basin (including new and amended flight paths). To ensure that new aircraft operations at WSI integrate into the operations of the broader Sydney Basin airspace as seamlessly as possible, an extensive flight path design development process has been undertaken. The intention of this process has been to optimise the currently proposed preliminary flight paths for WSI for introduction into the Sydney Basin. The development process to date has focused on 4 key criteria being safety, aircraft operation environmental, efficiency, and capacity and noise and other considerations, while minimising changes to existing airspace arrangements in the Sydney Basin.

This chapter describes the processes that have been applied to the development of the preliminary airspace design and Air Traffic Management system for WSI. An overview of the requirements for its finalisation and implementation are also discussed in this chapter.

6.1 Background to flight path development

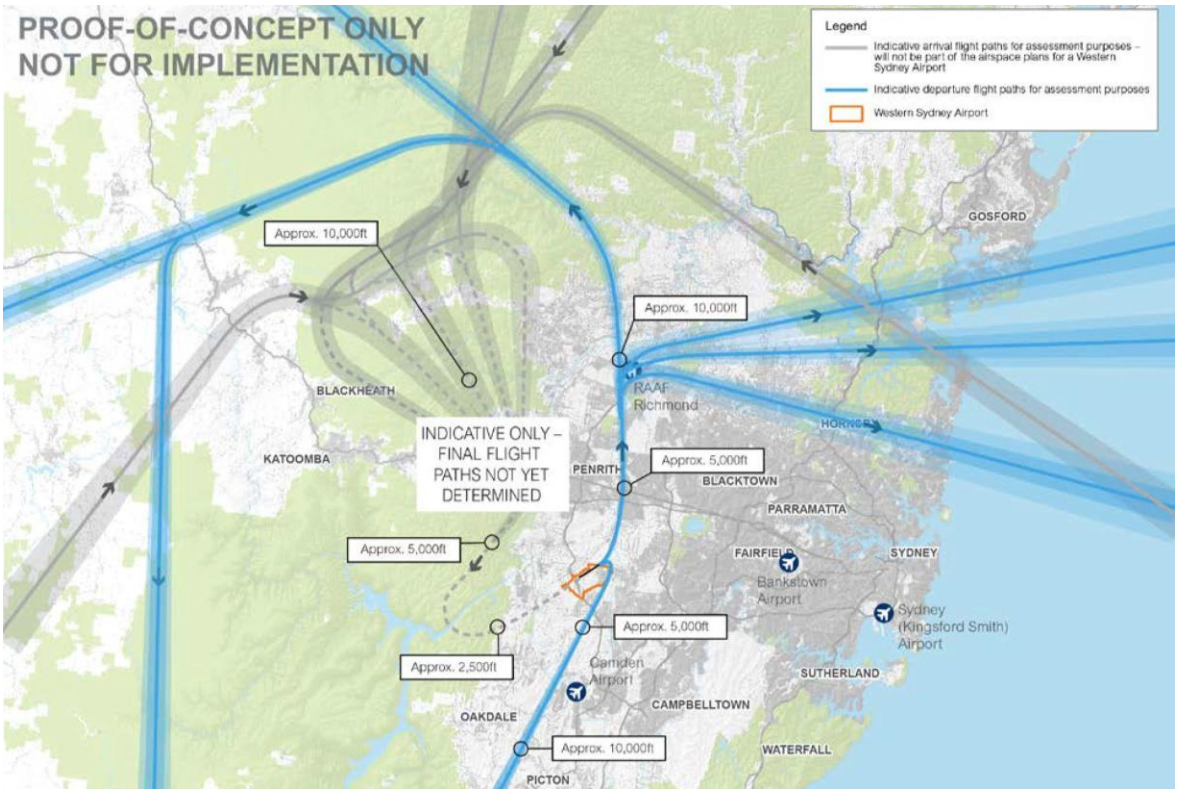
Proposals to develop a major airport at Badgerys Creek have been the subject of 3 earlier EISs – one in 1985, the next between 1997 and 1999, and most recently, in 2016. Similarities between the current *Western Sydney Airport – Airport Plan* (the Airport Plan) (DITRDC, 2021) and those described in the previous environmental assessments include a first stage single runway development, an ultimate parallel runway design and a largely south-west to north-east runway orientation. Utilising the most up to date information available at the time, each of the 3 EISs for WSI were based on different indicative flight path configurations, different ATC procedures, different operating fleet mixes and different passenger and air traffic demand forecasts.

As previously presented in Chapter 1, development approval was given to the airport design presented in the 2016 *Western Sydney Airport Environmental Impact Statement* (Department of Infrastructure and Regional Development, 2016) (2016 EIS). This approval confirmed the Stage 1 Development for WSI would be developed using a 05/23 runway alignment (approximately south-west to north-east). This fixed alignment allowed for the development of an initial airspace concept for flight paths for WSI. This initial concept was presented in the 2016 EIS.

6.1.1 The 2016 EIS airspace concept

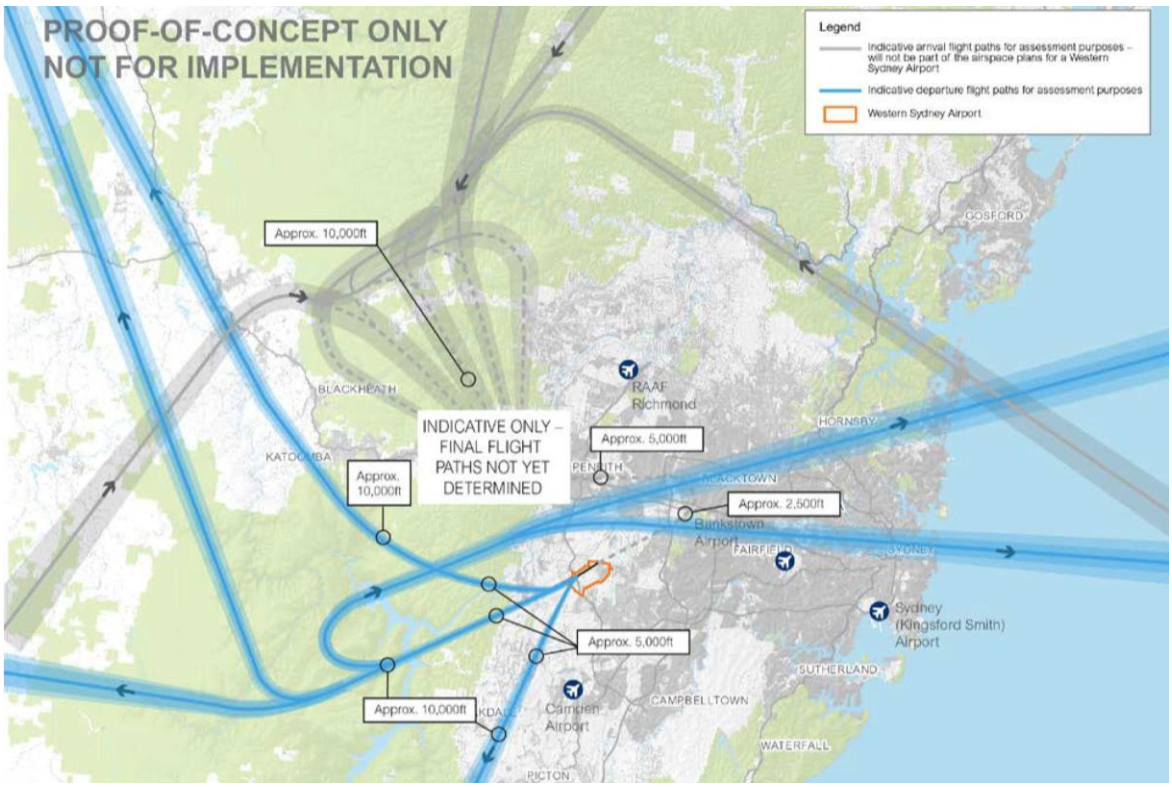
The 2016 EIS depicted an indicative airspace concept for the flight paths associated with single runway operations at WSI (see Figure 6.1 and Figure 6.2). In order to assess the viability of the proposed airport operation, indicative flight paths were developed. The flight paths identified and assessed in the 2016 EIS represented one possible airspace design (referred to as a 'proof of concept'), and included a preliminary assessment of key issues such as potential noise and air impacts for the proof of concept for flight paths. The main consideration for the 2016 EIS in its depiction of the indicative flight paths for WSI was to demonstrate air traffic management feasibility, particularly whether WSI flight paths could interact and synchronise with aircraft operating to or from Sydney (Kingsford Smith) Airport and other Sydney Basin airports, aerodromes and Defence facilities. The indicative flight paths developed were designed to demonstrate that WSI could operate independently of these other airports and achieve its design capacity.

A feature of the 'proof of concept' flight path design depicted in the 2016 EIS was a conceptual model for 2 modes of operation for aircraft arrivals and departures, for the 05 and 23 runway operating modes respectively. The design presented at the time of the 2016 EIS included a single indicative merge point location for aircraft arrivals serving both runway operating modes (05 and 23) as this was identified as providing an efficient flight path design for approaching aircraft.



Source: Department of Infrastructure and Regional Development, 2016

Figure 6.1 Conceptual flight paths for the Runway 05 operating mode as presented in the 2016 EIS



Source: Department of Infrastructure and Regional Development, 2016

Figure 6.2 Conceptual flight paths for the Runway 23 operating mode as presented in the 2016 EIS

As a means of managing potential noise impacts at night, a third operating mode, referred to as a 'head-to-head' mode (also known as reciprocal runway operations) was also identified in the 2016 EIS (and Airport Plan) as an additional potential mode of operation that would be utilised for WSI. The 2016 EIS identified that this option should be evaluated as part of any future, detailed assessment for the operation of WSI. Under this mode, all aircraft arrivals and departures would effectively occur using only one end of WSI for a period of time when traffic levels and safety requirements permitted (typically at night) and therefore offer a period of respite to more densely populated areas when possible (noting the converse impact this would have on some communities beneath the reciprocal runway flight paths – refer to Section 6.3.2 for further discussion of reciprocal runway operations).

As part of the development of the 'proof of concept' flight paths for the 2016 EIS, a *Preliminary Airspace Management Analysis* was conducted by Airservices Australia (Airservices Australia, 2015). The principal objective of the preliminary assessment was to establish whether safe and efficient operations could be introduced at the proposed airport through the development of indicative air traffic management designs. The assessment considered the potential airspace implications and air traffic management arrangements for airspace in the Sydney Basin associated with the potential introduction of flights to and from the proposed airport. The analysis indicated there was sufficient airspace capacity and there were no apparent physical impediments that would prevent safe and efficient operations for aircraft arriving at or departing from WSI. Indicative approach and departure routes demonstrated that WSI and Sydney (Kingsford Smith) Airport could both operate independently as high-capacity airports following the commencement of operations at WSI.

Based on community and stakeholder feedback, in particular with respect to potential noise impacts, the Australian Government subsequently announced that the airspace design to be implemented for WSI should not converge arriving aircraft at a single point over any one single residential area. The Australian Government identified that the future scope to assess and determine the final flight paths for arrivals and departures would seek to minimise the overflight of residential areas and reduce the impact of aircraft noise on the communities of Western Sydney and the Blue Mountains. Consistent with the Government's announcement, the preliminary airspace and flight path design for the proposed airport has applied international best practice for managing airspace design and its associated environmental impacts (refer to the following sections in this chapter for details of this process). These guidelines formed part of the WSI Airport Plan which has guided the development of the current airspace design as presented in this chapter and following sections of this Draft EIS.

6.1.2 Airport Plan

Alongside the development of the 2016 EIS, an Airport Plan (DITRDC, 2021) was prepared to outline the approach to the design and development of WSI as well as set out the intent for the operation of the airport. The Airport Plan also provides authorisation for the construction of Stage 1 of the development. Following finalisation of the 2016 EIS, the final Airport Plan was determined by the then Australian Minister for Urban Infrastructure, with conditions recommended by the then Australian Minister for the Environment.

Section 2.2.5 of the Airport Plan sets out the formal design process and establishes the key phases and activities – as discussed in Section 6.2 of this Draft EIS. Part 3 of the Airport Plan also sets out several conditions that must be completed prior to or as part of the construction of the Stage 1 Development. The process for airspace design for WSI including the flight paths, proposed airspace changes, air traffic control and noise abatement procedures is addressed in Condition 16 of the Airport Plan which states:

Condition 16 – Airspace design process

(1) The ALC must not permit regular aircraft operations to commence at the Airport unless the requirements of this condition have been satisfied.

(2) The airspace and flight path design are to be developed by a steering group led by the Infrastructure Department and involving Airservices Australia and the Civil Aviation Safety Authority. After an Airport Lease is granted the ALC will also be invited to participate in the steering group. The Infrastructure Department must establish a community and stakeholder reference group (Forum on Western Sydney Airport) which will operate until the end of the detailed design stage identified in Table 10 in Part 2 of the Airport Plan.

(3) In developing the airspace and flight path design, the steering group must conduct public consultation with stakeholders who include the aviation industry, the community and state and local government authorities.

(4) The airspace and flight path design, once developed, is to be referred as a plan for aviation airspace management, to the Environment Minister under section 161 of the EPBC Act.

(5) The airspace and flight path design must take account of the following principles, in addition to the principles in section 2.2.5 of the Airport Plan:

(a) airspace and flight path design must explicitly consider the Aircraft Overflight Noise mitigation options presented in chapters 7 and 10 of the EIS;

(b) airspace and flight path design must have regard to the social and economic impacts on existing airspace users in the Sydney Basin;

(c) airspace and flight path design must explicitly consider whether arrangements are required for managing Aircraft Overflight Noise at night; and

(d) airspace and flight path design must minimise to the extent practicable the impact of Aircraft Overflight Noise on the following:

(i) residential areas;

(ii) Sensitive Receptors;

(iii) the Greater Blue Mountains World Heritage Area – particularly areas of scenic or tourism value; and

(iv) Wilderness Areas.

(6) The airspace and flight path design for the Airport, once developed, must include or be accompanied by noise modelling of a range of realistic airport capacity and meteorological scenarios.

(7) The Infrastructure Department must develop a noise insulation and property acquisition policy in relation to Aircraft Overflight Noise for buildings outside the Airport Site, having regard to the 24-hour nature of operations at the Airport.

(8) Any referral(s) of a plan for aviation airspace management, in accordance with section 161 of the EPBC Act, must explain how all matters in this condition 16 have been addressed in developing the plan.

A range of community and stakeholder engagement sessions as part of the Forum on Western Sydney Airport (FOWSA) have occurred throughout the planning and preliminary airspace design phases of the flight path design process. This engagement commenced following the determination of the Airport Plan in 2016 and included consideration of the community and stakeholder feedback received on the 2016 EIS. The FOWSA has to date provided a link between the community, the Australian Government and WSA Co (developer and operator of WSI) during planning and construction of WSI and provides a consultative forum for the exchange of information and ideas. In determining the final flight paths, the community, aerodrome operators and airspace users will continue to be consulted extensively. Further details regarding the community and stakeholder consultation undertaken to date, in addition to the proposed future consultation regarding the proposed flight paths, is discussed in Chapter 9 (Community and stakeholder engagement).

The planning and preliminary airspace design phases of the airspace design process for single runway operations are the key phases which have been completed as part of the development of the project to date. Further discussion regarding each of these phases is provided in the following sections.

6.1.2.1 Development of airspace design principles

As described above, the initial 'proof of concept' design presented in the 2016 EIS utilised an airspace design that incorporated a concept known as 'Point Merge'. Point Merge is a description of a type of flight path design. 'Point Merge' is a method for synchronising arriving aircraft into one or more merge points prior to aircraft landing. This concept, which has been deployed at several airports around the world, delivers efficient high-capacity aircraft operations. The Point Merge concept presented in the 2016 EIS drew considerable concern from the community, in particular regarding potential noise impacts. To address this concern, the Airport Plan set out 12 Airspace Design Principles that the design process is required to follow. The principles were informed by and reflect community and industry feedback on the 2016 EIS.

The principles seek to maximise safety, efficiency and capacity, while minimising impacts on the community and the environment. With respect to the concern raised regarding the Point Merge concept, Principle 6 of the Airport Plan stated that aircraft arrivals will not converge through a single merge point over any single residential area.

The 12 guiding airspace design principles identified in the Airport Plan which were applied to planning phase of the airspace design process and were used to assist in guiding developing the preliminary flight paths are summarised in Figure 6.3.

Figure 6.3 Future airspace design principles

6.1.3 'No action' consideration and infrastructure constraints

Given the approval and ongoing construction of WSI, not proceeding with the project was not considered to be an alternative given the proposed flight paths are a critical component of the operation of the approved airport. Condition 16 of the Airport Plan also required the Australian Government to undertake an airspace design process and as such it is considered that a 'take no action' (i.e. to consider a no-flight path option) would not represent a feasible alternative.

The airfield geometry and infrastructure for WSI is now fixed and currently under construction consistent with the approved elements of the 2016 EIS. Therefore no alternatives were considered for runway direction and length, or for location of runway taxiway entries and exits. The initial and final flight path segments connecting to the runway are fixed by aircraft configuration and performance requirements in safely making any turns from the immediate runway heading for take-off or stabilising on final approach to the runway for landing.

In accommodating departing aircraft, the flight path design has been limited to the consideration of alternatives once a departing aircraft commences its take-off roll, becomes airborne and is established in a stable configuration to safely execute turns to join the established higher level enroute airspace system.

For arriving aircraft, the flight path must ensure that an aircraft is safely processed from the established higher level enroute airspace system to a landing onto the designated runway.

The need to process aircraft in an orderly sequence when arriving has limited the opportunity to develop multiple alternative approach paths for aircraft arriving at WSI. Similarly, airspace constraints within the Sydney Basin as a result existing flight paths, military areas etc also limit the opportunity for the development of multiple departure paths for WSI. One exception to this is that specific flight paths have been developed for non-jet aircraft which segregate these aircraft operations from jet aircraft operations.

6.2 Airspace and flight path design process

6.2.1 Overview

In addition to meeting Condition 16 of the Airport Plan requirements, the airspace design must meet civil aviation safety regulatory standards and other international rules and regulations. The design of the airspace and flight path design is required to balance the competing needs from the community, environment, industry and users of the Greater Sydney airspace, while maintaining safety. The airspace and flight path design must also efficiently integrate into existing and future air traffic management operations in the Sydney Basin.

The design process has therefore considered (among other factors) the following key requirements:

- safety of air navigation including
  - the required air traffic controller workload to manage the airspace for aircraft
  - the connectivity to the flight network
  - the operations of aircraft accessing other airports
  - flying training areas
  - other military airspace constraints
- capacity to meet projected demand
- efficiency of operation for arriving and departing aircraft
- minimising adverse effects on the environment from WSI aircraft operations.

The flight path design has been carefully designed to be compatible with the operational performance of the current and anticipated future airline aircraft fleets that could be expected to use WSI. In designing the flight path options, it was necessary to account for the fact that airspace operations are influenced by a range of factors, including weather, the number of arriving and departing aircraft and the origin and destination of these aircraft. The flight path design also sought to take into account longer-term factors such as future growth in total traffic volumes and new aircraft types and/or new technologies.

6.2.2 Airspace design process

A summary of the airspace and flight path design process is shown in Figure 6.4. Table 6.1 provides a more detailed discussion of the key activities and outputs of each of these process steps as outlined in the Airport Plan.

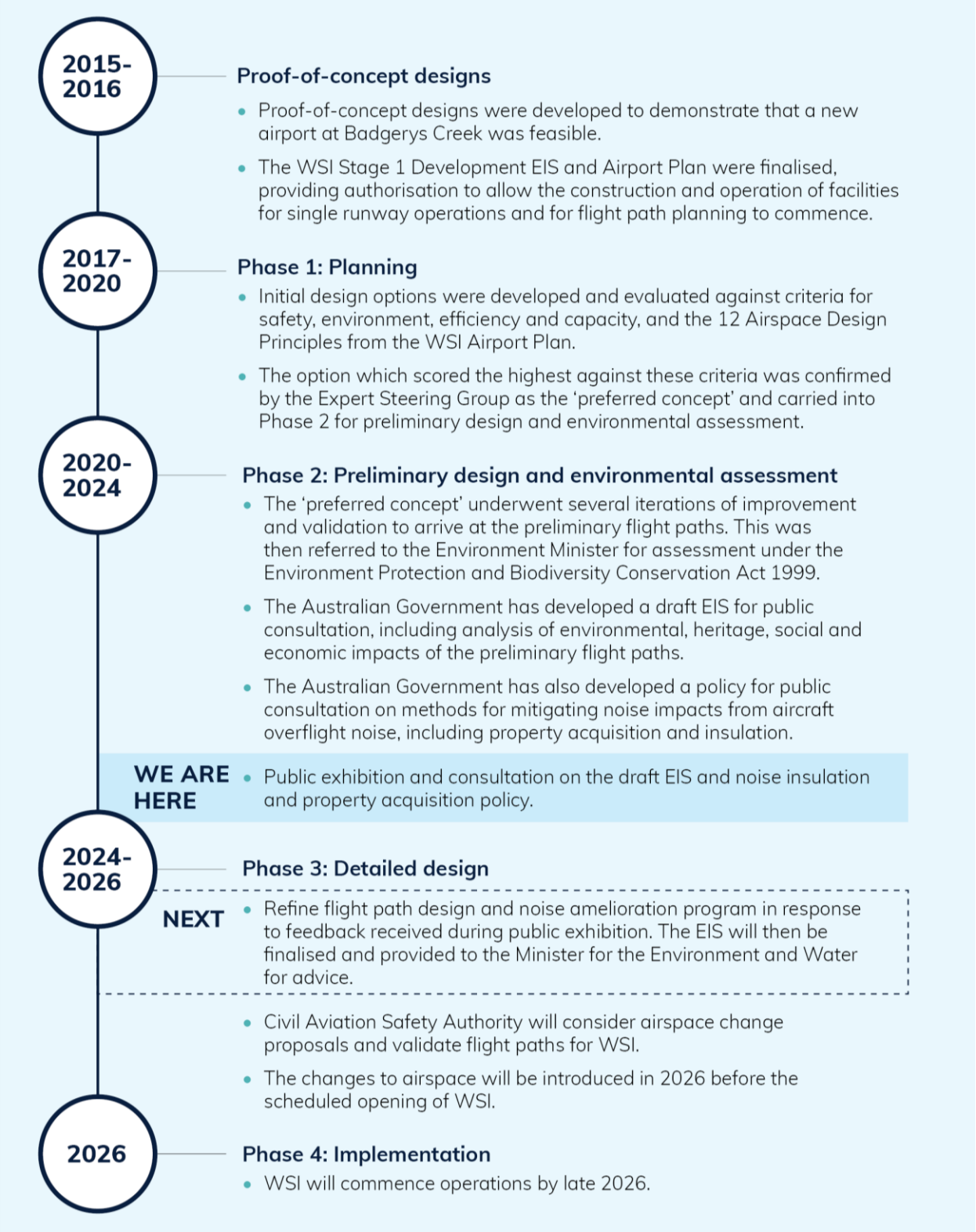


Figure 6.4 Flight path design pathway

Table 6.1 Airspace and flight path design process

Phase	Key activities	Key outcomes
Planning phase and indicative design	• Establish an Expert Steering Group • Collect stakeholder requirements including community and environmental inputs • Confirm Sydney basin airspace and air route requirements and constraints • Establish community and stakeholder reference group • Develop and undertake preliminary environmental assessment of airspace concept options (i.e. standard arrival and departure routes.	• Consultation conducted with interested parties, including regulatory authorities, government agencies, airlines, other Sydney Basin aerodrome operators and airspace users, and the community • Review of airspace concept options and potential noise abatement procedures including identification of a preferred high level airspace concept option.
Preliminary airspace design and environmental assessment	• Evaluate the preliminary airspace design through consideration of iterative flight path development, runway modes, identification of consequential impacts and changes to other airports and airspace users.	• Preferred airspace design concept.
	• Refer preferred airspace design to the Australian Minister for the Environment under the EPBC Act • Prepare and submit any formal environmental assessment documentation required by the Australian Minister for the Environment and Water • Public exhibition and community consultation • Policy on property acquisition and noise insulation announced.	
Detailed design	• Evaluate, validate and refine the detailed design taking account of the EPBC Act process.	• Final airspace design and noise abatement procedures for implementation • Long-term ANEF chart.
Implementation and post-implementation review	• Notify airspace and air route changes.	• Airspace change proposal approved by CASA • Commencement of air operations at WSI in accordance with specific noise abatement procedures identified in the airspace design process.

6.3 Development of the proposed airspace and flight paths for WSI

6.3.1 Planning phase

Flight path design in Australia, and more broadly at an international level, generally starts with developing 'proof-of-concept' designs. As discussed in Section 6.1.1, the initial 'proof-of-concept' flight path design developed for WSI was presented in the 2016 EIS and triggered the commencement of the planning phase. One of the key outcomes of the planning phase of the airspace and flight path design process was the identification and evaluation of a broad range of potential airspace flight path concepts (having regard to existing air route requirements and constraints), leading to selection of a preferred airspace concept.

The development of the preferred concept airspace design options was an iterative design and evaluation process. The concept airspace design options were developed and assessed based on existing Sydney Basin airspace and air route arrangements and future user and stakeholder requirements. Activities and outputs during this phase included:

- establishment of an expert steering group (ESG) to oversee the planning and design process. The ESG oversees the technical design process and is led by the Department of Infrastructure, Transport, Regional Development, Communications and the Arts. It includes Airservices Australia, the Civil Aviation Safety Authority (CASA), the Department of Defence and the WSI Airport operator. The operator of Sydney (Kingsford Smith) Airport and the Chair of the FOWSA also attend the ESG
- consideration of existing Sydney Basin airspace and air route arrangements and the conduct of consultations with regulatory authorities, Sydney Basin aerodromes, airspace managers and airspace users to consolidate future user requirements
- comprehensive and ongoing community and stakeholder engagement through creation of a community and stakeholder reference group, FOWSA, to ensure community views were taken into account in the airspace design process
- development of a range of conceptual air traffic management options (e.g. standard arrival and departure flight routes and procedures) and preliminary assessment of each option against key performance assessment criteria.

The key activities that were undertaken throughout the planning phase which led to the selection of the preferred airspace concept are outlined in Figure 6.5. Each of the activities are described in the following sections (noting the establishment of airspace concept design principles have been discussed previously in Section 6.1.2.1).

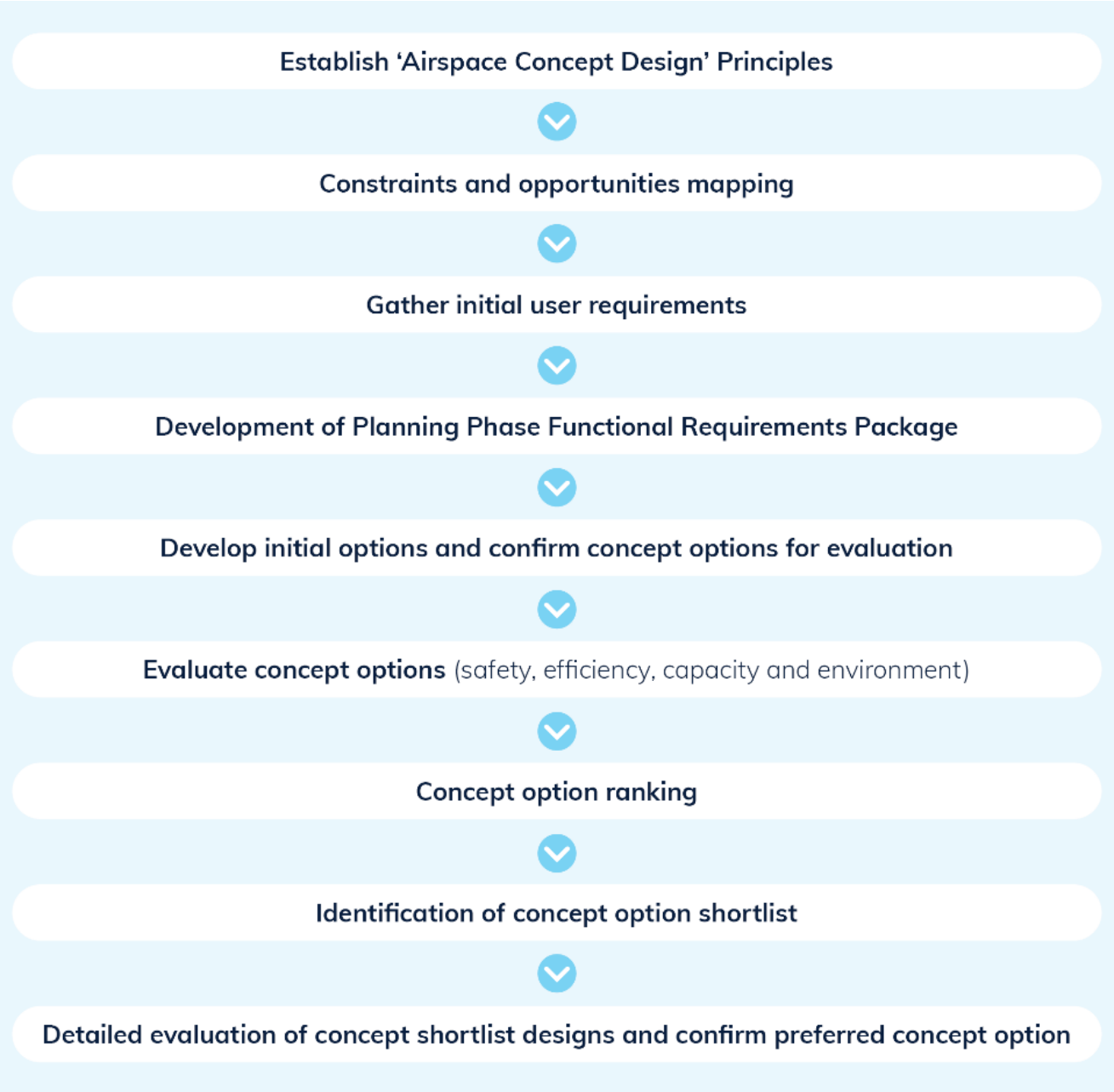


Figure 6.5 Overview of planning phase airspace development process

6.3.1.1 Constraints and opportunities mapping

As part of the initial stages of the planning phase, following establishment of the airspace concept design (refer to Section 6.1.2.1), the Department of Infrastructure, Transport, Regional Development, Communications and the Arts (DITRDCA) (and its technical service providers) identified key constraints and opportunities that were likely to impact on the development of the proposed flight paths. The key technical, airspace and environment constraints are summarised in the following sections.

Technical and flight constraints

In developing the preferred airspace concept flight paths, the development of the design was guided by a range of matters which determine what is technically feasible for the design. These included:

- *the need to maintain a safe airspace*: the need to comply with safety requirements and international rules of aviation was paramount for the development of the proposed flight paths
- *the fixed nature of the runway alignment*: there will be no changes to the north-east/south-west runway alignment, which was approved in the 2016 EIS and is currently under construction
- *the final approach and initial departure paths are fixed*: given the fixed runway alignment and the requirement for aircraft to approach and depart the WSI on a relatively straight trajectory (from a minimum distance of around 4 nautical miles (nm) (around 7 kilometres (km)) from the runway) was fixed for this portion of the flight paths. The need to safely manage the speed and altitude of aircraft in the final approach and departure faces of flight was also considered
- *the altitude of aircraft is constrained*: the height at which aircraft operate is determined by a number of factors, including the aircraft type, weather conditions, safety requirements and international rules of aviation. This also includes the height at which aircraft start their landing approach (e.g. maintaining a certain glide path towards the runway)
- *the presence of existing airports and other airspace requirements in Greater Sydney*: major changes cannot be made to the flight paths for Sydney (Kingsford Smith) Airport and considerations were needed to be made for operations at other airports, such as Camden, Bankstown, Richmond and Holsworthy (refer to detail below regarding Sydney Basin airspace).

Sydney Basin airspace

As described in Chapter 3 (Introduction to airspace) and Chapter 4 (Project setting), the Sydney Basin airspace is likely the most complex and busiest airspace within Australia. It comprises an extensive network of flight paths associated with:

- Sydney (Kingsford Smith) Airport
- Bankstown Airport and Camden Airport
- Defence airports – RAAF Base Richmond and Australian Army Holsworthy Airport
- Tasman Sea Military Flying Training restricted area
- Orchard Hills Defence Establishment (which includes restricted airspace over the facility when in use)
- recreational aviation activities (gliders, ballooning, parachuting)
- transiting flights.

The level of existing aircraft activity within the Sydney Basin airspace provided a substantial constraint with respect to identifying safe and feasible flight paths for WSI. As shown previously in Figure 6.6, the majority of the Sydney Basin is overflown by aircraft with flight tracks associated with the Sydney (Kingsford Smith) Airport being the dominant activity. In developing the WSI airspace and flight path design, minimising consequential changes to the established Sydney Basin airspace system to the extent practical has been a critical consideration. In particular, the preliminary airspace and flight path design has been developed through consultation with the Sydney (Kingsford Smith) Airport resulting in the evolution of the existing flight paths for WSI to minimise impacts to its future operations.

The necessary changes and associated impacts to the flight paths identified to accommodate aircraft operations from WSI have also been considered in terms of safety, national security (Defence), efficiency, equity of airspace access, existing aircraft operating standards as well as environmental impact.

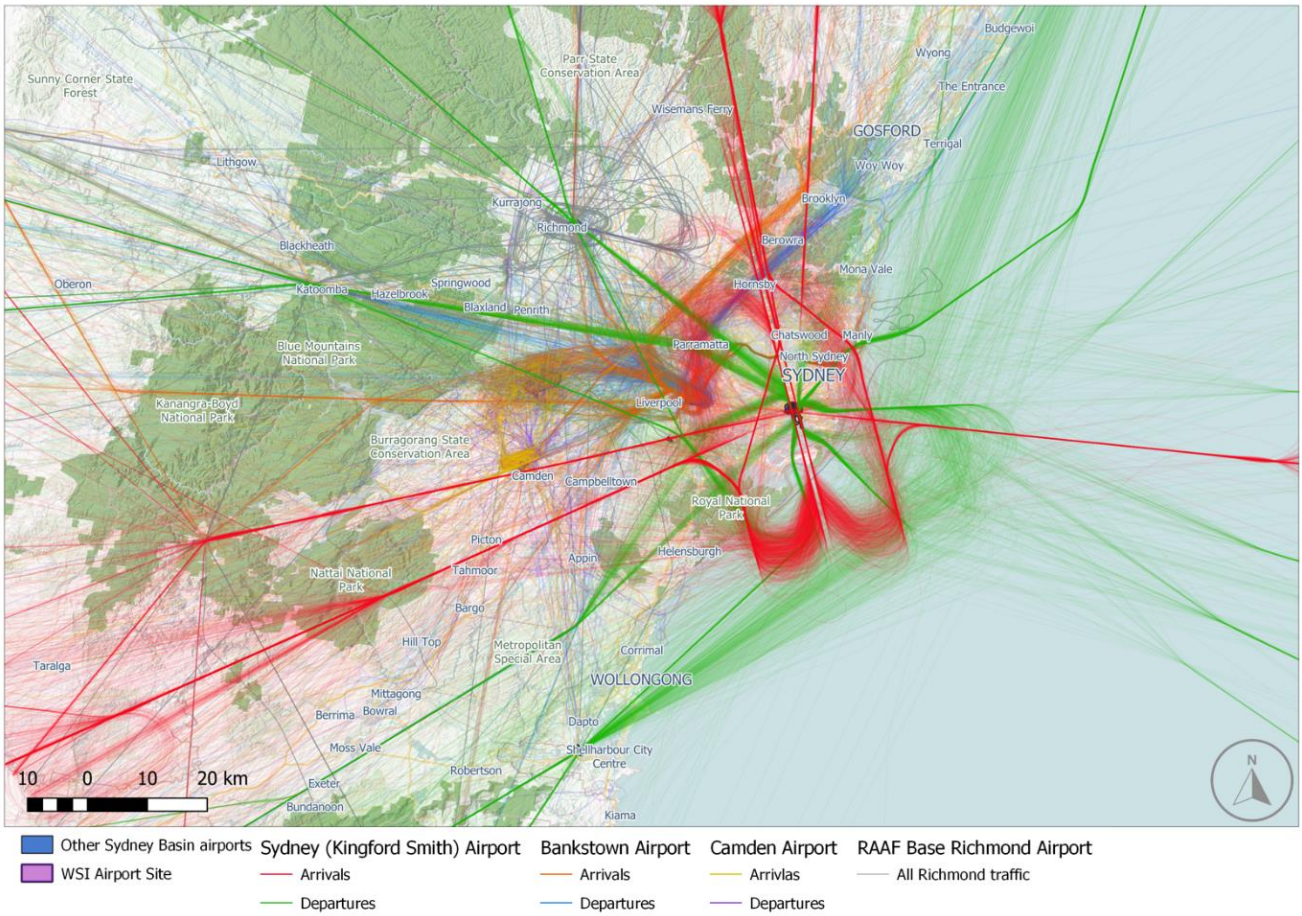


Figure 6.6 One week sample of flight track activity in 2019 in the Sydney Basin

Environmental and social considerations

In addition to the airspace design constraints, key environmental and social impacts were considered, in particular potential noise and visual amenity impacts as result of aircraft overflights. The key constraints considered in the flight path design process included:

- the Greater Blue Mountains Area (GBMA), which is listed as a World and National Heritage place
- residential built up areas within the Sydney Basin and Blue Mountains region
- sensitive tourist and recreation areas with the potential to receive impacts from aircraft overflights including:
  - Jamison Valley south of Echo Point lookout and the Scenic Cableway at Katoomba and Wentworth Falls lookout
  - Grose Valley east of Evans lookout and Govetts Leap lookout
  - the wilderness area between Deanes lookout and Crawfords lookout within Wollemi National Park
  - the wilderness area between Mt Yengo lookout and Finchley lookout within Yengo National Park
  - Nattai wilderness area
  - Kanangra Walls and wilderness area east of Kanangra-Boyd lookout
  - Baal Bone Gap within Gardens of Stone National Park.

Figure 6.7 and Figure 6.8 provide an overview of the key airspace and environmental constraints that were considered as part of the flight path design process. The identified constraints provided a key input for development of the functional requirements for used in developing the preferred airspace concept designs.

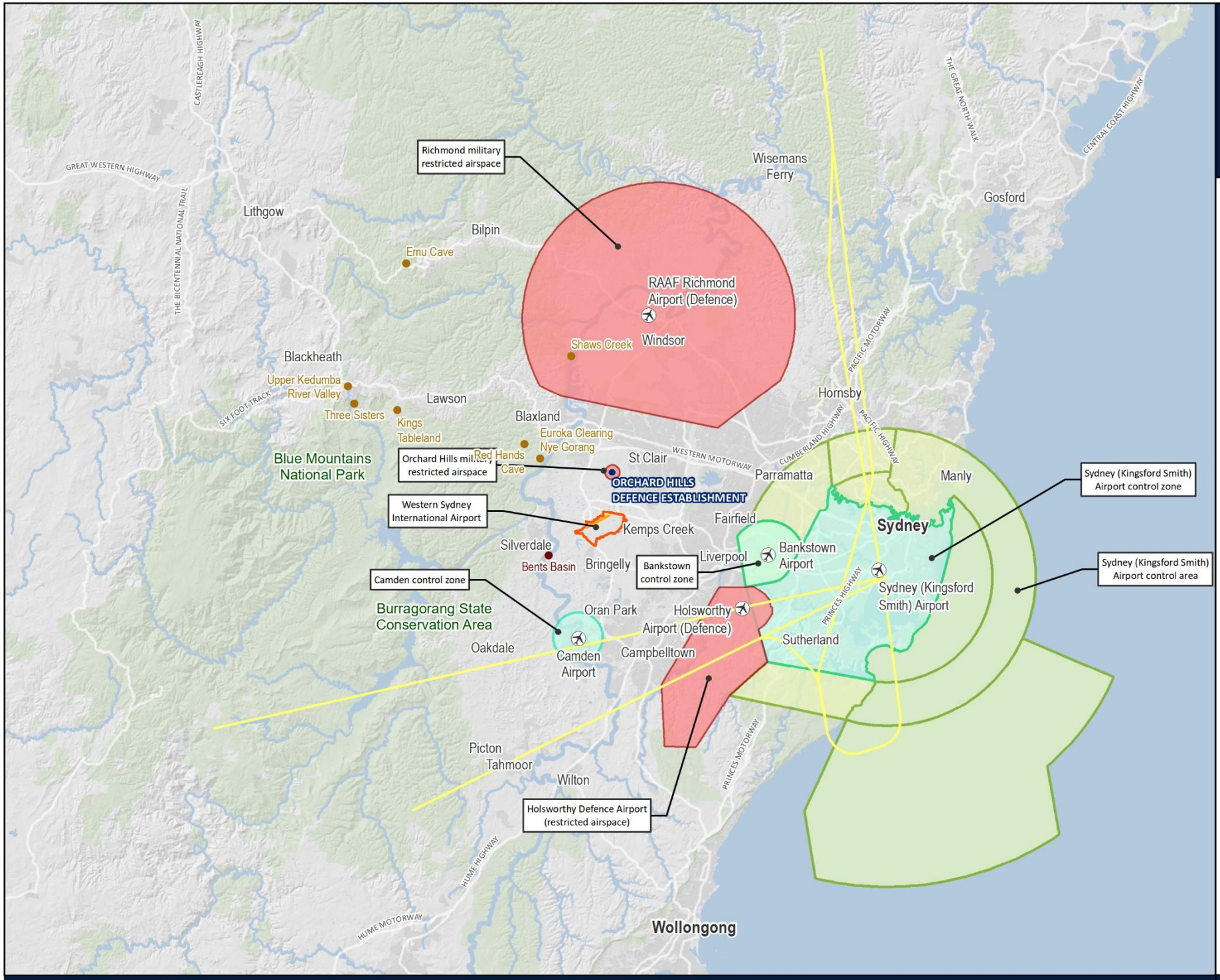


Figure 6-7

Key airspace constraints within the Sydney Basin

Legend

- WSI Runway
- Western Sydney International (Nancy-Bird Walton) Airport land boundary
- Key runway approaches
- Restricted area
- Control zone
- Control area
- Aboriginal Places raised during consultation (NPW Act)
- Site of Aboriginal significance

Coordinate system: GDA 1994 NSW Lambert

Scale ratio correct when printed at A4

1:750,000 Date: 31/07/2023

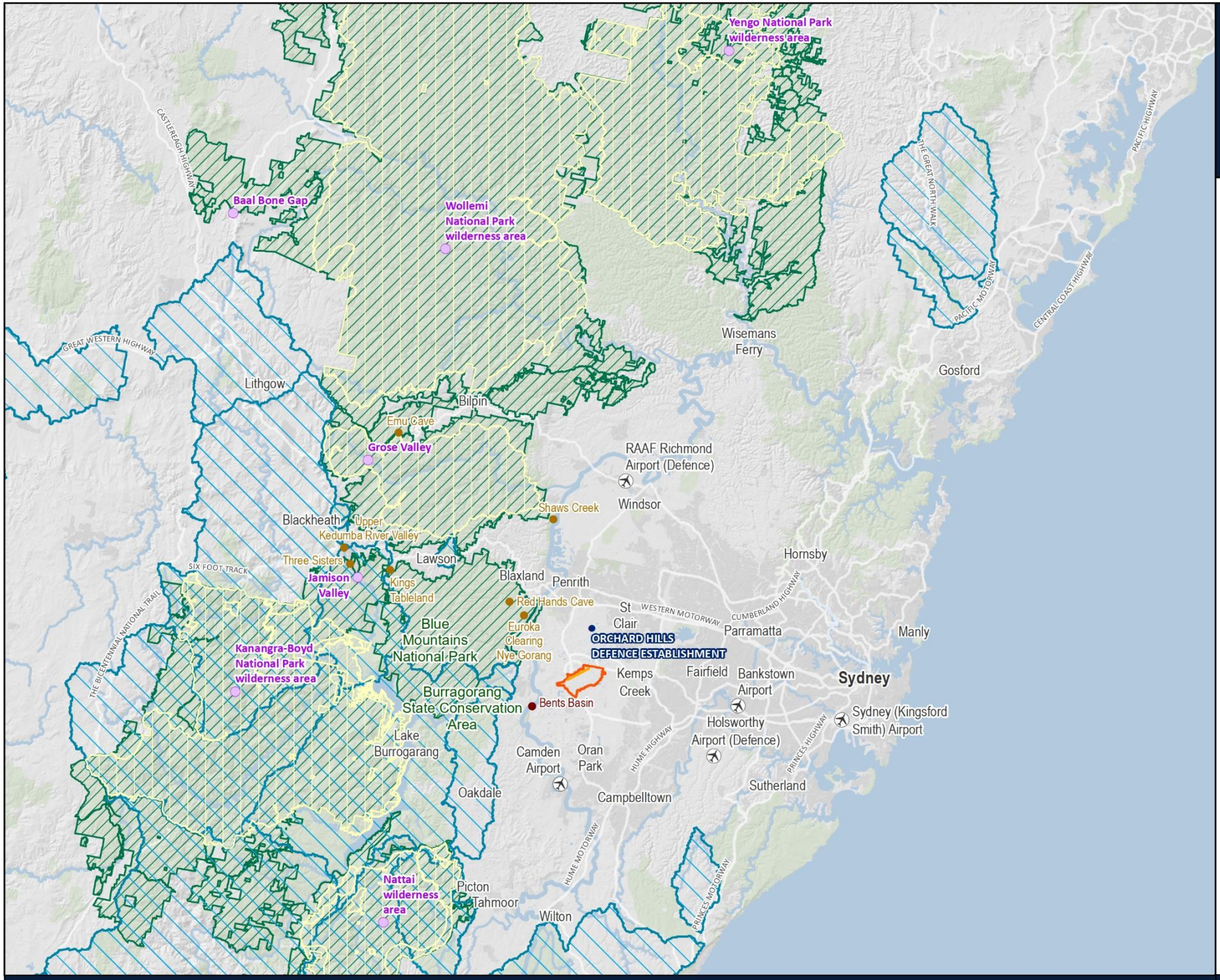


Figure 6-8

Key environmental and social constraints within the Sydney Basin

Legend

- WSI Runway
- Western Sydney International (Nancy-Bird Walton) Airport land boundary
- Declared Wilderness
- Drinking water catchments
- Greater Blue Mountains World Heritage Area
- Tourist locations
- Aboriginal Places raised during consultation (NPW Act)
- Site of Aboriginal significance

0 10 20 km

Coordinate system: GDA 1994 NSW Lambert

Scale ratio correct when printed at A4

1:800,000 Date: 30/06/2023

6.3.1.2 Gather initial user information requirements

Initial gathering of user requirements for the flight path designs was undertaken through a series of technical stakeholder meetings in early July 2018. Key user requirements identified during this phase were incorporated into the project functional requirements, as appropriate, during the subsequent phase of the options process.

6.3.1.3 Planning phase functional requirements

Development of the functional requirements

Following identification of the airspace concept design principles, constraints and opportunities, and initial user requirements, a series of functional requirements for the development of the flight path concept design options were identified in consultation with a broad series of stakeholders including:

- airlines – including Qantas and Virgin Group Australia
- airports – including representatives from Aeria Management Group (formerly Sydney Metro Airports who operate Bankstown and Camden airports) and Sydney Airport Corporation Ltd (SACL)
- other associations and agencies – including the Civil Aviation Safety Authority (CASA), Airservices Australia, the Department of Defence, the Board of Airline Representatives of Australia Inc and the Regional Aviation Association of Australia.

The user requirements and functional requirements were derived from the Airport Plan (and other reference documents including the Civil Aviation Safety Authority Manuals of Standards) and through initial stakeholder consultation and gathering of initial user requirements (refer to Section 6.3.1.2). Overall, 48 functional requirements were identified that were applied to the planning phase (and subsequent stages of the design development). The functional requirements essentially comprised a series of requirements that each of the concept design options needed to meet to allow for further consideration in the subsequent phases of testing and evaluation. These requirements (along with the associated performance assessment criteria) were documented as part of the Planning Phase Functional Requirements Package for WSI.

To facilitate prioritisation where the requirements might compete, the functional requirements were classified according to their criticality to the design using the following terminology:

- ‘must’ – design elements which were considered mandatory to the flight path design options. A solution may not be considered viable without this requirement being met
- ‘should’ – design requirements/elements which were identified as being preferential for inclusion within the design solution unless an identified/tangible benefit from their relaxation could be identified
- ‘consider’ – design elements which the design team were to take into account during development of the flight path design options and which were to be further examined during the Preliminary Design and Environmental Assessment Phase.

The technical design team jointly evaluated each Concept Mode (a concept design specifically aligned to operations in a specified runway direction at WSI – i.e. Runway 05 or Runway 23) for compliance with the Planning Phase Functional Requirements. The respective Concept Modes were evaluated qualitatively as having ‘met’, ‘not met’ or ‘not yet met’ each functional requirement. Based on this evaluation, the technical design team established a series of concept design options for progression to further performance assessment phases.

6.3.1.4 Identification of initial concept design options and qualitative assessment

Performance assessment criteria scoring methodology

Preliminary assessment work was then undertaken on each concept design option (both departure and approach options) using the 4 key performance areas (KPAs) of safety, environment, efficiency, and capacity. An overview of the KPAs, is summarised in Figure 6.9.

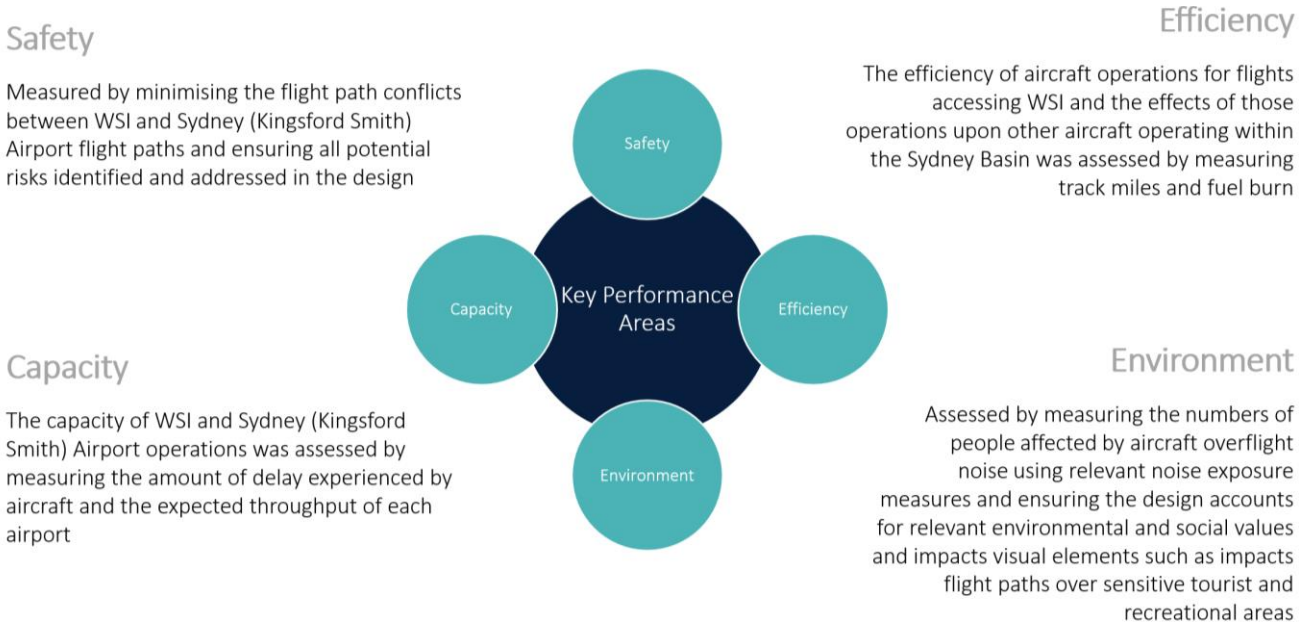


Figure 6.9 Key performance areas

Against each of the KPAs, a series of key performance assessment criteria were identified to assess the performance of each concept design option. These performance assessment criteria were developed to sit alongside the functional requirements and were used to assist in evaluating how certain functional requirements were determined as either met or not by each design concept.

Using this assessment criteria, the performance of each concept design option was assessed. The scores for each of the performance assessment criteria were tracked and combined into a single score for each of the 4 key performance areas. Using this method, it was possible to compare the performance of a concept against other concepts and to allow priority to be applied between the performance areas, the highest priority being given to safety.

Identification of initial concept design options

Twenty-two primary concept design options were initially identified and developed as potential WSI flight paths by the technical design team. It was considered that this high number of concept design options was needed to allow for consideration of a wide selection of ideas and solutions that could each be tested to inform the best possible design. A number of the concept design options required some form of change to flight paths currently utilised by Sydney (Kingsford Smith) Airport to accommodate the introduction of WSI into the Sydney Basin. Where changes were required, these were identified as either:

- tactical changes (changes that do not require publication of new flight paths or operating procedures)
- systemic changes (those that are published as flight paths or operating procedures with the aim of minimising air traffic control intervention).

This resulted in the 22 concept design options being grouped into 2 broad groups for consideration:

- standalone designs that did not include any change to Sydney (Kingsford Smith) Airport flight paths. These options were referenced using a series of alphabetical references (A, B, C, D, F, H, J, Q, R, S and Y)
- standalone designs with the same WSI flight paths as one of the above concept designs, but which would also require flight path changes for Sydney (Kingsford Smith) Airport. Concept designs which included changes to Sydney (Kingsford Smith) Airport flight paths were notated with the suffix 'v' to denote their potential impact (Av, Bv, Cv, Dv, Fv, Hv, Jv).

During the planning phase, the concept design options were depicted as single nominal flight paths for both the WSI and Sydney (Kingsford Smith) Airport operations. Once established into a viable concept design, the possible waypoints and track details for each concept were included to provide additional detail for each concept, to assist in the technical evaluation against the KPAs.

Qualitative assessment of the initial concept design options

Initial consideration of the 22 primary concept design options identified that 4 of the options failed to meet core safety requirements (in particular regarding the ability to provide safe flight operations). As a result, these 4 concept design options were not progressed any further in the options evaluation process.

The remaining 18 concept design options were progressed and were considered using a more rigorous assessment involving a process known as Fast Time Simulation (FTS – a technical modelling approach used to compare the performance of different airspace design options – such as with or without changes to existing operating modes for Sydney (Kingsford Smith) Airport operations), as well as preliminary environmental modelling (i.e. high level noise and visual impacts). The FTS modelling was employed to allow a rapid, cost-effective assessment of each concept design option, and provided the ability to quantify the performance of each option against the key performance assessment criteria during the planning phase.

Overall, each of the 18 concept designs underwent this evaluation, and were ranked against the key assessment criteria. A summary of the combined, single ranking for each of the options against each of the performance assessment criteria is shown in Figure 6.10.

Based on the evaluation, the top 5 options (Hv, Fv, Jv, Cv and Dv) were identified for further consideration and refinement due to their overall acceptable safety scores (highlighted in Figure 6.10 by the orange line which shows a clear break in the safety performance).

Below this line, the air traffic controller workload required to manage the number of aircraft interactions was evaluated to be substantially greater and therefore would potentially reduce the safety aspect of that option. Therefore, the remaining concepts below the top 5 options were not progressed further from this point.

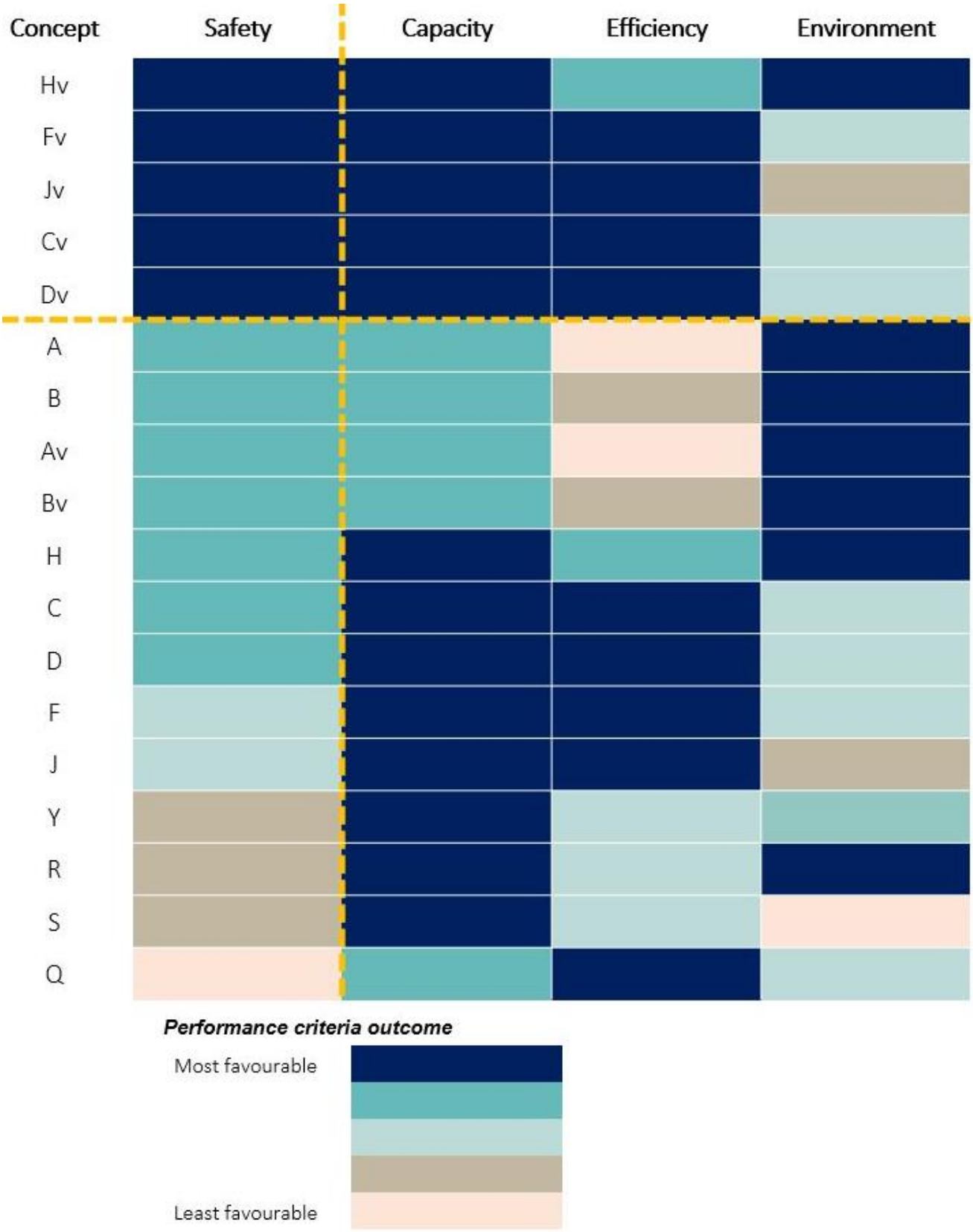


Figure 6.10 Long list ranking of initial concept design options

In summary:

- concept option Hv provided the most favourable outcome from a safety perspective and the most favourable environmental outcome. This option also required the least variation to existing flight paths at Sydney (Kingsford Smith) Airport (a key functional requirement) compared to other options
- concept option Fv provided an equally favourable outcome from a safety perspective and the most favourable outcomes from efficiency and capacity perspectives (in addition to a reasonably favourable score for environment).

6.3.1.5 Detailed evaluation of concept designs

The better performing elements of each of the 2 best performing concept design options (concepts Hv and Fv) were then integrated into a single 'preferred concept' design (designated as 'Concept W'). Baseline scoring of the concept design was also undertaken to identify the estimated noise footprint of the design (to further consider the environment criteria). This involved an approximate count of dwellings and population considered to be within the N60 to N70 noise contours (i.e. areas where noise impacts are predicted to be at or above 60 dB(A) and 70 dB(A) respectively).

The integration of the 2 concepts into one was conducted as an iterative design process through a series of technical workshops leading to the incremental evolution of the design across 3 primary versions.

These technical workshops resulted in the creation of the initial Concept W which provided significant improvements in the key performance criteria as follows:

- safety– in particular with respect to minimising air traffic control workload interactions
- efficiency – through improvements to the amount of level flight within the design and the reduction of the overall length of flight paths (referred to as track miles)
- environment – through minimising the number of dwellings overflown as far as possible
- capacity – minimal change.

The results of the Concept W refinement process were presented to the project Expert Steering Group (ESG) in November 2019 and Concept W was confirmed by the ESG as the 'preferred concept' design option for progression to the preliminary design phase. At this point the planning phase had achieved its primary goals of identifying the safest concept design option that met the identified functional requirements as best as possible, including the least impact on existing flight paths for Sydney (Kingsford Smith) Airport in the Sydney Basin.

At this point Concept W consisted exclusively of WSI and Sydney (Kingsford Smith) Airport flight paths. The next phase of the design process would introduce the additional elements required to operate WSI in day and night operations, and include the changes required to existing airspace elements for Bankstown, Camden and RAAF Base Richmond airports.

Proposed Concept W flight paths for the Runway 05 and Runway 23 operating modes (showing the development since the initial 2016 EIS concept flight paths) are shown in Figure 6.11 and Figure 6.12 respectively. Note the flight paths shown are indicative and represent the nominal centreline of the proposed flight path. As described in Chapter 3 (Introduction to airspace) due to dispersion, the actual path would progressively widen to notionally 2 km either side of the nominal centreline. If aircraft fly within the flight path corridor, they are considered to be on track. For ease of comparison of the various options, only the nominal centreline has been shown.

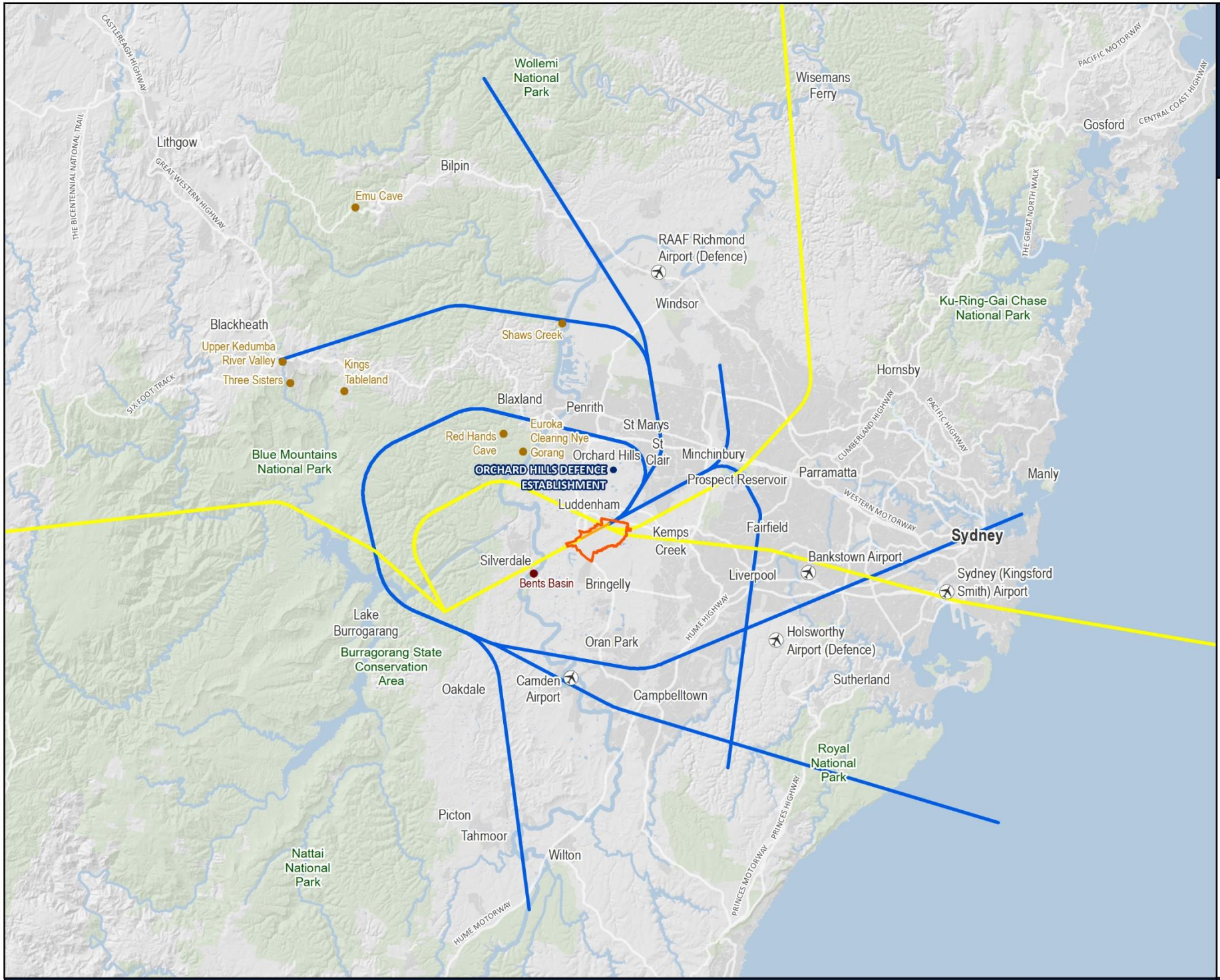


Figure 6-11

Proposed Concept W flight paths (Runway 05 operating mode)

Legend

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

Flight Paths

- Indicative Concept W arrivals flight path
- Indicative Concept W departures flight path

0 10 20 km

Coordinate system: GDA 1994 NSW Lambert

Scale ratio correct when printed at A4

1:600,000 Date: 31/07/2023

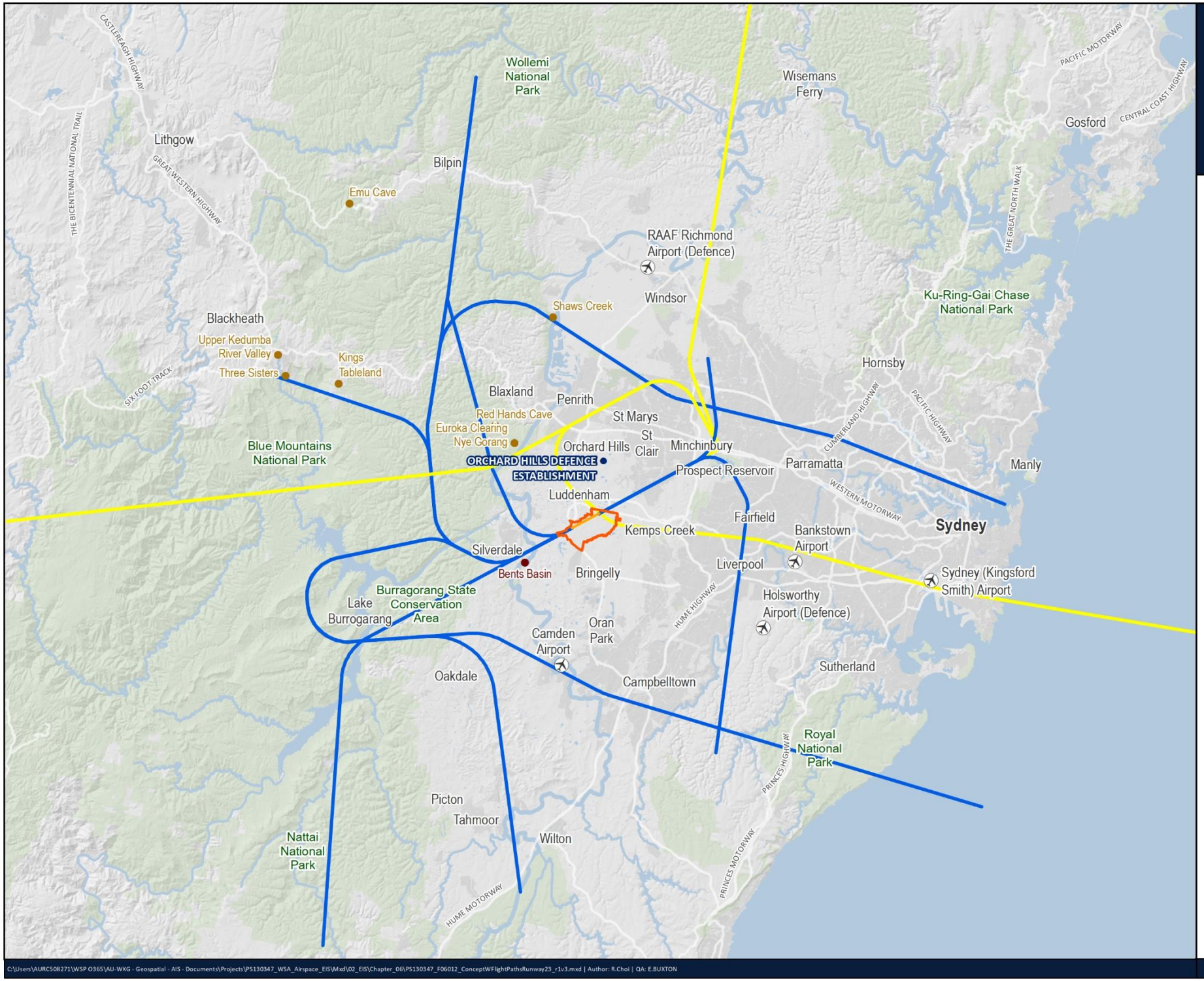


Figure 6-12

Proposed Concept W flight paths (Runway 23 operating mode)

Legend

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

Flight Paths

- Indicative Concept W arrivals flight path
- Indicative Concept W departures flight path

0 10 20 km

Coordinate system: GDA 1994 NSW Lambert

Scale ratio correct when printed at A4

1:600,000 Date: 30/06/2023

6.3.2 Preliminary airspace design and environmental assessment

The purpose of this phase was to progress the preliminary airspace design using an iterative flight path development process to create a complete airspace design for WSI day and night operations, and include the changes required to existing airspace elements for Bankstown, Camden and RAAF Base Richmond airports.

6.3.2.1 Evolution of Concept W design

Following identification of the preferred airspace concept flight paths during the planning design phase, a technical working group was formed to conduct further design activities. The technical working group began with the Concept W design that had been endorsed at the end of the planning phase. The Concept W design required further refinement as the design presented was only based on a peak day time period of operation. At this stage of design, it did not take into account non-peak periods or night time operations. The concept design was also brought closer to a viable operational state with the introduction of additional airspace design elements such as:

- draft flight paths for all Instrument Flight Rules (IFR) capable airports within the Sydney Basin
- draft initial airspace containment volumes for the new WSI flight paths
- development of suggested flight paths that may be used by VFR aircraft to remain clear of the WSI flight paths
- draft air traffic control operating procedures for air traffic management including draft noise abatement procedures.

This approach resulted in an initial evolved flight path concept that was suitable for 24-hour operations in all weather conditions.

Confirmation of functional requirements and performance assessment criteria

As part of the initial preliminary airspace design process, a review was conducted of the functional requirements and performance assessment criteria. Where it was identified that the existing functional requirements and performance assessment criteria were still relevant and fit for purpose, they were transitioned into a subsequent functional requirements package for the Preliminary Design and Environmental Assessment Phase.

Requirements that were no longer relevant to the current state of the design were ‘retired’ and, where required, replaced with updated versions. This resulted in the clarification of some of the existing functional requirements (such as those relating to noise sharing arrangements with Sydney (Kingsford Smith) Airport or prioritisation of retaining existing flying training areas) based on how they had been applied in the previous planning phase of the flight path design.

A number of performance assessment criteria were also updated in order to reflect the requirements of the preliminary design stage.

6.3.2.2 Iterative development of the preliminary design flight paths

The refinement of the Concept W during the preliminary design phase included more detailed consideration of the factors that had previously been considered during the planning phase. As part of this consideration, the following fundamental parameters were applied to the flight path development during the preliminary design phase:

1. Safety – as with all of the design phases for the airspace development, the key performance assessment criteria of safety continued to be the paramount consideration in all flight path option development.
2. Environment – noise, and other environmental, visual and social impacts were minimised to the extent practical while still achieving safe and efficient operations.
3. Air Traffic Management requirements – consistent with the efficiency and capacity requirements, flight path options were refined to ensure they were fit for purpose and based on sound air traffic management requirements to deliver the required capacity in an efficient manner.

Where these requirements conflict, resolution was typically based on the above order. For example, some environmental impacts were generally, within reasonable limits, taken to have precedence over efficiency requirements. Conversely, some environmentally friendly flight paths were withdrawn from the design where they proved too complex for airlines to fly in a safe manner.

Preliminary assessments

In addition to ongoing refinements (of the Concept W design) to improve the safety outcomes of the flight path development during the preliminary design phase, a series of preliminary environmental assessments were undertaken to identify more detailed constraints. These assessments considered each relevant runway operating mode and time period (i.e. night time periods). A summary of the key areas considered during the preliminary assessments is provided in the following sections.

Overflights of sensitive tourist, recreational and wilderness areas

The visual impacts on sensitive tourist and recreational areas by aircraft overflight was considered in each preliminary design refinement with the aim of minimising the potential visual impacts of aircraft flying over these areas. In particular, this included considering the impacts of flight paths over the GBMA and other wilderness areas as well as the identified sensitive tourist and recreation areas (as identified previously in Section 6.3.1.1).

Noise impacts

Aircraft noise modelling was used to undertake preliminary environmental assessment of the design. Noise assessments for each of the refinements included an estimate of the number of dwellings which would be likely to be subject to different levels of overflight noise events. These assessments were produced for each relevant runway operating mode and time period. A more typical representation of an expected annual average day of operations, taking into account potential noise abatement operating mode priorities, was also developed.

A range of overarching noise abatement procedures were considered during the design of each flight path refinement, some of which built on considerations identified in the planning phase, and some of which were newly introduced during the preliminary design phase. These considerations included:

- use of noise preferential runways to direct the initial and final flight paths of aircraft away from noise-sensitive areas
- the use of noise preferential routes to assist aircraft in avoiding noise-sensitive areas on departure and arrival, including the use of turns to direct aircraft away from noise-sensitive areas located under or adjacent to the usual take-off flight paths.

Flight path design refinements which were considered throughout the preliminary design phase included (noting some of these refinements built on previous planning phase considerations):

- Runway 05 day north jet departures flight path to reduce residential overflight noise north of WSI by tracking as far west of St Clair and St Marys as possible
- Runway 05 day north jet departures flight path to minimise aircraft overflight noise for residential areas in the Blue Mountains and residential areas along the Great Western Highway, in particular favouring flight paths to the north of the highway
- Runway 05 arrivals to join final approach and remain south of the Silverdale township to minimise the aircraft overflight noise for this residential area
- Runway 23 day north, north west and west jet departures flight path by delaying the turn to the west until past Silverdale to minimise overflight noise in that area
- Runway 23 day arrivals were positioned, wherever possible, over light industry and green spaces for the last 22 kilometres of flight
- where required, flight paths to cross the Great Western Highway over areas of low residential density to minimise aircraft overflight noise to Blue Mountains communities
- reciprocal runway operations for night-time periods when demand permits (refer to following section for details).

Socio-economic

While potential socio-economic impacts had been considered as part of the planning phase (such as impacts on sensitive community receivers such as major residential areas, schools, hospitals etc.), consideration of potential impacts was expanded as part of the preliminary design phase to include additional types of receivers such as tourist locations, sporting facilities and major outdoor recreation-type facilities. Potential economic impacts to the values associated with tourist locations and facilities, in particular important tourism-related economic activities based in and around the GBMA, were also considered.

Reciprocal runway operations

In order to ensure that WSI night modes result in noise impact to the fewest feasible number of dwellings, the flight paths in the night modes are different from those in the day modes. A third operating mode, known as reciprocal runway operations, was also considered in line with section 2.2.3 of the Airport Plan.

Reciprocal runway operations (RRO) is a term given to a specific mode where aircraft depart in the opposite direction of flight to arriving aircraft. In the Airport Plan this runway mode is referred to as 'head to head operations'. The RRO mode of operation would not be the only night time operational mode but could be used for WSI as an additional operating mode when it is safe to do so and specifically when:

- the number of arriving and departing aircraft is not more than around 20 air traffic movements per hour to permit the safe separation of aircraft
- the weather conditions (principally a dry runway and light downwind component) mean that it is safe to take off or land; and
- the Sydney (Kingsford Smith) Airport curfew period is in effect due to the complexity of operating the RRO and the large amount of airspace it requires (noting this would apply to all night modes of operation at WSI, not just RRO).

RRO was developed to minimise noise impacts over populated areas and was therefore restricted to operations which utilise a Runway 05 arrival and Runway 23 departure orientation. This arrangement confines low level flight paths over the less populated areas to the south and south-west of the Airport Site.

Design refinements which were applied throughout the preliminary design phase for RRO (as well as for day time operations) focused on seeking to minimise tracking of flight paths over high density inhabited/residential (and other noise sensitive) areas such as Camden, Silverdale, Wallacia and Warragamba. This also included consideration of balancing impacts to existing wilderness and other sensitive areas (noting that for some options this resulted in some flight paths maximising overflight of low or unpopulated areas to avoid maximising overflight of wilderness areas).

Further discussion regarding the proposed reciprocal runway operations and noise impacts and preferred noise abatement procedures associated with these operations is provided in Chapter 7 (The project).

Impacts to Defence sites

Defence operates a number of aircraft that regularly access the Sydney Basin. These include military transport, fast jet aircraft, and helicopter operations. Consultation has been conducted with the Department of Defence at regular intervals to confirm that the flight paths developed would support Defence operations and establish the suitability of the designs to provide a viable future access capability.

Interaction with RAAF Base Richmond

The way in which aircraft accessing WSI would interact with the RAAF Base Richmond operations has been developed through ongoing consultation with Defence through the creation of the Defence Airspace Technical Working Group (DATWG). The intention of the working group was to negotiate suitable solutions and broad procedures that would be used to operate WSI (including arrival and departure flight paths transiting overhead of the airbase), whilst maintaining continued RAAF operations.

Ongoing discussion within the DATWG led to the development of a solution which enabled arrival and departure flight paths that would cross towards the eastern and southern sides of the existing restricted airspace area.

Co-ordination will continue to occur with Defence into the detailed design phase of the project, in order to finalise the shape of the restricted airspace so that it meets Defence's future needs.

Interaction with Orchard Hills Defence Establishment

As described in Chapter 4 (Project setting) the Defence Establishment Orchard Hills is a RAAF operated facility. It is located approximately 4 nm (around 7 km) a north of WSI. It has a restricted airspace that is approximately 1.2 nm (around 2.2 km) in diameter and exists to prevent aircraft overflying an explosive risk area. As a result of the explosive risks associated with the facility, the airspace above the Defence Establishment Orchard Hills is not accessible to flying activity while the site is in use.

Consultation between the project team and the Department of Defence has been ongoing since 2017. In anticipation of the WSI airspace design process, the Department of Defence undertook a review of its airspace requirements at the Defence Establishment Orchard Hills and reduce the operating hours of this facility to generally between Monday to Friday 9 am to 4 pm. In addition, ongoing consultation between the Department of Defence and the design team led to an agreement to initiate a reduction in the lateral extent of the restricted area above the facility to accommodate the new flight paths. This allowed the design team to consider alternate options for flight paths within the vicinity of this facility.

Following confirmation of the area and time within which potential flight paths could occur, all of the preliminary design jet flight paths that depart from Runway 05 incorporated a left turn in close proximity to the Defence Establishment Orchard Hills. The design process considered various refinements to avoid this site while also considering the other key constraints in this area (such as existing Sydney (Kingsford Smith) Airport flight paths and the need to minimise impacts to the Bankstown Airport control zone).

Airspace structure

As described in Chapter 3 (Introduction to airspace), controlled airspace is an airspace of defined dimensions within which air traffic control services are provided to IFR flights and to VFR flights in accordance with the airspace classification. The airspace structure of flight paths for WSI is expected to be controlled airspace (which refers to the controlled airspace surrounding major airports). Within this airspace, both IFR and VFR flights are permitted and must communicate with air traffic control).

In designing the airspace structure for WSI, every effort was made (in line with the functional requirements), to minimise the impact on Bankstown Airport and Sydney (Kingsford Smith) Airport operations as well as existing flying training areas and VFR corridors granting equity of access to the Sydney Basin. To achieve this throughout the flight path design refinement, consultation was conducted with key industry bodies and operators from Camden and Bankstown airports to develop the proposed airspace structure presented in Chapter 7 (The project).

Of specific note during the refinement process with reference to the proposed airspace structure:

- the north-east control zone boundaries of the WSI control zone were optimised to align with expected VFR tracking
- the south-east control zone boundaries were optimised to reduce constraints between Bankstown Airport and WSI operations
- the control area lower levels were raised wherever possible to maximise opportunities for VFR flight over the GBMA.

Of necessity, some alignment and optimisation has been undertaken to ensure that the airspace being assigned to protect WSI aircraft operations, integrates safely and efficiently into the existing airspace model.

Equity of access – Interaction with Bankstown and Camden airports

The preliminary design phase functional requirements identified the need for the airspace design to provide equity of airspace access within the Sydney Basin, wherever possible. Notwithstanding this, the introduction of an airspace structure around WSI requires some reduction to the lateral extent of Flying Training Areas D552, D556A and D556B. These volumes of airspace are utilised by flights operating out of Bankstown and Camden airports.

As part of the preliminary design process, further consideration of the functional requirement to minimise the loss of airspace available for flying training was undertaken. This was considered through the development of a series of flight path refinements for arriving and departing aircraft which positioned the flight paths primarily to the west of WSI, in order to reduce the impact on VFR operations in the affected flying training areas for Bankstown and Camden airports. The resultant iterative process resulted in the identification of a generally north-east to south-west line of restriction across the existing flying training zones.

New flying training areas are expected to be introduced to the north and south of the Sydney Basin to replace those lost due to the WSI airspace structure. These are described in Chapter 8 (Facilitated changes) and are subject to a separate airspace change proposal, depending on the extent of the changes.

6.3.2.3 Identification of the preferred design for environmental assessment

Overall, the preliminary design phase considered 9 separate refinements/iterations of the flight paths to arrive at the preferred preliminary design. Figure 6.13 to Figure 6.15 provides a high level comparison between the proposed flight paths identified at the end of the planning phase (i.e. refined Concept W) and the preliminary design phase (i.e. the preliminary flight path designs). As with Figure 6.11 and Figure 6.12, for ease of comparison of the various options, only the nominal centreline flight paths have been shown.

Further detail regarding the description of each of the flight paths, based on the runway operating mode and time of day is provided in Chapter 7 (The project).

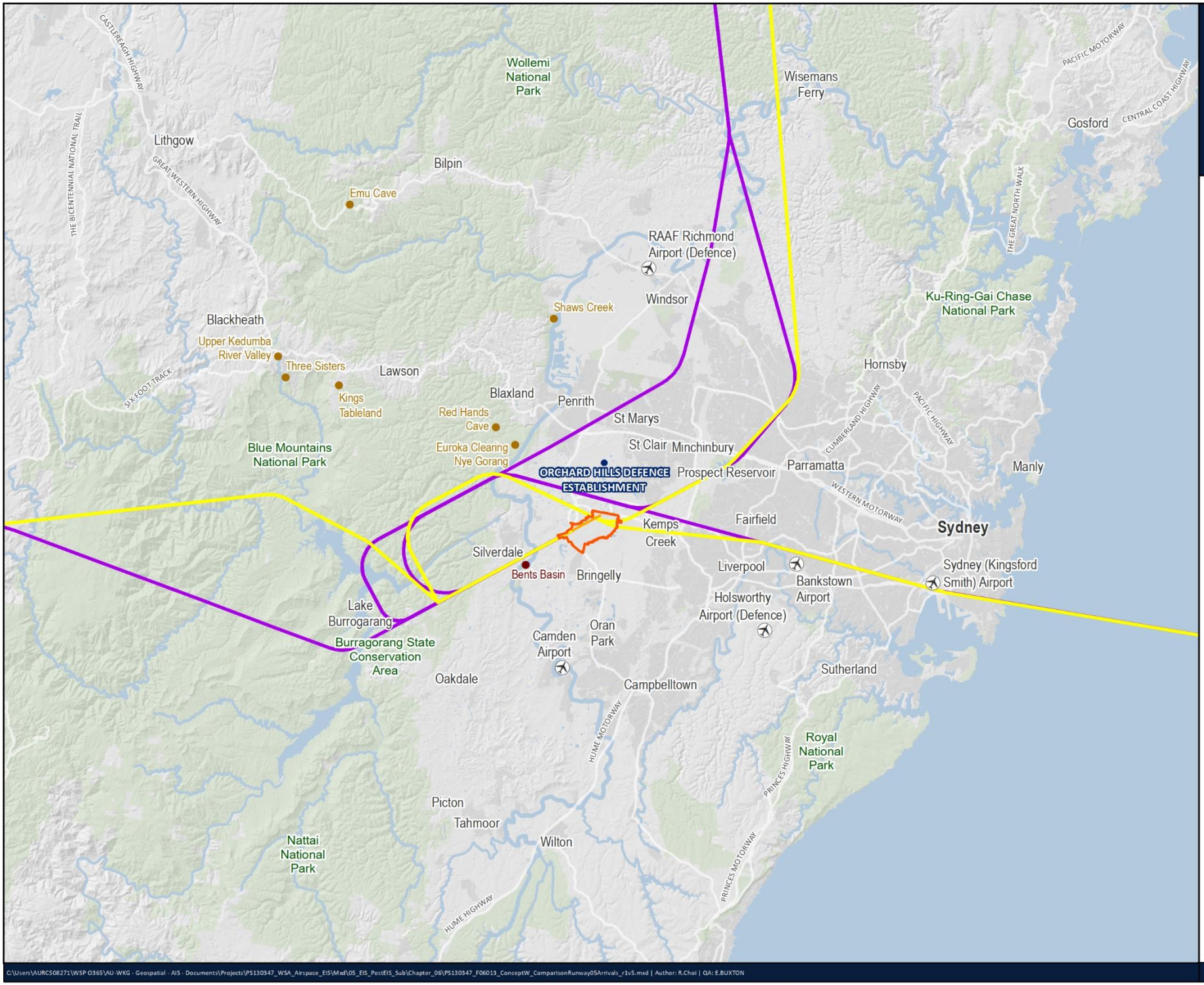


Figure 6-13

Comparison of Concept W and preliminary design flight paths
(05 arrivals operating mode)

Legend

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

Flight Paths

- Indicative Concept W arrivals flight path (05 arrivals)
- Indicative Preliminary design flight path (05 arrivals)

0 10 20 km

Coordinate system: GDA 1994 NSW Lambert

Scale ratio correct when printed at A4

1:600,000 Date: 31/07/2023

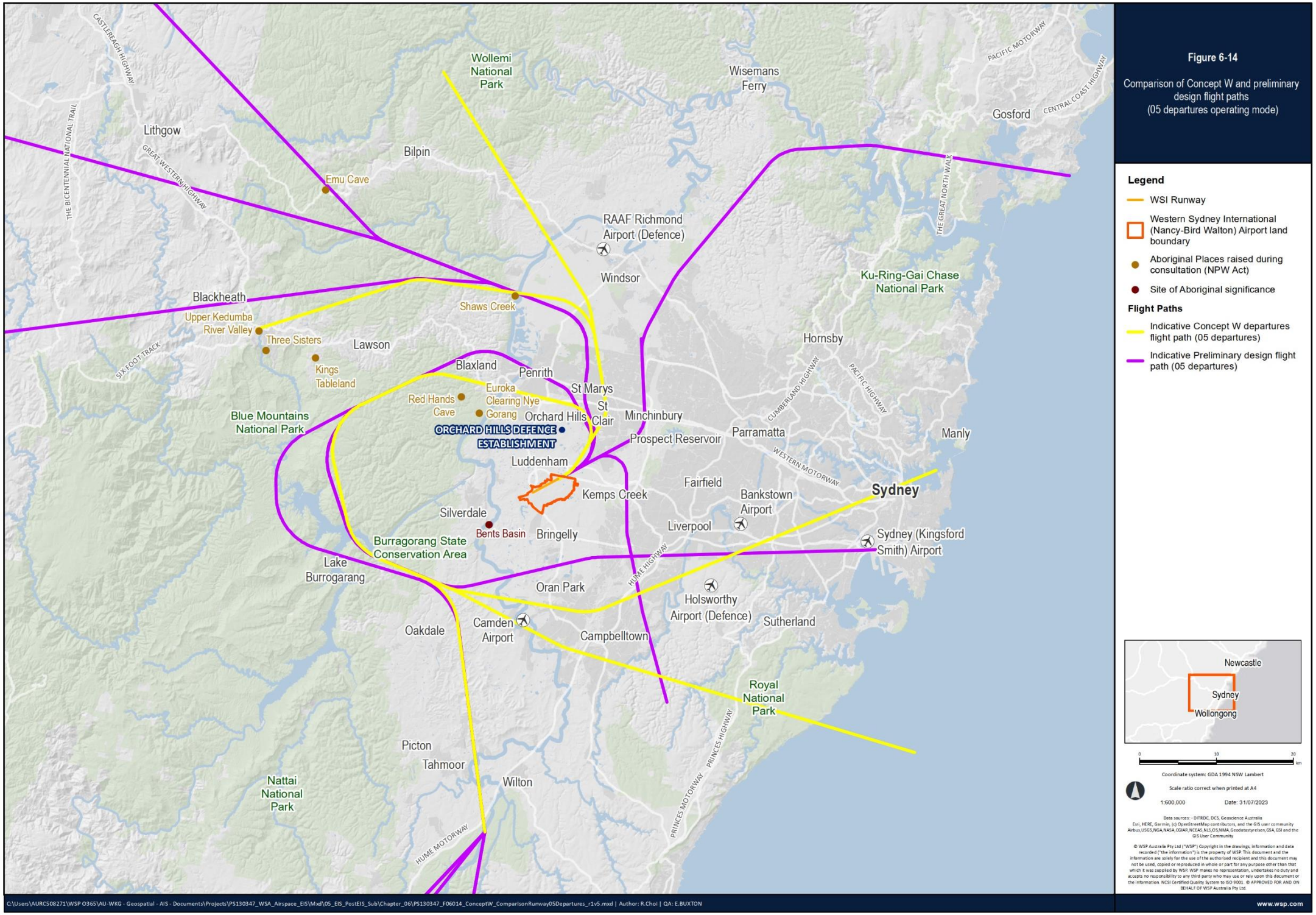


Figure 6-14

Comparison of Concept W and preliminary design flight paths
(05 departures operating mode)

Legend

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

Flight Paths

- Indicative Concept W departures flight path (05 departures)
- Indicative Preliminary design flight path (05 departures)

0 10 20 km

Coordinate system: GDA 1994 NSW Lambert

Scale ratio correct when printed at A4

1:600,000 Date: 31/07/2023

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

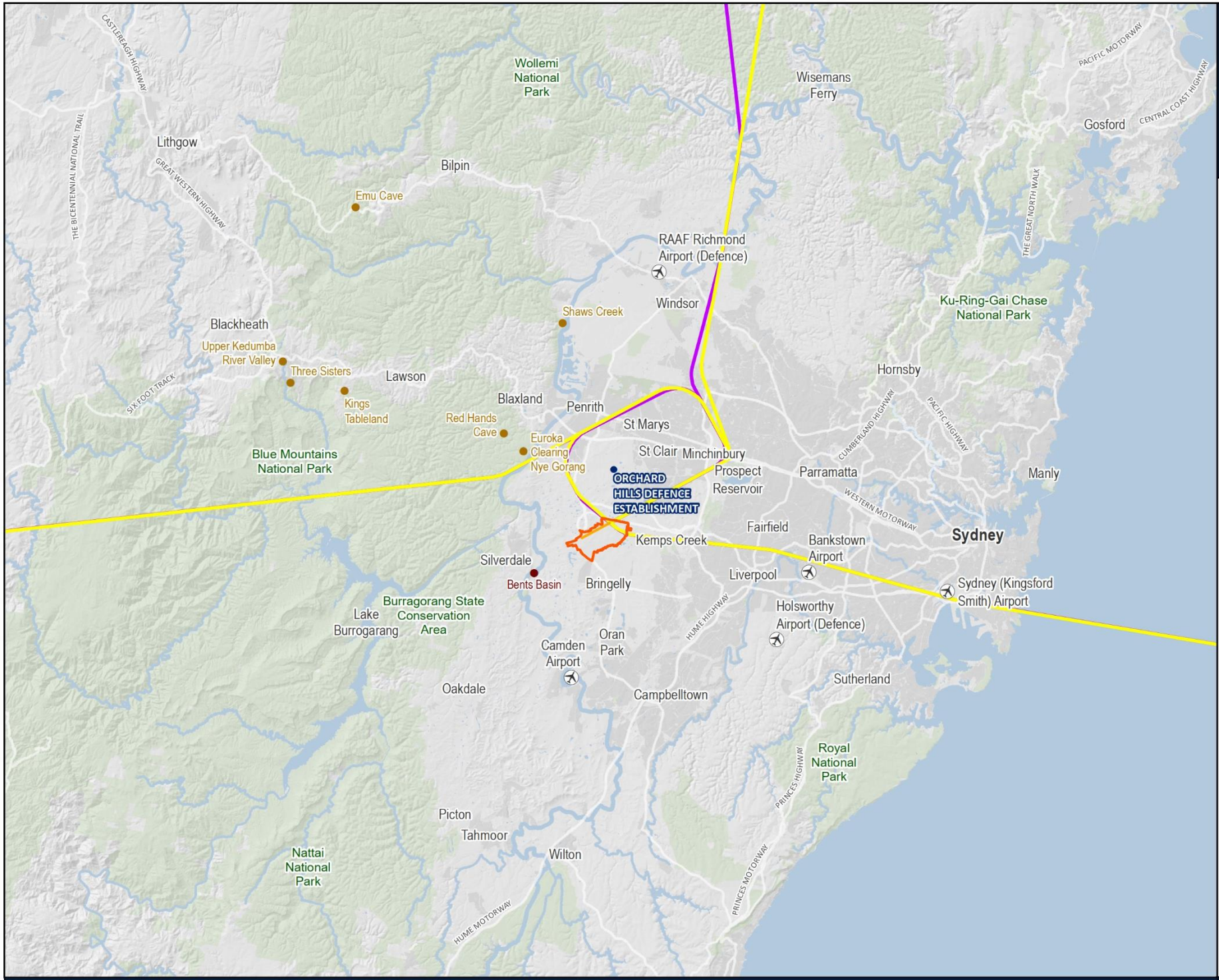


Figure 6-15

Comparison of Concept W and preliminary design flight paths (23 arrival operating mode)

Legend

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

Flight Paths

- Indicative Concept W arrivals flight path (23 arrivals)
- Indicative Preliminary design flight path (23 arrivals)

0 10 20 km

Coordinate system: GDA 1994 NSW Lambert

Scale ratio correct when printed at A4

1:600,000 Date: 31/07/2023

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

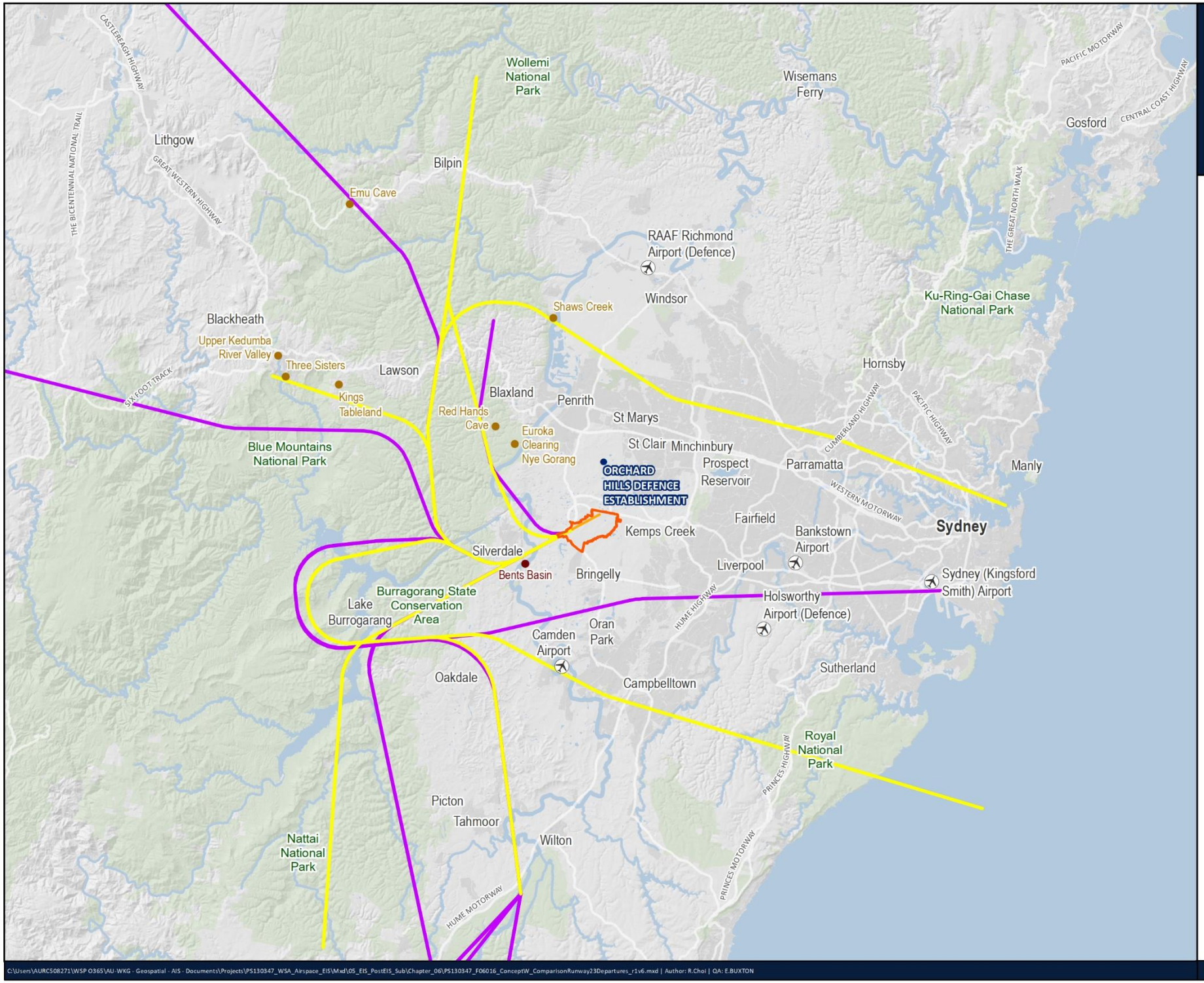


Figure 6-16

Comparison of Concept W and preliminary design flight paths (23 departures operating mode)

Legend

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

Flight Paths

- Indicative Concept W departures flight path (23 departures)
- Indicative Preliminary design flight path (23 departures)

0 10 20 km

Coordinate system: GDA 1994 NSW Lambert

Scale ratio correct when printed at A4

1:600,000 Date: 31/07/2023

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

6.4 Future phases

Following completion of the preliminary design (and completion of the current environmental assessment – this document), a series of future phases will still be required to be completed in order for the proposed changes to be implemented. These include:

- detailed design
- implementation, and
- a post-implementation review of the implementation of the flight paths.

A summary of each of these phases is provided in the following sections.

6.4.1 Detailed design phase

The detailed design phase will include further evaluation and refinement of the proposed selected airspace design for implementation based on feedback received from the community and other technical stakeholders such as airlines and industry bodies. This includes refinement of the preliminary design (as outlined in Chapter 7 (The project)) and further development of the design to a level appropriate to secure regulatory approvals.

The detailed design phase will include a review of feedback received during community consultation on this Draft EIS and the advice or recommendations received from the Minister for the Environment and Water following the completion of the Environmental Assessment Phase. This phase will also include:

- further development and simulation testing of the proposed airspace design and flight paths, including consideration of comments received during community consultation, and ongoing input from all stakeholders to ensure the operating procedures are fit for purpose and suitable for implementation
- further, a safety and hazard assessments to ensure that risks have been identified and managed to the lowest practicable level
- finalisation including evaluation of the viability of noise abatement procedures identified through the preliminary design phase and considered in the EPBC Act process, including options for managing the noise impacts of night-time operations.

6.4.2 Implementation of the flight path design

The implementation phase will include conducting all activities required to implement changes to existing Sydney Basin flight operations. This phase will also include the regulatory certification and authorisation of the proposed airspace design and its implementation. During the implementation phase, a series of operational readiness activities will take place. Activities during this phase will include:

- approval of the airspace classification by CASA (in the form of an airspace change proposal (ACP))
- validation of the final airspace design and flight paths
- identification of the appropriate operational readiness date and Aeronautical Information Regulation and Control date to ensure safe and efficient dissemination of aeronautical information
- flight path validation and runway aids/technology testing and training of air traffic controllers
- notifying airspace and flight path changes to aviation industry stakeholders and the community ahead of the commencement of air operations at the WSI. This would be achieved through publication of revised Aeronautical Information Management data and stakeholder and airspace user briefings regarding the changed airspace design
- commencement of noise abatement procedures and noise management measures through the airspace and flight path design process.

The facilitated changes to the Sydney Basin airspace would be introduced in 2026 on a scheduled Aeronautical Information Regulation and Control (AIRAC) date, prior to the official opening of WSI. Introduction of these changes ahead of WSI's opening will allow pilots and air traffic control to adjust their systems and become familiar with changes to current procedures before WSI traffic is introduced, and minimise the likelihood of conflicts or incidents in the airspace. These facilitated changes are described in Chapter 8 (Facilitated changes).

6.4.3 Post-implementation review

Following 'opening day' there would continue to be ongoing monitoring of the operation of the design as part of standard business practices for new airspace and flight paths projects. Monitoring of the operation would be undertaken by key operational stakeholders, in particular Airservices Australia, the Department of Defence and CASA. It is standard practice for Airservices Australia to conduct a Post Implementation Review of significant airspace changes.

Chapter 7 The project

This chapter describes the key features of the project, including its air traffic control procedures, runway modes of operation, noise abatement procedures and proposed flight paths when Western Sydney International (Nancy-Bird Walton) Airport (WSI) is opened. The changes to the Sydney Basin airspace required to support WSI operations also form part of the project description and are described in Chapter 8 (Facilitated changes).

The information reflects the flight paths and operating parameters that Department of Infrastructure, Transport, Regional Development, Communication and the Arts (DITRDCA) and Airservices Australia understand would be adopted for operations on the single runway following completion of WSI. Operating parameters not only affect operational and commercial viability, but also the safety of operations and the potential for environmental and social impacts.

The mitigations inherent in the design, in particular the opportunities for noise abatement in the runway modes of operation, are also presented. These are presented in the context of international and Australian standards and recommended practices for the design and operation of airspace for single runways.

Aviation terminology and concepts presented in this chapter are explained in Chapter3 (Introduction to airspace) and the airspace and flight design process (flight path development) is described in Chapter 6 (Project development and alternatives).

The information in this chapter provides, directly and indirectly, the basis for the impact assessments within this Draft EIS.

7.1 Project overview

The project is the development of proposed flight paths and a new controlled airspace volume for single runway operations at WSI, including the associated air traffic control and noise abatement procedures, runway modes of operation and facilitated changes to airspace.

The airspace design is for single runway operations, as approved by the Airport Plan, and has been developed on the requirement for WSI to operate 24-hours, 7 days a week. The airport infrastructure at WSI has been designed to be an all-weather operation. The eventual use is for commercial passenger and freight aircraft.

The scope of airspace operations for the project is restricted to:

- standard instrument arrivals (STARs) from when an inbound aircraft leaves the higher level enroute sector to when it joins its final alignment for landing
- standard instrument departures (SIDs) from when a departing aircraft leaves the runway and is established in a stable configuration to safely execute turns to join the higher level enroute sector for its destination
- taking off (from start of roll for aircraft) or landing (until an aircraft exits runway).

These phases of flight are depicted in Figure 3.11 of Chapter 3 (Introduction to airspace).

The project does not consider the operation of aircraft when performing manoeuvring operations on the runway and taxiway system on their way to or from their parking positions at the terminals (as assessed in the 2016 EIS).

No construction works or changes to the physical ground infrastructure approved and currently under construction are required for the project. This includes the airfield, terminal, landside layout and facilities, navigational aids including instrument landing systems, and lighting systems as outlined in Chapter 4 (Project setting).

Operating a new airport offering domestic, international and freight air services will require changes to the current Sydney Basin airspace and its airspace classification structure – likely the most complex and busiest airspace in Australia (refer to Chapter 4 (Project setting)).

As presented in this chapter, the project would introduce of a new controlled airspace volume (Section 7.2) to contain the WSI air traffic control procedures (Section 7.3) and flight paths (Section 7.5), which determine where and how aircraft arrive and depart the airport's runway.

Consequential changes to the established Sydney Basin airspace system have been minimised to the extent practical and the required adjustments are described in Chapter 8 (Facilitated changes).

The key features presented in this chapter are preliminary and subject to finalisation as described in Chapter 6 (Project development and alternatives). Using preliminary flight paths for identifying and assessing the nature and scale of impacts arising from operations at WSI is considered a valid approach and is generally consistent with the environmental assessment approach for airspace at other airports.

For the purposes of this Draft EIS, the location of the project is the airspace within the Sydney Basin that captures each WSI flight path extending to around 45 nautical miles (nm) (83 kilometres (km)) from the single runway and other airspace changes as presented in Chapter 8 (Facilitated changes). The coordinates for the project extents are presented in Appendix E. Not all this area would be overflown or otherwise affected by WSI flight paths or changes to existing flight paths (refer to Chapter 10 (Approach to impact assessment)).

7.2 Volume of aircraft traffic

An aircraft movement is defined as a single landing or take-off event.

As outlined in Chapter 1 (Introduction), the approval for WSI is limited to single runway operations with the capacity to handle up to 10 million annual passengers and around 81,000 air traffic movements per year by 2033, including freight operations. In the medium to longer term, WSI's airfield and terminal facilities would be expanded incrementally to handle up to 37 million annual passengers and around 226,000 air traffic movements per year in 2055. This includes both jet and non-jet (for example turbo-prop) aircraft.

This phasing of operations is represented by particular years as depicted in Figure 7.1 and forms the basis of the forecast schedules (refer to Section 7.2.1) and assessment years (refer to Chapter 10 (Approach to impact assessment)) for the purpose of this Draft EIS. The years and reasons for selection are:

- **2033** – representing 7 years after opening, when passenger numbers at WSI reach the planned design capacity for the initial Stage 1 terminal development of 10 million passengers per year. The volumes predicted for 2033 provides a more appropriate representation of mature levels of activity (and therefore potential impacts) than those predicted in 2026.
- **2040** – representing continued growth at WSI, at a point when the airport reaches 15 million passengers per year.
- **2055** – representing a year as the single runway approaches capacity. While significant enhancements to aircraft technology are likely by this timeframe, the forecast schedules have not considered technological step changes (for example, upgrading of aircraft fleets) and have instead relied on existing and soon-to-be commissioned aircraft types. This provides a conservative impact assessment.

The number, type and timing of daily aircraft movements expected to operate from WSI influences the runway infrastructure required as well as the way in which the airspace is used by aircraft (refer to Chapter 3 (Introduction to airspace)). The number of aircraft arriving and departing varies throughout the day and between days and months.

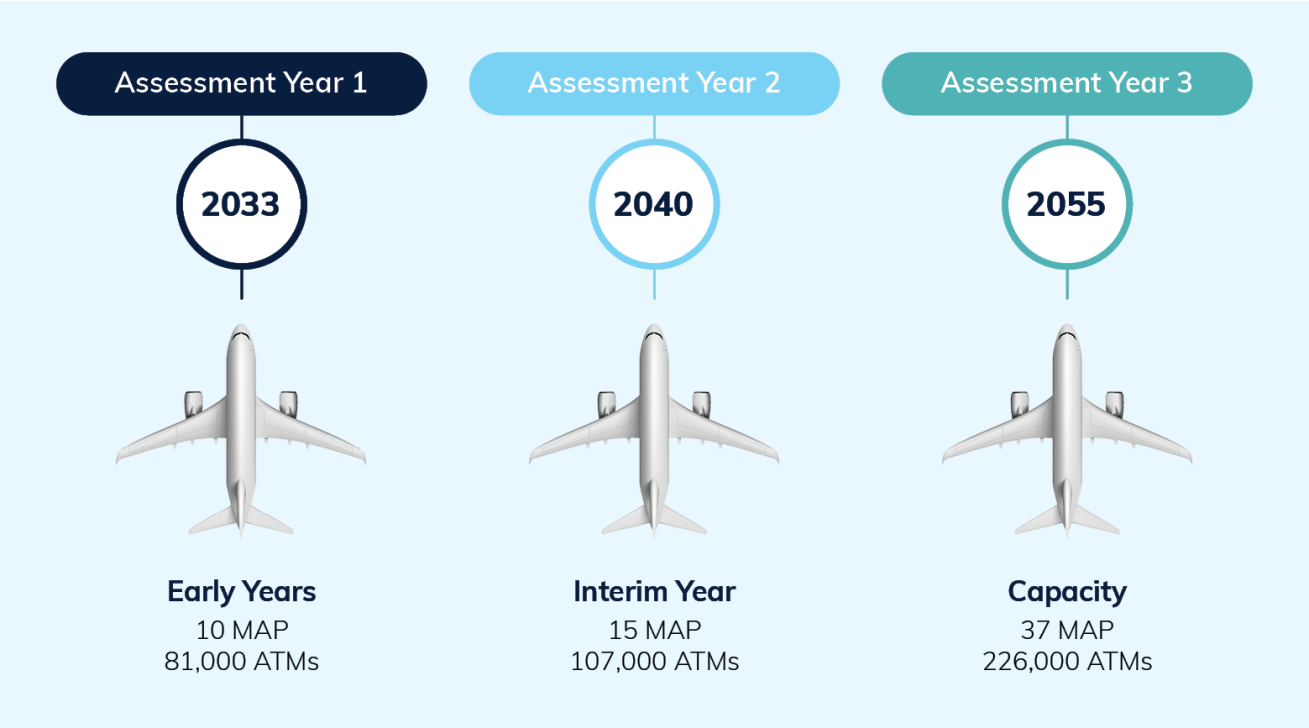


Figure 7.1 Volume of passenger and air traffic movements over single runway operations

7.2.1 Forecast schedules

As a completely new airport facility, WSI does not have access to historic operations and daily aircraft movement profiles to extrapolate into future years of operation. Consequently, Western Sydney Airport Company Limited (WSA Co), as the airport lessee company for WSI, has provided projected demand schedules – or 'forecast schedules' for aircraft movement – for the 3 assessment years.

These projections break down each movement by the type of aircraft, operation type (arrival or departure), time of operation and port of origin or destination. The forecast schedules for 2033 and 2055 form the basis of modelling undertaken to inform the assessment of impacts for this Draft EIS. The forecast schedules for 2040 were used in the aircraft noise assessment (refer to Chapter 11 (Aircraft noise).

All forecast schedules were developed as accurately as possible by WSA Co and are considered sufficient for the purpose of this assessment. They are considered the most reliable source at this time given WSA Co, as the ALC, is the owner of the airport lease granted by the Australian Government, and responsible for the development and operation of WSI.

The forecast schedules are therefore considered sufficient for the purpose of this assessment.

The forecast schedules 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.

7.2.2 Number of flights

The various runway modes of operation (refer to Section 7.4) and associated air traffic control procedures (refer to Section 7.3) generate a certain movement capacity (the number of aircraft that can safely land or take off in a certain period). Traffic demand (the number of aircraft that wish to land or take off in a certain period) therefore affects which available modes of operation are used. Weather conditions and other weather phenomena such as fog, low cloud and low visibility conditions can also adversely influence runway and airspace movement capacity; however, this can be managed through navigational systems and aids.

Northern Summer (NS)/Northern Winter (NW) is the internationally acceptable method of describing scheduling seasons and the convention adopted by the Australian Aviation industry. The NS/NW convention typically captures the overall local seasonality of flights, considering time change (that is, daylight saving). The forecast schedules provided by WSA Co reflect an average week schedule derived from the NS/NW airline schedule seasons for each future year. The average weekly schedules were "annualised" by taking the relative proportions of days in the NS/NW airline schedule seasons to create a table with 365 days' worth of aircraft movements. This was the basis for the daily and hourly movement data presented Section 7.2.2.1 and Section 7.2.2.2 respectively.

7.2.2.1 Daily movements

Projected total daily movements of freight and passenger aircraft are presented in Table 7.1. The projected aircraft movement numbers represent an average day.

Table 7.1 Total predicted daily aircraft movements at 2033, 2040 and 2055

Single runway operations	Aircraft movements per day (average day)		
	Passenger	Freight	Total
Early years (2033)	195 (88%)	27 (12%)	222
Interim year (2040)	261 (89%)	33 (11%)	294
Approaches capacity (2055)	569 (91%)	53 (9%)	623

By comparison, in 2019 Adelaide Airport (with one main runway), handled on average 291 aircraft movements per day.

Table 7.2 shows the projected daily aircraft movements for the early years (2033), an interim year (2040) and for when the single runway is expected to operate close to capacity (2055) – as summarised in Table 7.1. This breakdown of the aircraft family is based on those currently in service and not all types of aircraft listed in Table 7.2 are expected to be operating in 2055. This is because aircraft technology continues to improve and airlines replace older aircraft with newer models which are generally quieter and more fuel efficient, as has been the trend over previous decades. There are no known plans to accommodate helicopter operations at WSI.

Table 7.2 Predicted average daily aircraft movements by aircraft family at 2033 and 2055

Aircraft family	Aircraft movements per day		
	Early years (2033)	Interim year (2040)	Approaching capacity (2055)
Passenger aircraft movements			
Airbus A220	21	21	19
Airbus A320	46	34	126
Airbus A321	18	28	44
Airbus A330	12	24	45
Airbus A350	2	8	47
Boeing B737	71	100	171
Boeing B777	2	2	32
Boeing B787	6	23	61
Bombardier Dash 8	13	13	13
Saab SF340	4	8	12
Subtotal	195	261	569
Freight aircraft movements			
Airbus A321	11	15	23
Airbus A330	3	3	4
Airbus A350	–	2	3
Boeing B737	9	10	19
Boeing B747	1	1	1
Boeing B777	3	2	3
Subtotal	27	33	53

Figure 2.4 in Chapter 2 (Strategic context and need) provides a comparison of various commercial aircraft, providing some scale for the various aircraft families described above.

7.2.2.2 Hourly movements

Other important metrics in airspace design are periods of concentrated demand including the peak hourly movement rate demand and the peak period durations. These have been estimated from the forecast schedules as described in Section 7.2.2 for the early years (2033), for an interim year (2040) and for when the single runway system is operating close to capacity (2055), as shown in Figure 7.2.

The movement rate demand influences the runway modes of operation which are feasible at various times of the day and night, including the application of the Reciprocal Runway Operations (RRO) mode (refer to Section 7.4).

It is expected that the WSI single runway system (05/23) will be capable of processing around 48 to 49 aircraft movements per hour subject to adverse weather influences and a reasonable balance in arrival and departure demand.

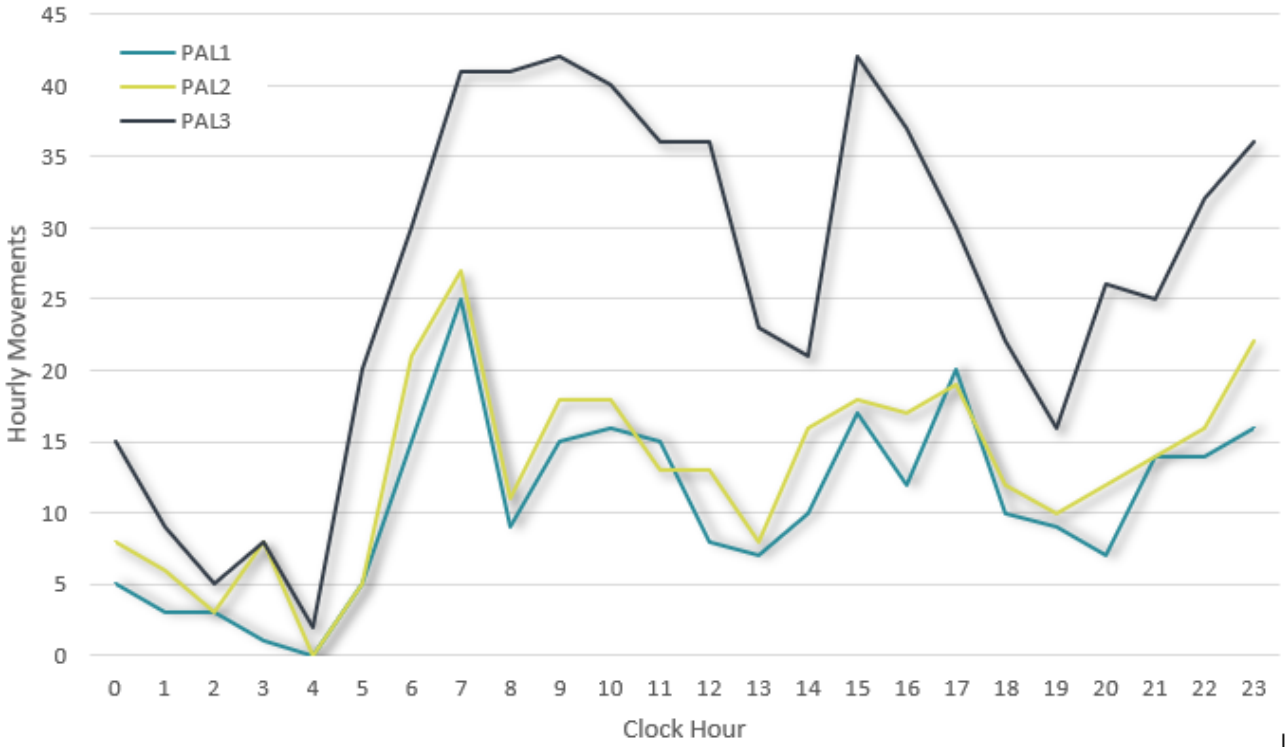


Figure 7.2 Daily predicted aircraft traffic movements over future years 2033, 2040 and 2055

7.3 Air traffic control procedures for WSI

Runway operations are managed by air traffic control using air traffic control procedures to ensure safe and efficient operations of arriving and departing air traffic.

Each controlled airport will also have a set of procedures specific to its operation. The set of procedures WSI is required to have, and the documentation to be made available to pilots and/or air traffic control as presented in this chapter would include:

- Aeronautical Information Package (Section 7.3.1)
- STAR and SIDs (Section 7.3.2)
- standard clearances and coordination (Section 7.3.3)
- weather criteria for visual and instrument landings (Section 7.3.4)
- noise abatement procedures (Section 7.3.4)
- criteria for selecting the operating runway (or the 'nominated' runway) (Section 7.3.6)
- airport specific separation and sequencing requirements for arriving and departing aircraft (Section 7.3.7)
- intersection departures (Section 7.3.8).

Visual and Instrument Flight Rules govern how aircraft are flown and how safe separations are maintained in differing meteorological conditions. All WSI procedures have been or would be designed to be flown under Instrument Flight Rules.

7.3.1 Aeronautical Information Package

The pilot must not commence a flight unless the latest editions of the aeronautical maps, charts and other aeronautical information and instructions, are carried in the aircraft and are readily accessible to the flight crew. These would be published in the Aeronautical Information Package provided by Airservices Australia when the airspace change proposal is approved by the Civil Aviation Safety Authority (CASA). This would occur during the implementation phase of the airspace and flight path design process.

The relevant aeronautical information is that which is applicable:

- to the route to be flown; and
- to any alternative route that may be flown on that flight.

The Aeronautical Information Package is based on weather and visual criteria and comprises:

- Aeronautical Information Publication book
- Aeronautical Information Publication supplements and aeronautical information circulars
- Departure and approach procedures (may designate specific noise abatement procedures at some airports)
- Designated airspace handbook
- Enroute supplement Australia
- Aeronautical charts.

The Aeronautical Information Package can also contain 'Special Procedures' and 'Fly Neighbourly Advice' for areas not associated with specific airports. A Fly Neighbourly Advice is currently published for the Blue Mountains National Park.

The application of these publications is included in relevant sections of this chapter.

7.3.2 STARs and SIDs

To achieve safe segregation of aircraft and minimise the noise effects on the community, aircraft would arrive and depart at WSI according to a set of flight path procedures known as STARs and SIDs. SIDs connect the runway to the enroute flight paths and STARs connect the runway from the enroute flight paths. STARs and SIDs also specify the directional and height limits that pilots are required to observe when flying into and out of a destination. SIDs may also differ depending on the aircraft performance (jet versus non-jet aircraft).

These SIDs and STARs are designed and coded to Performance Based Navigation (PBN) standards (representing satellite-based navigation technologies) whereas conventional technologies employed fixed ground-based beacons to guide aircraft along published routes via waypoints (specified locations used to define positions along an air navigation route).

The application of PBN standards in the preliminary airspace design of WSI SIDs and STARs permits aircraft flight paths to be specified in position both laterally, and vertically. The ability to accurately describe these departure and arrival flight paths has been used in the preliminary design process to strategically de-conflict the flight paths from concurrent and crossing track operations for WSI as well as all other Sydney Basin operations. This airspace design approach delivers robust "Safety by Design" outcomes as per the CASA Manual of Standards Part 172 – Air Traffic Services and increases the reliability and efficiency of operations reducing the level of interaction required by air traffic control to tactically manage aircraft (refer to Section 7.3.7).

The concepts of SIDs, STARs, PBN, waypoints and other navigation specifications such as Required Navigation Performance (RNP) are described in Chapter 3 (Introduction to airspace).

The WSI flight paths are presented in Section 7.5.

7.3.2.1 STARs

WSI STARs have been designed as Closed STARs – a method of processing arrivals that enables aircraft to make its approach and descent using modern aircraft on-board flight management systems with limited air traffic control intervention. The design has used PBN incorporating the RNP rules.

A Closed STAR provides track, speed and altitude guidance from the exit point of the enroute segment of flight to either an intercept of a ground-based approach aid such as the Instrument Landing System (ILS) – shown conceptually by Figure 7.3 – or to the commencement point of an RNP or RNP-Authorisation Required (AR) arrival procedure.

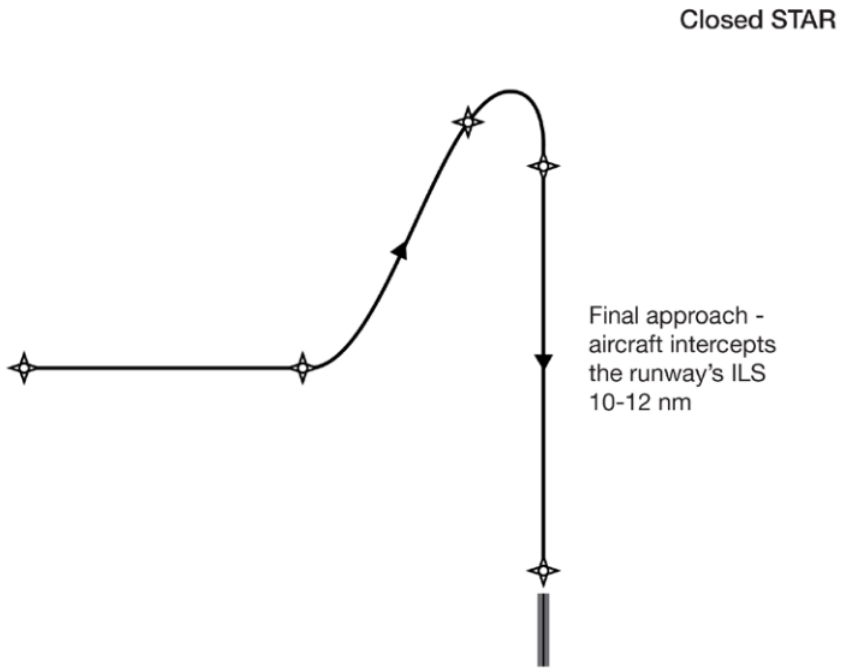


Figure 7.3 Closed STARs arrivals management system using ILS

The WSI STARs design maximises to the extent practical the ability for arriving aircraft to undertake a continuous descent approach, delivering environmental and community benefits through reduced fuel burn, emissions and reduced engine noise (further described in Chapter 3 (Introduction to airspace)).

The Closed STARs model enables accurate fuel time and energy management for aircraft with flight management system capability although it may not provide the flexibility required to maximise runway capacity.

7.3.2.2 SIDs

There is greater flexibility in the design of SIDs to use the latest technology such as PBN-RNP standards. Some SIDs at WSI have multiple turning points so aircraft overfly lower density residential and industrial areas, open space and urban green space. SIDS assigned to jet aircraft will describe the full route from the runway to the enroute airspace structure.

Other SIDs allocate more track nautical miles for heavy aircraft on hot days to climb to a higher altitude over open space and urban green space before flying over a populated area.

Non-jet departures would be managed via SIDs for the initial segments, then processed by air traffic control to join the enroute airspace structure. This form of processing allows air traffic control to separate non-jets from the faster jet operations. Non-jet night departures would utilise Jet SIDs.

The WSI SID design also applies continuous climb operations to the extent practical to deliver environmental and community benefits. Such benefits include reduced fuel burn and emissions and reduced engine noise. This is achieved by minimising intermediate level segments, which require increased levels of engine thrust, to the extent possible (refer to Chapter 3 (Introduction to airspace) for further explanation).

7.3.3 Standard clearances and coordination

To manage large volumes of air traffic that operate in the Sydney Basin safely and predictably, air traffic control issues clearances and coordinates internally using a series of pre-coordinated, standard clearances and procedures. These standard clearances define the way air traffic control process aircraft onto SIDs and STARs and determine the number of aircraft that will fly along specific flight paths.

The method of using pre-coordinated, standard clearances and procedures would continue to be used by air traffic control to manage WSI flight paths. Both WSI and Sydney (Kingsford Smith) Airport can operate independently regardless of which runway direction is in operation at either airport.

7.3.4 Weather criteria for visual and instrument landings

A set of generic weather criteria is applied by air traffic control at Australian airports and adjusted to suit individual airport conditions to determine whether an instrument or visual approach is prescribed. Broadly the criteria are as follows:

- where most of the cloud cover is below 2,500 feet (ft) (760 metres (m)) above ground level and the visibility is 5 km or less – an instrument approach will be nominated on the computerised automatic terminal information service; or
- where most of the cloud cover is above 2,500 ft (760 m) above ground level and the visibility is 5 km or more – a visual approach may be nominated.

Similar approach nomination criteria would apply once WSI is operational. For WSI, whenever there is cloud or reduced visibility on the approach path below the Initial Approach Fix (IAF) level, an instrument approach will be expected. This is likely to be 4,000 ft (1.2 km) for Runway 05 and 2,500 ft (760 m) for Runway 23. Given the STARs are only designed to connect to instrument approaches, it is possible that the primary instrument approach will be nominated all the time (to be decided in consultation with WSI Tower air traffic control in the detailed design phase).

7.3.5 Noise abatement procedures

The purpose and limitations on the use of noise abatement procedures along with some generic examples are described in Chapter 3 (Introduction to airspace).

Noise abatement procedures are published for an airport in the Aeronautical Information Package (enroute supplement Australia component) and implemented by air traffic control, airports or airport owners. They contain instructions to pilots and air traffic control on the runways, flight paths and procedures that should be followed to minimise the impacts of aircraft overflight noise on the community. The departure and approach procedures charts may designate more specific noise abatement procedures for some approaches and departures.

For a major airport like WSI, noise abatement procedures typically evolve over time, with Airservices Australia as the national Air Navigation Services Provider developing and reviewing the procedures in consultation with stakeholders. Stakeholders include aircraft operators, airlines, the airport operator, and Community Aviation Consultation Groups (CACGs). A CACG managed by WSA Co will replace the current Forum on Western Sydney Airport (FOWSA) closer to WSI opening.

Noise abatement procedures included in the preliminary design for WSI include the use of noise preferential flight paths which, where possible, direct aircraft operations away from noise sensitive areas. This includes the use of different flight paths between 11 pm and 5.30 am, when additional airspace flexibility is available as a result of substantially diminished Sydney (Kingsford Smith) Airport operations during this period.

Other noise abatement procedures which may be included in the final airspace design include:

- preferred runway modes of operation which give preference to runway operating directions which minimise the population exposed to significant level of aircraft noise (refer to Section 7.4.2)
- the use of noise abatement departure procedure climb profiles (discussed in Section 11.2 of Technical paper 1).

These noise abatement procedures for WSI would be developed or continue to be developed as part of detailed design following further community and stakeholder consultation including responses to this Draft EIS.

In deciding on a preferred order of runway use, WSI is limited in that it would be a single runway airport in Stage 1. As such, the possibility of developing crossing runway modes of operation in use at Sydney (Kingsford Smith) Airport, or dedicated use of one parallel runway over another such as in use at Brisbane Airport would not exist at WSI.

Only 2 runway directions are available (Runway 05 or Runway 23) to incorporate into a set of 'runway modes of operation' as part of the WSI specific noise abatement procedures.

The runway modes of operation for WSI are presented in Section 7.4.

7.3.6 Nominated runway

Air traffic control operating procedures require the selection of a runway direction for use, known as the 'nominated runway'. The nominated runway is advised to pilots by air traffic control and all aircraft are expected to use this runway unless there is an operational requirement to use another. Air traffic control must consider a set of specific conditions relating to weather, operational conditions and noise abatement procedures before nominating the runway for use.

The Aeronautical Information Publication book outlines the application of noise abatement procedures when nominating runways at Australian airports at ENR 1.5 section 9.1. Specifically:

- noise abatement procedures normally apply to all jet-propelled aircraft and other aircraft having a maximum take-off weight exceeding 5,700 kilograms (kg) (so not applicable to non-jet aircraft with a weight of less than 5,700 kg)
- where noise abatement procedures are prescribed, and air traffic control traffic management permits, the runway nomination provisions of the Aeronautical Information Publication book will be applied
- notwithstanding this, noise abatement as prescribed in the noise abatement procedures will not be a determining factor in runway selection under the circumstances outlined in Figure 7.4 (unless required by noise abatement legislation).

Aeronautical Information Publication Book ENR s1.5-42

Section 9.1.2 *a) in conditions of low cloud, thunderstorms and/or poor visibility;*

b) for runway conditions that are completely dry:

*(1) when the crosswind component, including gusts, exceeds 20 knots (kt) (37 km per hour)**

(2) when the tailwind component, including gusts, exceeds 5 kt (9 km per hour)

c) for runway conditions that are not completely dry:

*(1) when the crosswind component, including gusts, exceeds 20 kt (37 km per hour)**

(2) when there is a tailwind component;

d) when wind shear has been reported

e) when, in the opinion of the pilot in command, safety would be prejudiced by runway conditions or any other operational consideration.

*Note: when an airport has only a single runway, the continued operation in a crosswind is only limited by the certified crosswind capability of the operating aircraft types.

Figure 7.4 Extract from Section 9.1.2 of Aeronautical Information Publication Book ENR 1.5-42 (02 December 2022) (Airservices Australia, 2022a)

These requirements are applicable to all airports with a set of noise abatement procedures and controlled by air traffic control.

These conditions are further described in Section 7.4.

7.3.7 Aircraft separation and sequencing

CASA's Manual of Standards Part 172 – Air Traffic Services sets the minimum separation requirements for aircraft (vertical or lateral) which are applied in the design of SIDs and STARs. These build separation assurance into the system or "Safety by Design".

It is the responsibility of air traffic control to monitor aircraft compliance with expected aircraft trajectories. They would intervene where known severe air turbulence exists or where there are indications separation would cease to exist as planned.

Separation assurance has not been provided in the design where:

- 'open' (radar vectored (radar)) procedures are used, for example some non-jet SIDs
- tactical air traffic control measures would be more efficient
- sufficient separation is expected to exist in the normal climb and descent performance of the aircraft types involved in the procedure.

Where separation assurance is not currently provided in the preliminary airspace design, this will continue to be reviewed for safety outcomes through the airspace detailed design phase and may be incorporated if required (without materially changing the expected aircraft trajectories). A core element of Safety by Design is to deliver standardised procedures wherever possible and the introduction of variability in procedure must balance efficiency against safety.

WSI operations would also establish the sequence of arriving and departing aircraft by requiring them to adjust flight operation, as necessary, to achieve proper spacing.

Aircraft separation and sequencing requirements are further explained in Chapter 3 (Introduction to airspace).

7.3.8 Intersection departures

Air traffic control would permit intersection departures at WSI. This concept and its benefits are introduced in Chapter 3 (Introduction to airspace).

A number of runway/taxiway intersections are available at WSI in either runway direction to enable aircraft that do not operationally require the full length of the runway to safely take-off.

Figure 7.5 presents the basic configuration of WSIs single runway system and connecting taxiway network.

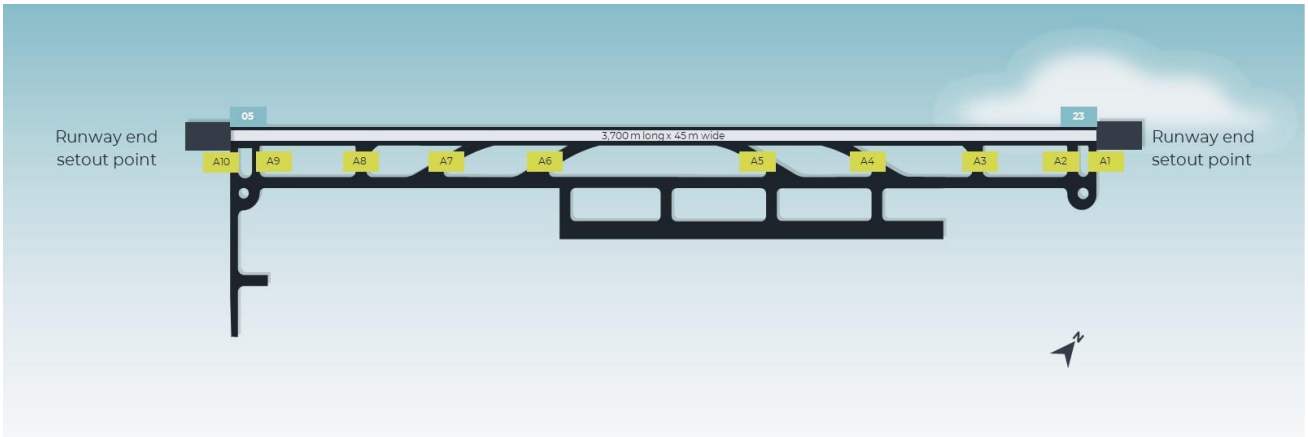


Figure 7.5 WSI Runway 05/23 and connector taxiways schematic layout

WSI intersection departures and their level of use would be part of the final airspace design.

Taxiways A1 and A2, A9 and A10 are 'full length' runway holding points and available to all types at all times. Taxiways A3 and A8 are 90 degree 'intersection' runway holding points and their availability is subject to aircraft payload and performance. Rapid exit taxiways are not expected to be used for departure under normal operating scenarios.

7.4 Runway modes of operation

Runway modes of operation refer to the direction in which aircraft take off and land. This section provides information on the different runway modes of operation available for WSI and in what situation these modes are applied. The concept of runway modes of operation is explained in Chapter 3 (Introduction to airspace).

The choice of a runway mode of operation is primarily informed by the weather (especially wind direction and strength) (refer to Sections 7.3.6 and 7.4.3). Other factors include the runway surface status, aircraft performance profile and capability, air traffic demand and airspace management procedures and potential impacts on surrounding communities, such as noise.

7.4.1 Description of runway modes of operation

The runway modes of operation for WSI are described in Table 7.3 and depicted in Figure 7.6. These include those for day (5:30 am to 11 pm) and night (11 pm to 5:30 am), with the reason for these time periods explained in Section 7.4.1.1.

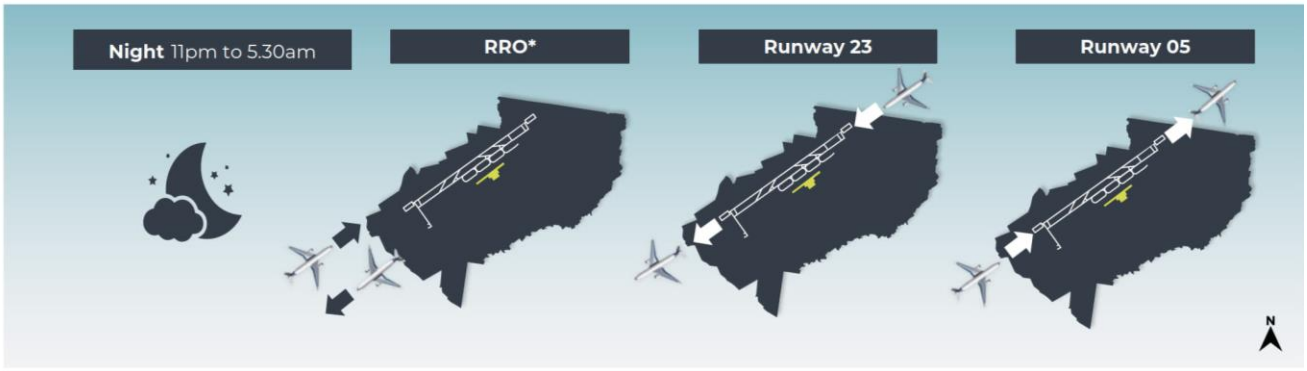
Table 7.3 Runway modes of operation[1]

Time	Hours of operation	Runway mode	Description
Day	5:30 am to 11 pm	05	All aircraft arrive from the south-west and take-off to the north-east
		23	All aircraft arrive from the north-east and take-off to the south-west
Night	11 pm to 5:30 am	RRO	All aircraft arrive from the south-west onto Runway 05 and take-off to the south-west off Runway 23 *(suitable only:* 1. dur*ing Sydney (Kingsford Smith) Airport curfew hours* 2. *when traffic demand levels permit* 3. *when weather conditions permit).*
		05	All aircraft arrive from the south-west and take-off to the north-east (a variation to Runway 05 day flight paths) *(suitable during Sydney (Kingsford Smith) Airport curfew hours only)*
		23	All aircraft arrive from the north-east and take-off to the south-west (a variation to Runway 23 day flight paths) *(suitable during Sydney (Kingsford Smith) Airport curfew hours only)*

Table does not indicate an order of preference for runway mode of operation.

WSI Day/Evening (5.30am to 11pm) runway modes of operation

WSI Night (11pm to 5.30am) runway modes of operation



*RRO is suitable only at night (11pm to 5.30am) when air traffic demand levels and weather conditions permit.

Figure 7.6 WSI runway mode selection

Aircraft generally land and take-off into the wind. Depending on the prevailing wind conditions at WSI, the 2 principal runway modes of operation (for day and night) are:

- Runway 05 – whereby all aircraft would be directed to approach the airport to land from the south-west and directed to take off to the north-east, before redirecting towards their ultimate destination.
- Runway 23 – whereby all aircraft would be directed to approach the airport to land from the north-east and take-off to the south-west, before redirecting to their ultimate destination.

A third operating mode, head-to-head or Reciprocal Runway Operations (RRO), is an additional mode that would be used when conditions permit. This would involve all take-offs and landings occurring in opposing directions, to and from the south-west of the airport. RRO requires the following criteria to operate:

- tailwinds (including gusts) must not exceed 5 knots (kt) (9 km per hour (km/h))
- runway surface must be dry
- visibility and cloud base criteria would need to be met for the aircraft approach within the licensed pilot training and aircraft parameters, and
- when air traffic demand levels permit safe operations (due to the significantly increased separation required between an arriving and departing aircraft). In practice, this is expected to be when air traffic demand levels are less than around 20 movements per hour (refer to Figure 7.2).

RRO modes have been used safely at Brisbane Airport for 30 years prior to the introduction of the parallel runway in 2020, and at Sydney (Kingsford Smith) Airport since the 1970's curfew constraints on runway use.

7.4.1.1 Time periods

The selection of hours 11 pm to 5.30 am for the WSI night period is based on additional airspace availability during the Sydney (Kingsford Smith) Airport curfew (11 pm to 6 am). This allows greater flexibility in the WSI flight paths, for which a suite of proposed night flight paths have been developed, including those proposed for the RRO mode. These WSI night flight paths vary to those of the WSI day period.

The additional airspace available during the 11 pm to 5:30 am period has also allowed the development of a RRO mode at WSI when air traffic demand and weather conditions are suitable.

WSI flights will be required to be established on the day period flight paths from 5.30 am, to ensure aircraft positioning to land at Sydney (Kingsford Smith) Airport at 6 am can be safely segregated from WSI flights. However, the switchover times from day to night flight paths (and vice-versa) for WSI may vary slightly day-by-day as air traffic control manages the transition into and out of Sydney (Kingsford Smith) Airport curfew mode.

7.4.2 Preferred runway modes of operation

Preferred runway modes of operation are where preference is given to where, if wind conditions, and air traffic demand allows, a particular runway mode of operation would be used to move aircraft as efficiently as possible while reducing the noise impact over residential areas.

Operationally there is no major difference between the runway directions. Both provide similar length, similar climb gradient requirements for departing aircraft, similar approach angle and length of final approach for landing aircraft, and similar movement capacities in either direction.

However, the preliminary design of the ‘day’ and ‘night’ flight paths have taken advantage of the additional flexibility that is available due to the reduced activity within the Sydney Basin airspace at night, including activity from Sydney (Kingsford Smith) Airport. This has provided an alternative suite of proposed ‘night’ SIDs and STARs as well as an option for an RRO over the lower density rural and rural residential zones to the immediate south-west of WSI (when conditions permit as per Section 7.4.1).

With respect to community overflight, there are some benefits for certain flight paths to be used in order to provide a level of respite and to share the noise in some areas impacted by higher aircraft volumes during the day, and reduce the number of dwellings or size of the population within certain noise criteria at night (particularly when RRO mode can be used).

Noise abatement procedures contain a time element as part of their criteria and day-time preferred runway modes may vary based on WSI’s noise abatement procedures. Any specific option for preferred runway mode of operation would be informed by the outcomes of engagement on the preliminary airspace design.

7.4.3 Influence of meteorological conditions

Each runway operating mode is only available under certain weather conditions, including prevailing wind direction and speed on a seasonal and temporal basis. These weather conditions are outlined in Chapter 3 (Introduction to airspace).

Based on 10 years of Bureau of Meteorology (BoM) data (1 January 2012 to 31 December 2021) from the Badgerys Creek weather station, it is anticipated the single Runway 05/23 orientation could be used approximately 99.9 per cent of the time based solely on the ICAO standard crosswind limitation of 20 kts (37 km/h) for runway nomination. The ICAO standard of maximum 20 kt (37 km/h) crosswind applies where there are other runways that could be nominated. As there is only a single runway at WSI, the runway can be nominated at all times (that is, aircraft can land at WSI with more than 20 kt (37 km/h) crosswind). However, if the crosswind is over 20 kt (37 km/h) (around 0.1 per cent of the time), a pilot in command may seek an alternative such as delaying operation until conditions ease.

Once operational, more movements will operate during day-time so prevailing day-time winds have a larger impact on the distribution of movements by runway.

Historical wind data indicates that RRO, if prioritised, may be available for up to 78 per cent of the 11 pm to 5:30 am period.

7.5 Flight paths

This section presents the preliminary flight paths for WSI. The structure includes:

- connection to enroute flight paths – provides an overview of the flight-path integration with Sydney (Kingsford Smith) Airport (Section 7.5.1)
- flight altitude – outlines the presentation of flight altitude which has been used to evaluate the level of environmental impact in the Draft EIS (Section 7.5.2)
- air traffic management – provides a generic outline of arrivals and departures management (Section 7.5.3)
- day flight paths – depicts day arrivals and departures along the nominated STARs and SIDs for Runway 05 and Runway 23 modes of operation (Section 7.5.4)
- night flight paths – depicts night arrivals and departures flight paths along the nominated STARs and SIDs for Runway 05 and Runway 23 modes of operation (Section 7.5.5)
- RRO Night flight paths – depicts night arrivals and departures flight paths along the nominated STARs and SIDs for the RRO mode of operation (Section 7.5.6).

The section also describes:

- off-procedure manoeuvring areas – describes the safety or similar operational reasons where air traffic control is required to take an aircraft off the published SID or STAR (Section 7.5.7)
- missed approach procedures – go-arounds – outlines the procedure where an aircraft misses or aborts the landing (Section 7.5.8).

Sections 7.5.4 to 7.5.6 provide:

- a figure depicting the flight path corridor for each group of flight path track along with a flight path number and indicative altitude (above mean sea level (AMSL) in ft)
- tables with individual flight path descriptions, including the flight path name.

The flight path name corresponds to the name used in the online WSI Aircraft Overflight Noise Tool. Each flight path name includes the includes runway number (RWY 05 or RWY 23), the compass direction of the flight path (arriving from or departing to) (for example ‘Arrival North’), the operation type (if non-jet only, otherwise all jet) and the time of day (Day, Night or RRO).

The area navigation tracking type (RNP; RNP-AR; or Radar) is described at the introduction of each table.

These flight paths are subject to finalisation as outlined in Chapter 6 (Project development and alternatives).

7.5.1 Connection to enroute flight paths

The location of WSI in the western part of the Sydney Basin and the availability of airspace to the north-west, west and south-west for the development of the WSI SIDs and STARs has also allowed the designers the opportunities to segregate some Sydney (Kingsford Smith) Airport and WSI traffic in the enroute phase of flight. While arrivals to WSI from the north will be segregated from traffic inbound to Sydney (Kingsford Smith) Airport about halfway from Brisbane in the enroute phase, arrivals from the east will share the enroute phase of flight with traffic bound for Sydney (Kingsford Smith) Airport, with variations only in the latter stages of descent. Aircraft arrivals to WSI from the immediate north, west and south will do so from the enroute structure in the west of New South Wales (NSW) via new tracks.

Departures from WSI will connect to the existing Sydney (Kingsford Smith) Airport shared route structure when heading for eastern, southern and western destinations, but those bound for northern destinations will depart to the north-west and connect with the enroute airspace already established in the west of NSW.

7.5.2 Flight altitude

A presentation and description of the altitude of an aircraft as part of flight paths and arrival and departures management is provided in this section and Sections 7.5.3 – 7.5.6.

Within the 45 nm (83 km) study area boundary, aircraft are expected to operate up to approximately 20,000 ft (6 km) and higher.

The altitude and dispersion of aircraft are presented in coloured overlays on the flight path figures in Sections 7.5.4 to 7.5.5. The 2-dimensional charts with altitude and dispersion as developed for this project are common and accepted practice (including for Australian Airport Master Plans).

The flight paths also have vertical separation at cross-over points which cannot be discerned from these 2-dimensional images. However, the difference in flight path altitude at a distance from the airport is indicated by the fading of the flight path colour shading from dark (lower altitude) to light (higher altitude).

7.5.3 Air traffic management

This section provides an overview of arrivals and departures management. It incorporates concepts and terms introduced in Chapter 3 (Introduction to airspace) and expands the discussion of flight altitude (Section 7.5.2).

7.5.3.1 Arrivals management

Air traffic control is responsible for the routing of aircraft once airborne. All arrival aircraft at WSI would normally be cleared by air traffic control to join a pre-determined STAR that provides standard vertical and lateral tracking guidance from the enroute cruise phase of flight to their landing runway. Air traffic control would monitor aircraft from the top of descent to their arrival on the runway, for compliance with STAR and approach requirements. When short-term demand exceeds capacity in busy air traffic conditions or when capacity decreases due to reduced visibility or low cloud, several options exist to manage the resultant delay to arriving aircraft. If the capacity disruption is expected to be of a long duration, then arriving aircraft can be subject to ground holding at their departure point. Aircraft already airborne can be speed controlled or have their path stretched or ultimately be subject to enroute holding to manage and sequence traffic flow to the runway. Consistent with practice at other major Australian airports, holding patterns for arrival aircraft would typically be beyond 40 nm (74 km) from WSI and above 10,000 ft (3 km).

Some aircraft in extremely rare instances, in line with safety requirements, could be required to enter a lower altitude holding pattern at 4,000 ft (1.2 km) if there is an unplanned major issue (for example, wind changes forcing a runway change) at WSI or a technical issue with the aircraft.

STARs commence at a Feeder Fix (FF) waypoint or at a transition waypoint that leads to a FF waypoint. Air traffic control would nominate a published STAR in accordance with an agreed set of options, depending on the nominated runway at WSI.

Arriving aircraft would generally be processed to join the final approach path following agreed instrument flight procedures such as making an ILS approach. Where the STAR track aligns with the ILS track, aircraft would seamlessly join the ILS track and glide path at the IAF for the runway. These STARs intercept the ILS directional track at about 9 nm (17 km) from touchdown and at an approximate height of 2,700 ft (800 m). On occasions, some aircraft may join the final approach closer (that is, approximately 6 nm (11 km)) for traffic management reasons.

The glideslope (vertical profile used during a final approach) associated with the ILS at WSI is expected to be set at 3-degrees, but this may vary a small amount to comply with safety standards. This is the angle recommended by the ICAO for commercial aviation for safety reasons and adopted universally at major Australian airports. On intercepting the ILS, or flying an RNP approach, aircraft, irrespective of type or size, would descend at steady rate along the final flight path to the runway. At the same distance from touchdown on the runway, each aircraft would be at about the same height.

All non-jet arrivals would be initially cleared via the same STARS as jet arrivals. For safety or traffic management reasons some non-jets would have their STAR cancelled and be radar vectored to final approach.

7.5.3.2 Departures management

All departure aircraft from WSI would fly a SID with an initial track extending in the direction of the take-off runway, either Runway 05 or Runway 23.

Air traffic control would assign SIDs from the nominated runway applicable to the aircraft's planned route and in accordance with agreed air traffic control procedures. All jet departures would normally be assigned an altitude restriction of 4,000 ft (1.2 km) and non-jets an altitude restriction of 3,000 ft (1 km) by default. This altitude limit would ensure separation from the airspace immediately above WSI, which is reserved for the very limited number of aircraft required to transit overhead. It will also separate departing aircraft with WSI arrivals on a conflicting STAR (termed a "paper stop" altitude restriction). Aircraft would level off at 3,000/4,000 ft (1 km – 1.2 km) in the infrequent event of an interaction conflict with a transiting flight. Where no conflict exists, departing aircraft would be cleared for further climb and handed off to the next controlling air traffic control unit.

The PBN based design of the SIDs and STARs would then require the aircraft's flight management system to automatically manage altitude requirements, ensuring separation at any SID and STAR crossover points. Depending on the climb and descent profile of any conflicting aircraft, some short periods of level flight may occur if air traffic control is unable to avoid conflict of the aircraft by track adjustment. Once safely established above terrain as well as other airspace and air traffic constraints, either at pilot request or air traffic control instigation to save track miles and emissions aircraft may be permitted to leave the SID in conformance with local Noise Abatement Procedures and fly a more direct course to intercept the main air traffic routes (enroute airspace).

On occasions where an aircraft is unable to meet the climb gradient required on the normal SID to its planned route, an alternate SID with a lesser climb gradient would be issued.

Aircraft do not fly in the same way as a train running on a linear railway track. Once in flight, the aircraft is subject to dispersion (as described in Chapter 3 (Introduction to airspace)), which would influence where the aircraft would be in relation to the SID flight path, hence the flight paths are depicted as a flight path corridor (Sections 7.5.4 – 7.5.6). The corridor shows the flight path widening to notionally 2 km either side of the nominal centreline of the SID flight path, transitioning to 5 km as the aircraft join the enroute flight network.

All non-jet departures will be processed on the initial SIDs. Once they are separated from other departures and arrivals they will be radar vectored by air traffic control to join their planned route to destination. This tactical radar vectoring is expected to take place within the shaded areas (radar vectoring areas) shown on relevant figures in Sections 7.5.4 to 7.5.6.

7.5.4 Day (5:30 am to 11 pm) flight paths

7.5.4.1 Runway 05 arrivals

The day arrival flight paths for Runway 05 and their indicative altitudes are shown on Figure 7.7 landing from the south-west. Descriptions for these 5 flight paths are provided in Table 7.4. The flight paths are for use by jet and non-jet aircraft. Flight path numbers A1-A4 require a RNP arrival procedure and flight path number A5 requires an RNP-AR arrival procedure.

Table 7.4 Runway 05 – Day arrivals – description of flight paths

Flight path no.	Flight path name	Flight path description
A1	RWY05 Arrival North Day	This flight path provides access for arriving aircraft from the north to WSI when Sydney (Kingsford Smith) Airport is using Runway 34 (34L or 34R) or Runway 25 directions as it: • turns towards WSI above the Hills District allowing aircraft departing Sydney (Kingsford Smith) Airport to climb beneath aircraft arriving at WSI • shares arrival path with eastern arriving traffic overhead WSI to minimise airspace complexity.
A2	RWY05 Arrival North.2 Day	This flight path: • remains further west than A1 and provides access for arriving aircraft from the north to WSI when Sydney (Kingsford Smith) Airport Runway 16 or 07 directions are in use • allows aircraft departing Sydney (Kingsford Smith) Airport to climb above aircraft arriving at WSI.
A3	RWY05 Arrival West Day/RWY05 Arrival West Night	This flight path: • provides access for arriving aircraft from the south and west to WSI • transits south of the main branch of Lake Burragorang • joins final descent at 16 nm (30 km) from touchdown, remaining south and east of Silverdale.
A4	RWY05 Arrival East Day	This flight path: • passes overhead Sydney (Kingsford Smith) Airport to minimise airspace complexity • passes overhead WSI to avoid descent through Camden Airport flying training area • shares the same arriving flight path as Sydney (Kingsford Smith) Airport aircraft until crossing the coast • remains above 10,000 ft (3 km) until passing overhead Cabramatta • shares arrival path with northern arriving traffic to minimise airspace complexity.
A5	RWY05 Arrival North.2 (RNP) Day	• This flight path provides quicker access for suitably equipped arriving aircraft from the north, and east to WSI without increasing residential overflight. • Aircraft must be capable of RNP AR operations to be eligible for this procedure.

7.5.4.2 Runway 05 departures

The day departure flight paths for Runway 05 and their indicative altitudes are shown on Figure 7.7, taking-off to the north-east.

The SIDs to the north and west are designed to go under the STAR from the north (flight path number (no. A2) when the Runway 16 direction is in use at Sydney (Kingsford Smith) Airport. When the runway direction at Sydney (Kingsford Smith) Airport is the Runway 34 direction, then the alternate STAR from the north (flight path no. A1) is used for WSI traffic which does not conflict with the WSI Runway 05 northern and western SIDS. The Runway 16 and Runway 34 directions at Sydney (Kingsford Smith) Airport are almost equally used.

Descriptions for these 9 flight paths are provided in Table 7.5. Flight path numbers D1-D6 are for jet aircraft under a RNP departure procedure. Flight path numbers D7-D9 are for non-jet aircraft under a radar vectoring procedure.

Table 7.5 Runway 05 – Day departures – description of flight paths

Flight path no.	Flight path name	Flight path description
D1	RWY05 Departure North Day	This flight path: • may impose a level segment (meaning aircraft flying at a constant altitude) on some aircraft if in conflict with a Sydney (Kingsford Smith) Airport departure • transits in a left turn past the Orchard Hills Restricted Area • has been designed to reduce residential overflight noise north of WSI by tracking as far west as possible of St Clair.
D2	RWY05 Departure West Northwest Day	This flight path: • transits in a left turn around Orchard Hills Restricted Area • has been designed to reduce residential overflight noise north of WSI by tracking as far west as possible of St Clair • remains to the north of the Great Western Highway to minimise the aircraft overflight noise for residential areas in the Lower Blue Mountains and along the Great Western Highway.
D3	RWY05 Departure West Day	This flight path: • may impose a level segment on some aircraft if in conflict with a Sydney (Kingsford Smith) Airport departure • transits in a left turn around Orchard Hills Restricted Area • has been designed to reduce residential overflight noise north of WSI by tracking as far west as possible of St Clair • transits north of the existing Sydney (Kingsford Smith) Airport flight path to the west • remains to the north of the Great Western Highway to minimise the aircraft overflight noise for residential areas in the Lower Blue Mountains and along the Great Western Highway.
D4	RWY05 Departure South Day	This flight path: • transits in a left turn around Orchard Hills Restricted Area • has been designed to reduce residential overflight noise north of WSI by tracking as far west as possible of St Clair • transits in a left turn to minimise impacts to Bankstown flying training areas • climbs above WSI arriving aircraft from the south and west • climbs above Sydney (Kingsford Smith) Airport arriving aircraft from the south and west.

Flight path no.	Flight path name	Flight path description
D5	RWY05 Departure South (Hot) Day	This flight path: • provides alternative option for high-temperature days for slow climbing aircraft by allowing additional track miles for aircraft to reach vertical navigation requirements • transits in a left turn around Orchard Hills Restricted Area • has been designed to reduce residential overflight noise north of WSI by tracking as far west as possible of St Clair • transits in a left turn to minimise impacts to Bankstown flying training areas • climbs above WSI arriving aircraft from the south and west • climbs above Sydney (Kingsford Smith) Airport arriving aircraft from the south and west.
D6	RWY05 Departure East Day	This flight path: • transits in a left turn around Orchard Hills Restricted Area • has been designed to reduce residential overflight noise north of WSI by tracking as far west as possible of St Clair • transits in a left turn to minimise impacts to Bankstown flying training areas • climbs above WSI arriving aircraft from the south and west • climbs above Sydney (Kingsford Smith) Airport arriving aircraft from the south and west.
D7	RWY05 Departure Northeast (Non-Jet) Day	This flight path provides more flexibility for traffic management for air traffic control by providing an alternative flight path for aircraft with different performance capacities than jet aircraft.
D8	RWY05 Departure North (Non-Jet) Day	This flight path: • provides access for departing non-jet aircraft to the north and north-east, from WSI in all Sydney (Kingsford Smith) Airport Day modes • provides more flexibility for traffic management for air traffic control by providing an alternative flight path for aircraft with different performance capacities than jet aircraft.
D9	RWY05 Departure South (Non-Jet) Day	This flight path: • delays the initial right turn until above Bankstown operations • tracks southbound initially below flight paths of aircraft departing from Sydney (Kingsford Smith) Airport • provides more flexibility for traffic management for air traffic control by providing an alternative flight path for aircraft with different performance capacities than jet aircraft.

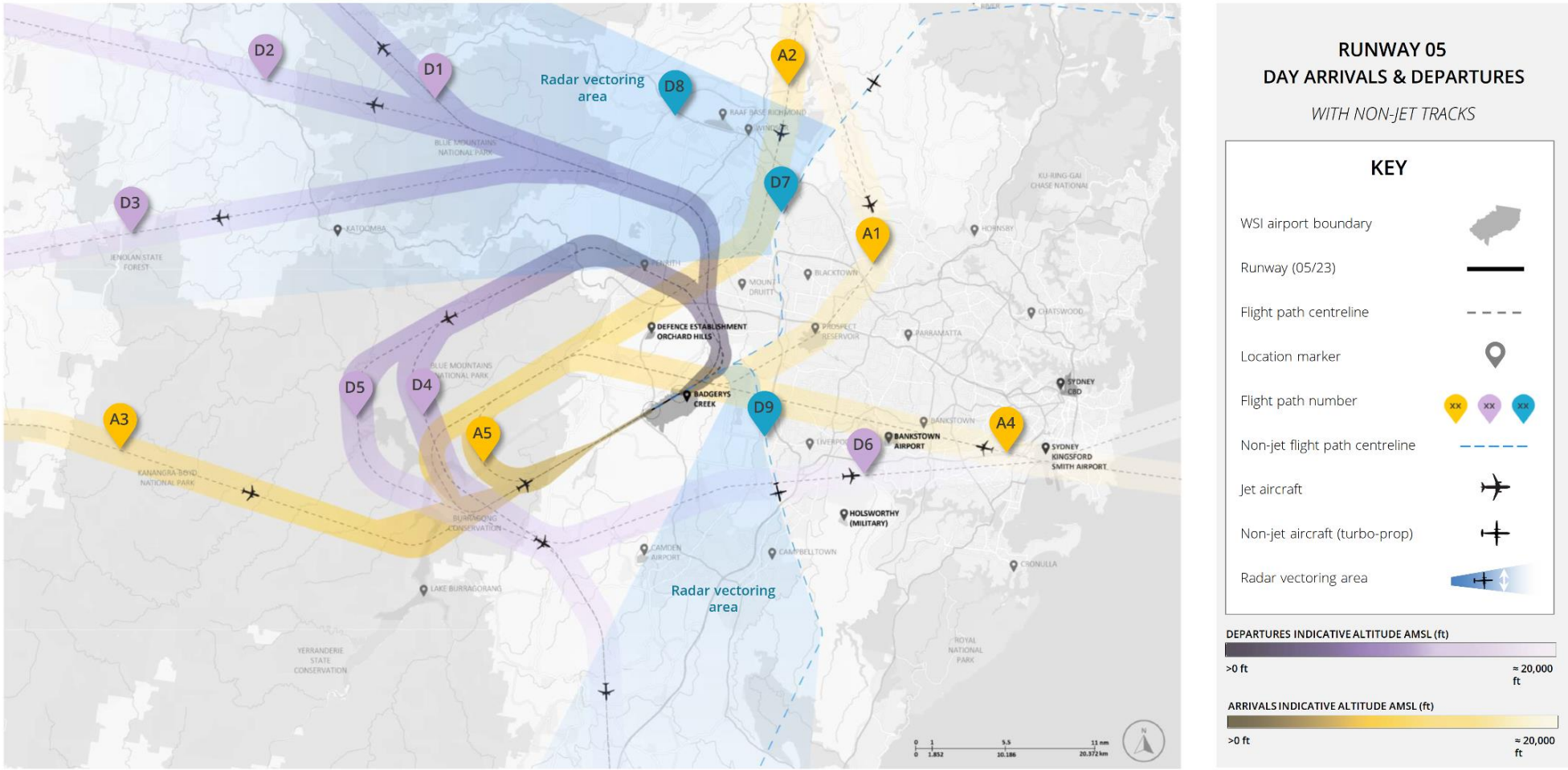


Figure 7.7 Runway 05 – Day arrivals and departures – flight paths

7.5.4.3 Runway 23 arrivals

The day arrival flight paths for Runway 23 and indicative altitudes are shown on Figure 7.8, landing from the north-east.

Descriptions for these 4 flight paths are provided in Table 7.6. The flight paths are for use by jet and non-jet aircraft. Flight path numbers A6-A8 require a RNP arrival procedure and flight path number A9 requires a RNP- AR arrival procedure.

Table 7.6 Runway 23 – Day arrivals – description of flight paths

Flight path no.	Flight path name	Flight path description
A6	RWY23 Arrival North Day	Is positioned to fly over green and light commercial areas at Marsden Park.
A7	RWY23 Arrival West Day	This flight path remains north of Lake Burragorang and clear of the Lower Blue Mountains residential areas for as long as operationally practicable.
A8	RWY23 Arrival East Day	This flight path: • passes overhead Sydney (Kingsford Smith) Airport to minimise airspace complexity • follows existing Sydney (Kingsford Smith) Airport eastern arrival flight paths until approximately 5.4 nm (10 km) west of Sydney (Kingsford Smith) Airport • transits overhead WSI before descending to join with the flight path for western arrivals.
A9	RWY23 Arrival All (RNP-AR) Day All arrivals	This flight path: • provides access for suitably equipped arriving aircraft to track the green corridor and minimise direct overflight of built up areas • provides noise respite to Bungarribee and Eastern Creek.

7.5.4.4 Runway 23 departures

The day departure flight paths from Runway 23 and their indicative altitudes are shown on Figure 7.8, taking-off to the south-west.

The SIDs to the north, north-west and west are designed to go under the WSI STAR from the west (flight path number A7). There is a requirement on these SIDs for aircraft to maintain 5,000 ft (1.5 km) until clear of the possible conflict with the STAR.

Descriptions for the 7 flight paths are provided in Table 7.7. Flight path numbers D10-D14 are for jet aircraft under a RNP departure procedure. Flight path numbers D15-D16 are for non-jet aircraft under a radar vectoring procedure.

Table 7.7 Runway 23 – Day departures – description of flight paths

Flight path no.	Flight path name	Flight path description
D10	RWY23 Departure North Day	This flight path: • crosses the Great Western Highway at an area of low population density, and • delays the initial turn off runway heading until past Silverdale to minimise overflight noise in that area.
D11	RWY23 Departure West Day	This flight path: • has a delayed right turn off runway heading until south of Silverdale to minimise residential overflight • transits south of the existing Sydney (Kingsford Smith) Airport flight path to the west which passes overhead Leura and Katoomba in the Blue Mountains • avoids aircraft overflight of residential areas along the Great Western Highway.
D12	RWY23 Departure South Day	This flight path: • delays a turn to the south to minimise effects on the Camden/Bankstown Airport flying training areas • has a delayed right turn until south of Silverdale to minimise residential overflight • initially transits west to gain height above Sydney (Kingsford Smith) Airport arriving aircraft from the south-west • to accommodate the safe operation of aircraft during warm weather events and strong winds, high altitudes of this flight paths west of The Oaks may need to be realigned approximately 3 km further south and east of the flight path displayed.
D13	RWY23 Departure South (Hot) Day	This flight path: • shares the same track as the RWY23 Departure South (Non-Jet) Day (flight path number D16) • provides access for slow climbing aircraft departing to the south from WSI by allowing the aircraft to remain low and below Sydney (Kingsford Smith) Airport arriving aircraft • delays a turn to the south to minimise effects on the Camden/Bankstown Airport flying training areas.

Flight path no.	Flight path name	Flight path description
D14	RWY23 Departure East Day	This flight path: • delays a turn to the south to minimise effects on the Camden/Bankstown Airport flying training areas • initially transits west to gain height above Sydney (Kingsford Smith) Airport arriving aircraft from the southwest • has a delayed right turn until south of Silverdale to minimise residential overflight.
D15	RWY23 Departure North (Non-Jet) Day	This flight path: • turns immediately to the west to clear the departure flight path of jet aircraft • provides more flexibility for traffic management for air traffic control by providing an alternative flightpath for aircraft with different performance capacities then jet aircraft.
D16	RWY23 Departure South (Non-Jet) Day	This flight path: • shares the same track as the south departure on high temperature days – RWY23 Departure South (Hot) Day (flight path number D13) • delays the initial turn until above Camden Airport flying training areas • initially tracks south below flight paths of aircraft arriving to Sydney (Kingsford Smith) Airport from the south-west • despite sharing the initial 6 nm (11 km) upwind track with jet departures, this track provides more flexibility for traffic management for air traffic control by providing an alternative flight path for aircraft with different performance capacities than jet aircraft.

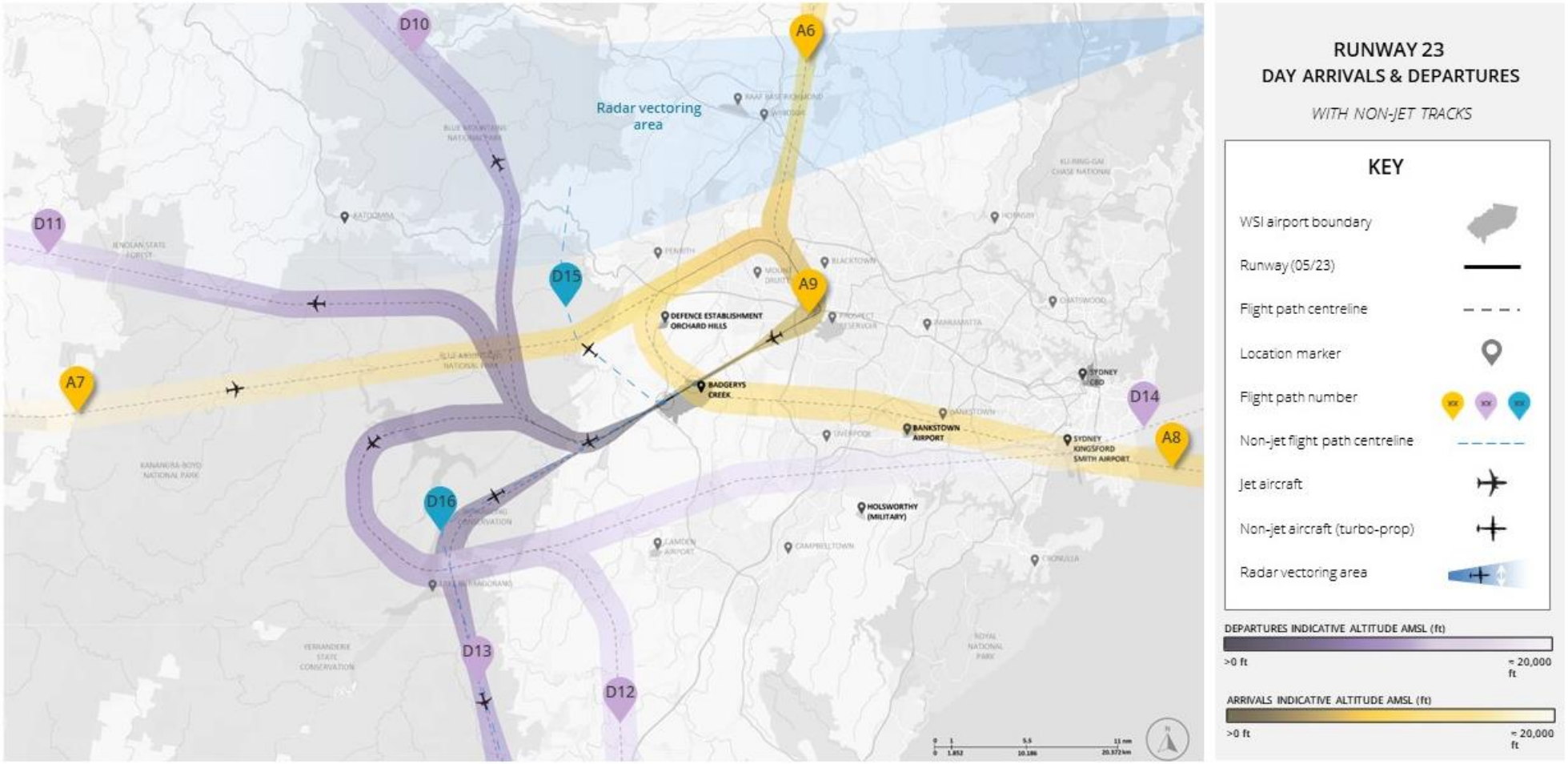


Figure 7.8 Runway 23 – Day arrivals and departures – flight paths

7.5.5 Night (11 pm to 5:30 am) flight paths

The flight paths in the night modes at WSI are different from those in the day modes to:

- take advantage of the increased airspace available during the Sydney (Kingsford Smith) Airport curfew hours of 11 pm to 6 am
- to further minimise the number of residences exposed to noise.

Non-jet aircraft utilise WSI jet SIDs and STARs at night. Non-jets that cannot meet the altitude restrictions or requirements of the SID may require radar departures.

7.5.5.1 Runway 05 arrivals

The night arrivals flight paths for Runway 05 and their indicative altitudes are shown on Figure 7.9, landing from the south-west.

Descriptions for these 4 flight paths are provided in Table 7.8. These flight paths are for use by jet and non-jet aircraft. Flight path numbers A10-A12 require a RNP arrival procedure and flight path number A13 requires a RNP- AR arrival procedure.

Table 7.8 Runway 05 – Night arrivals – description of flight paths

Flight path no.	Flight path name	Flight path description
A10	RWY05 Arrival North Night	This flight path: • crosses the Great Western Highway where the lowest number of dwellings would be overflown • turns to join the final approach and remains south of Silverdale to minimise the aircraft overflight noise for residential areas. The alignment of this flight path may be adjusted once south of the Great Western Highway to facilitate the climb of departing aircraft.
A11	RWY05 Arrival West Day/RWY05 Arrival West Night	This flight path: • is the same for both day and night modes • remains over uninhabited areas until final approach • turns to join final approach and remains south of Silverdale to minimise the aircraft overflight noise for residential areas.
A12	RWY05 Arrival East Night	This flight path: • remains south of Bundeena and Camden • turns to final approach south-west of The Oaks and remains south of the Silverdale to minimise aircraft overflight noise for residential areas.
A13	RWY05 Arrival (RNP) North Night	This flight path: • provides access for suitably equipped arriving aircraft from the north to WSI to reduce track miles and increase efficiency • crosses the Great Western Highway where the lowest number of dwellings would be overflown • will position aircraft over the Great Western Highway lower than flight path A10 • turns to join final approach and remains south of Silverdale to minimise the aircraft overflight noise for residential areas.

7.5.5.2 Runway 05 departures

The night departure flight paths for Runway 05 and their indicative altitudes are shown on Figure 7.9 departing to the north-east.

Descriptions for these 5 flight paths are provided in Table 7.9. These flight paths are for use by jet and non-jet aircraft under a RNP departure procedure.

Table 7.9 Runway 05 – Night departures – description of flight paths

Flight path no.	Flight path name	Flight path description
D17	RWY05 Departure Northeast Night	This flight path: • turns at altitude to fly over the western side of Twin Creeks providing reduced aircraft overflight noise at St Clair • is positioned to fly between residential areas • crosses the coastline at approximately 18,000 ft (5.5 km).
D18	RWY05 Departure North Night	This flight path: • turns at altitude to fly over the western side of Twin Creeks providing reduced aircraft overflight noise at St Clair • is positioned to fly between residential areas.
D20	RWY05 Departure West Night	This flight path: • may impose a level segment on some aircraft if in conflict with northern arrivals to WSI • turns as soon as safely practicable after take-off to provide respite and remain west of St Clair • remains south of the Great Western Highway to minimise the aircraft overflight noise for residential areas along the highway.
D21	RWY05 Departure South Night	This flight path: • turns as soon as safely practicable after take-off to provide respite and remain west of St Clair • remains west of populated areas when tracking south.
D22	RWY05 Departure Southeast Night	This flight path: • turns as soon as safely practicable after take-off to provide respite and remain west of St Clair • remains clear of Picton, The Oaks, Tahmoor, and Wilton when tracking south • remains over populations of low density when turning east • crosses the Princes Highway at approximately 20,000 ft (6 km).

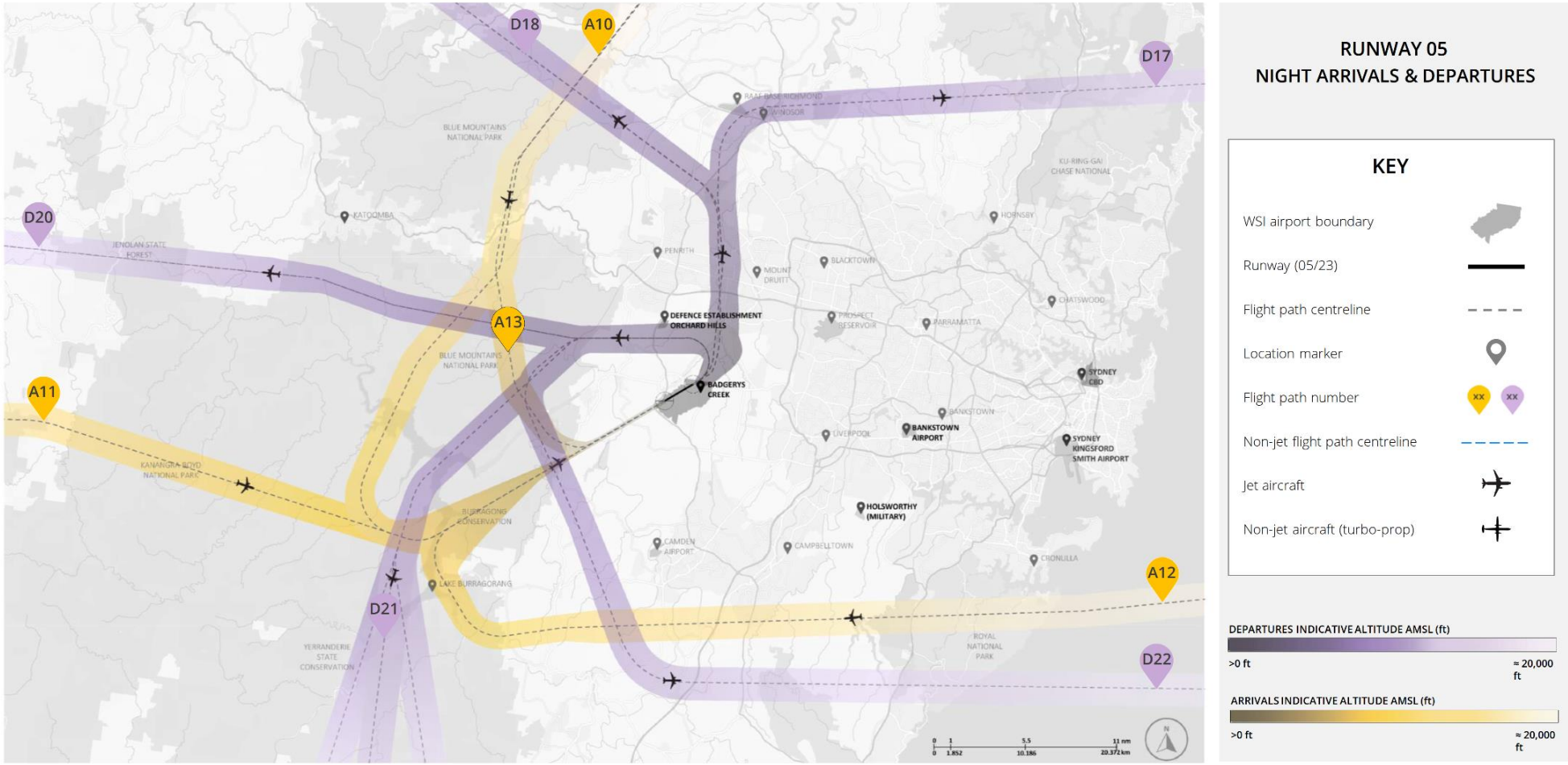


Figure 7.9 Runway 05 – Night arrivals and departures – flight paths

7.5.5.3 Runway 23 arrivals

The night arrival flight paths for Runway 23 and their indicative altitudes are shown on Figure 7.10, arriving from the north-east.

Descriptions for these 5 flight paths are provided in Table 7.10. These flight paths are for use by jet and non-jet aircraft. Flight path numbers A14-A17 require a RNP arrival procedure and flight path number A18 requires a RNP- AR arrival procedure.

Table 7.10 Runway 23 – Night arrivals – description of flight paths

Flight path no.	Flight path name	Flight path description
A14	RWY23 Arrival North Night	This flight path provides the same tracking as the Runway 23 Day North arrival.
A15	RWY23 Arrival West Night	This flight path: • provides access to WSI from the west, south, and northwest using continuous descent operations • crosses the Great Western Highway at a point of lower residential population between Blaxland and Springwood • is designed to minimise overflight of residential areas as the aircraft approach Marsden Park • provides respite to residential communities that are overflown during day operations until waypoint NB107 (located north of Bidwill/Oakhurst and west of Colebee).
A16	RWY23 Arrival Northwest Night	This flight path will be used as a tactical option to reduce crossings of residential areas of the Great Western Highway for aircraft arriving from the north-west.
A17	RWY23 Arrival East Night	This flight path: • minimises residential areas overflown for aircraft arriving from the east by adding additional track miles • provides respite to residential communities that are overflown during Day operations until waypoint NB107 (located north of Bidwill/Oakhurst and west of Colebee).
A18	RWY23 Arrival All (RNP-AR) Night	This flight path: • provides access for suitably equipped arriving aircraft to track the green corridor and minimise direct overflight of built up areas • provides noise respite to Bungarribee and Eastern Creek.

7.5.5.4 Runway 23 departures

The night departure flight paths for Runway 23 and their indicative altitudes are shown on Figure 7.10, departing to the south-west.

Descriptions for these 5 flight paths are provided in Table 7.11. These flight paths are for use by jet and non-jet aircraft under a RNP departure procedure.

Table 7.11 Runway 23 – Night departures – description of flight paths

Flight path no.	Flight path name	Flight path description
D23	RWY23 Departure Northeast Night	This flight path: • provides for continuous climb operations for departing aircraft to the northeast and east from WSI • aircraft to be above 13,000 ft (4 km) at the coast crossing • positions aircraft south and west of Silverdale and Wallacia prior to turning north • crosses the Great Western Highway over an area of lower population density to minimise aircraft overflight noise to lower Blue Mountains communities.
D24	RWY23 Departure North Night	This flight path: • positions aircraft south and west of Silverdale and Wallacia prior to turning north • crosses the Great Western Highway over low residential area to minimise aircraft overflight noise to lower Blue Mountains communities.
D25	RWY23 Departure West Night	This flight path: • for continuous climb operations for departing aircraft to the west from WSI • positions aircraft south and west of Silverdale and Wallacia prior to turning north • remains south of the Great Western Highway until west of Katoomba to minimise the aircraft overflight noise for residential areas along the Great Western Highway.
D26	RWY23 Departure South Night	This flight path provides efficient tracking to enroute transitions and reduces unnecessary overflight of residential areas.
D27	RWY23 Departure Southeast Night	This flight path: • remains clear of populated areas when turning to the east off runway centreline • aircraft remain south of Camden, Menangle, and Bundeena when tracking east • crosses the coast at approximately 18,000 ft (5.5 km).

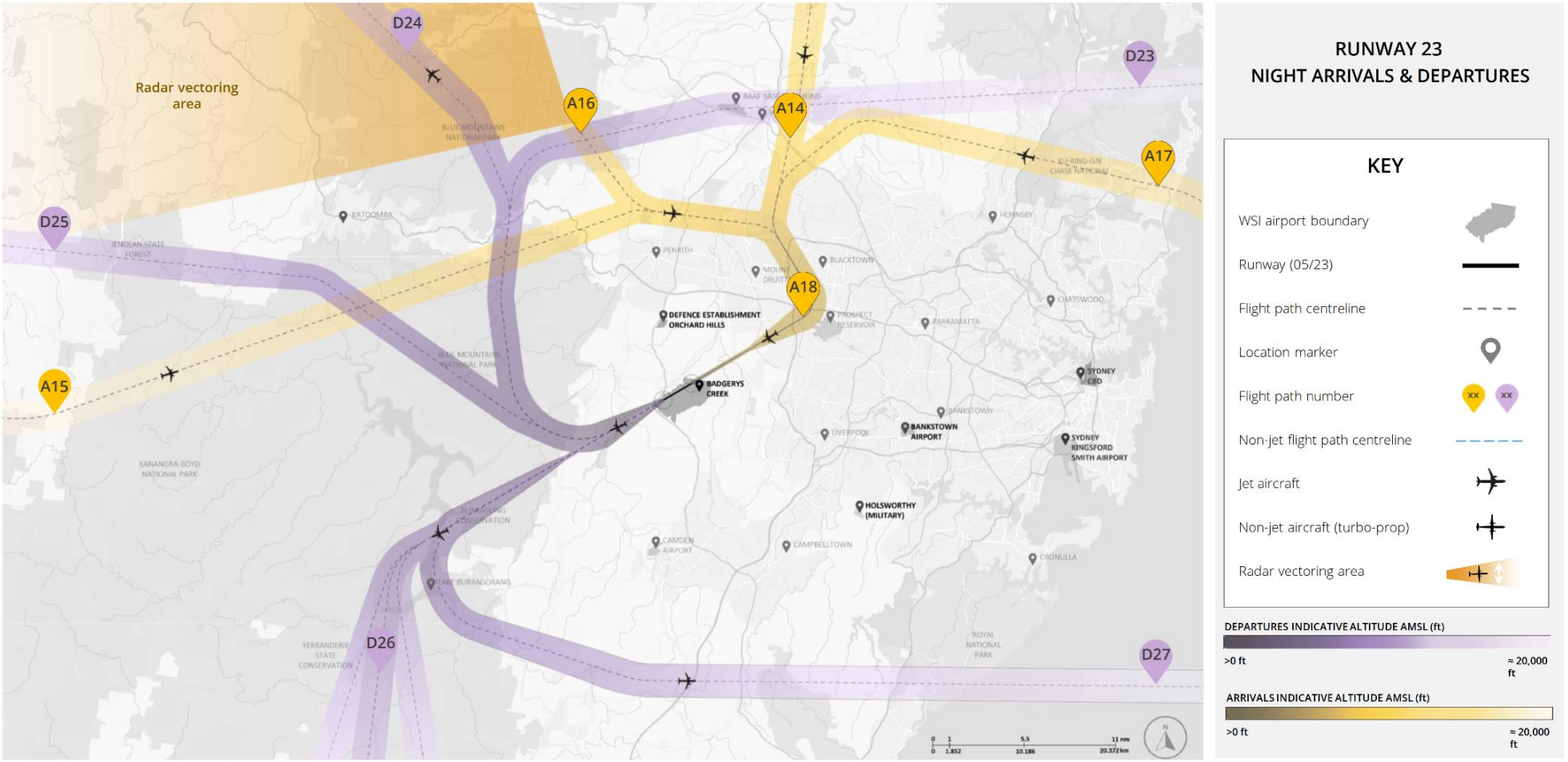


Figure 7.10 Runway 23 – Night arrivals and departures – flight paths

7.5.6 RRO – Night (11 pm to 5:30 am flight paths)

WSI Night procedures may use a RRO runway mode when it is safe to do so (refer to Section 7.4).

7.5.6.1 RRO arrivals

The night arrivals flight paths for RRO Runway 05 and their indicative altitudes are shown on Figure 7.11, landing from the south-west.

Descriptions for these 3 flight paths are provided in Table 7.12. These flight paths are for use by jet and non-jet aircraft under a RNP arrival procedure.

Table 7.12 RRO arrivals – description of flight paths

Flight path no.	Flight path name	Flight path description
A19	RWY05 Arrival North Night (RRO)	This flight path crosses overhead Penrith above 10,000 ft (3 km).
A20	RWY05 Arrival West Night (RRO)	This flight path: • remains over uninhabited areas until final approach, and • remains south of the Silverdale to minimise the aircraft overflight noise for residential areas.
A21	RWY05 Arrival East Night (RRO)	This flight path: • remains south of Bundeena and Camden • turns to final approach southwest of The Oaks and remains south of the Silverdale to minimise the aircraft overflight noise for residential areas.

7.5.6.2 RRO departures

The night departure flight paths for RRO off Runway 23 and their indicative altitudes are shown on Figure 7.11, departing to the south-west.

Descriptions for these 5 flight paths are provided in Table 7.13. These flight paths are for jet and non-jet aircraft under a RNP departure procedure.

Table 7.13 RRO – Night departures – description of flight paths

Flight path no.	Flight path name	Flight path description
D28	RWY23 Departure Northeast Night (RRO)	This flight path: • turns at altitude as soon as safely possible to allow for separation with RRO arrivals • crosses the Great Western Highway over areas of lower population densities to minimise aircraft overflight noise to Lower Blue Mountains communities • tracks north of the Sydney Metropolitan Area to cross the coast north of Barrenjoey Head.
D29	RWY23 Departure North Night (RRO)	This flight path: • turns at altitude as soon as safely possible to allow for separation with RRO arrivals • crosses the Great Western Highway over areas of lower population densities to minimise aircraft overflight noise to lower Blue Mountains communities.
D30	RWY23 Departure West Night (RRO)	This flight path: • turns at altitude as soon as safely possible to allow for separation with RRO arrivals • remains south of the Great Western Highway until west of Katoomba.
D31	RWY23 Departure South Night (RRO)	This flight path: • turns at altitude as soon as safely possible to allow for separation with RRO arrivals • remains clear of Camden, The Oaks, Picton, Tahmoor and Wilton when tracking south.
D32	RWY23 Departure Southeast Night (RRO)	This flight path: • turns at altitude as soon as safely possible to allow for separation with RRO arrivals • remains clear of Camden, The Oaks, Picton, Tahmoor and Wilton when tracking south • crosses the Princes Highway at approximately 18,000 ft (5.5 km) above ground level.

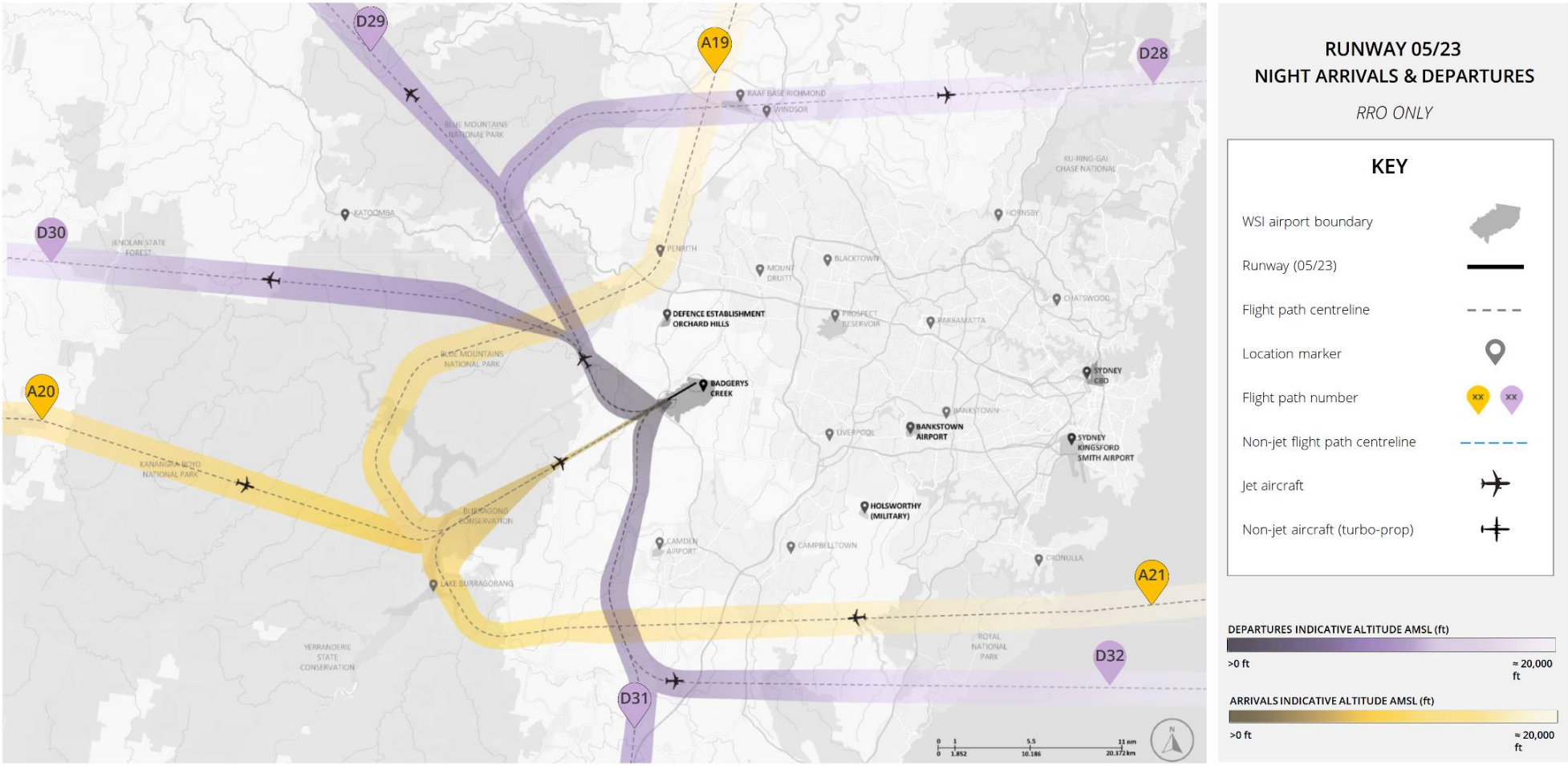


Figure 7.11 RRO – Night arrivals and departures flight paths

7.5.7 Off-procedure manoeuvring operations

This section outlines the reasons for aircraft flying off the flight paths published within the Aeronautical Information Package, describes the proportion of operations where this is likely to occur and presents the proposed off-procedure manoeuvring areas.

7.5.7.1 Reasons for aircraft flying off-procedure

By far the great majority of aircraft arriving and departing WSI at lower altitudes (operations below 10,000 ft (3 km)) are expected to remain on the published flight paths where operational predictability and safe assurance of separation from other aircraft is built into the procedure design. However, under certain circumstances some aircraft would operate away from published flight paths and may fly over areas that do not normally experience regular aircraft overflight. This may be at the request of a pilot or initiated by air traffic control. The options would be different for day and night modes arriving and departing aircraft and would require the development of off-procedure manoeuvring areas.

Pilots generally request a deviation from a SID or STAR:

- to avoid hazardous airspace conditions – such as severe weather, storm cells, smoke hazards
- the pilot has declared an emergency and requires priority routing.

Air traffic control may cancel the tracking and altitude requirements of a SID or STAR and provide the pilot with instructions to leave the published route either by the use of radar vectoring or direct tracking to an off-procedure waypoint:

- to maintain separation with preceding or following aircraft – for example, when 2 aircraft on the same flight path are getting too close to each other and speed control is not expected to resolve the closing speed issue, one of the aircraft will be turned away from their flight path until the required separation is achieved
- to manage an aircraft needing to safely avoid and maintain separation to another aircraft which in turn was not able to operate on its intended flight path
- if the intended flight path is blocked by priority operations (for example, search and rescue, MEDEVAC, bushfire surveillance and control such as water bombing, military activity)
- when military activity requires, whereby aircraft departing WSI will be issued a SID Radar and vectored clear of the military activity.
- if the aircraft has unusually low operating performance and is unable to comply with the intended flight path design requirements
- if WSI is transitioning between changed runway operating modes that require different approach and/or departure flight paths
- if a flight-planned runway mode/direction is unexpectedly unavailable
- if the aircraft is conducting local air work (for example: training, surveys))
- if specific noise abatement procedure promotes aircraft divergence from a published flight path as soon as safely practicable
- to maintain safety and separation compliance with other Sydney Basin interacting operations such as military activities at RAAF Base Richmond
- to provide track shortening, resulting in fuel and emissions savings during low demand operating periods.

As well as the above reasons applicable to both off SID and off STAR manoeuvring, air traffic control may cancel the tracking and altitude requirements of a STAR:

- to expedite and resolve sequencing in high arrival demand peak-periods to maintain the optimised landing sequence in a safe and orderly manner, and
- to address backlog arrivals recovery from broader system impacting events such as a weather closure of a major east coast airport.

Other common reasons aircraft may be noticed operating away from a published WSI flight path include:

- the pilot has aborted their attempt at landing (missed approach procedure – refer to Figure 7.14) and is repositioning their aircraft for another approach
- the aircraft is not flying to or from WSI at all but is operating on one of the many existing flight paths to or from the other major Sydney Basin airports, or the several smaller airports, or possibly crossing the Sydney Basin airspace.

7.5.7.2 Off-procedure manoeuvring areas

It is not feasible to predict, depict, nor quantitively assess the impact of the low proportion of operations that will need to deviate from published flight paths. However, with respect to aircraft arriving WSI, broad indicative areas where air traffic control may need to clear aircraft off their published STAR can be approximated based on early air traffic control simulation of the preliminary airspace design. While the use of these areas is expected to evolve with experience and the natural growth of the airport, even in its early years of operation, WSI morning and evening peak demand periods may generate enough demand to require some aircraft to be manoeuvred away from published STARs.

During day operations (5:30 am to 11 pm) it is expected that off STAR manoeuvring operations could occur for around 10 per cent of WSI arrival flights. During night operations (11 pm to 5:30 am) off STAR manoeuvring will be minimised over Sydney Basin and built up areas in the Greater Blue Mountains Area.

When necessary, off STAR manoeuvring will be facilitated by air traffic control through the application of radar vectoring and is expected to mostly be contained within the indicated zones in Figure 7.12 and Figure 7.13, to allow aircraft to join the final approach manoeuvre to land on the allocated runway. The missed approach vectoring area also shown in Figure 7.12 and Figure 7.13 may be used 24-hours a day where an aircraft conducts a missed approach (as described in Section 7.5.8).

It is not possible to predict any level of, or location of any off departure manoeuvring by departing aircraft from WSI as each occurrence would be a result of pilot request or air traffic control intervention. This could occur at any point on the SID track and would be subject to the separation requirements of safely interacting with all Sydney Basin flight movements at that time.

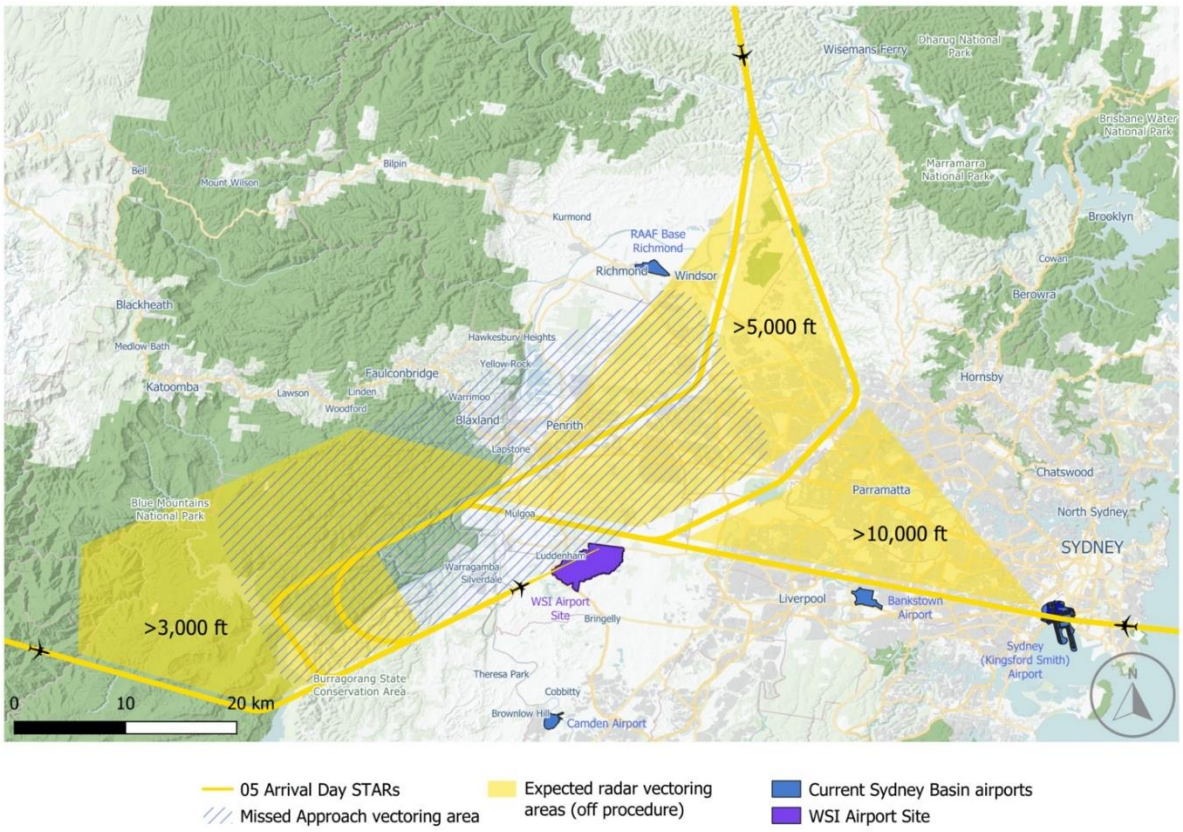


Figure 7.12 Runway 05 Day – off-procedure manoeuvring areas (5.30 am to 11 pm)

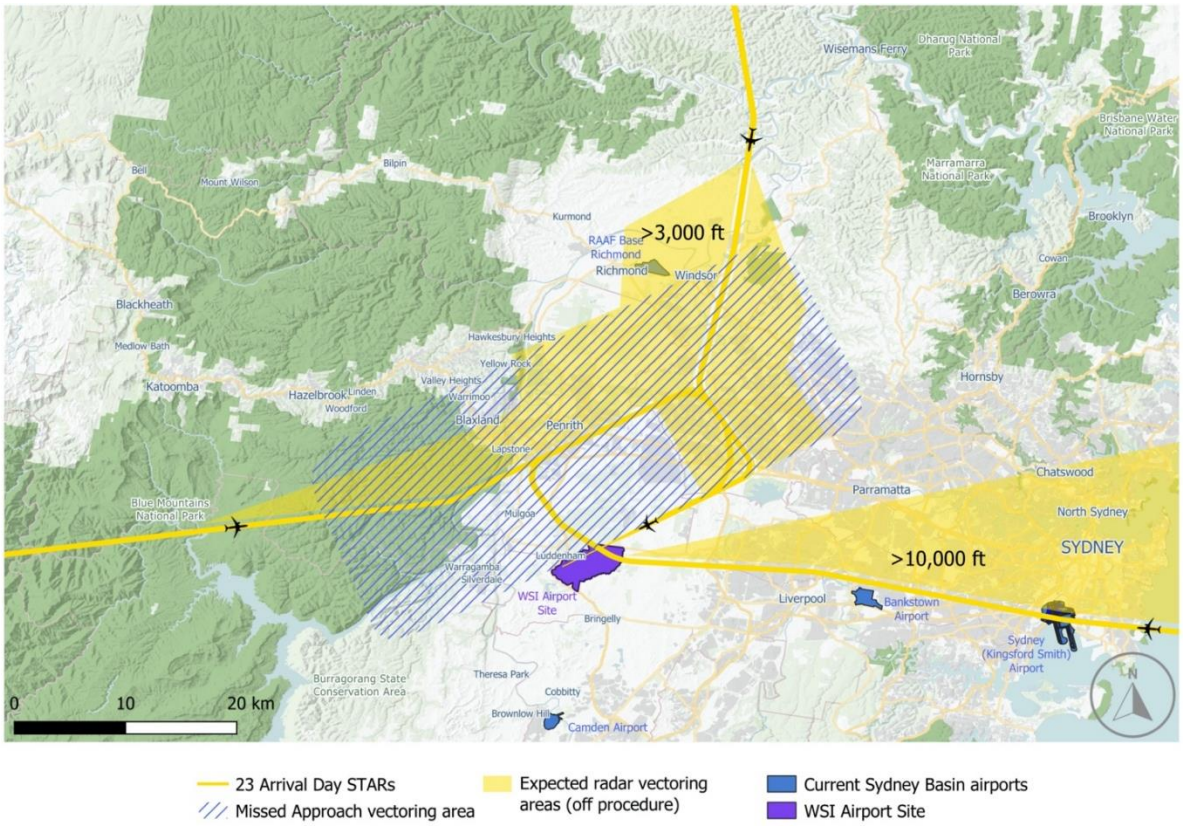


Figure 7.13 Runway 23 Day – off-procedure manoeuvring areas (5.30 am to 11 pm)

7.5.8 Missed approach procedures – go-arounds

A go-around or missed approach (also sometimes referred to as an aborted landing), is a safe and well-practised manoeuvre that sees an aircraft discontinue its approach to the runway and may be employed at WSI. This standard manoeuvre does not constitute any sort of emergency or threat to safety but may cause passengers or witnesses to become anxious.

During a go-around, the pilot would apply full take off power to the engine(s), adopt a nose-up take-off attitude, retract the landing gear and flaps, and climb into the traffic pattern to circle around for another approach. A go-around may be initiated by the pilot, or the pilot may be directed to go-around by air traffic control.

The causes are usually adverse weather conditions including strong winds experienced by the aircraft on final approach, and flying training. Other causes include debris on the runway (for example, tyre fragments), an aircraft that has been slow to take-off or an aircraft (or vehicle) that has not yet cleared the runway. In these circumstances, a go-around is the safest approach.

Figure 7.14 provides a schematic of a missed approach procedure. The missed approach area for WSI is depicted on Figure 7.12 and Figure 7.13.

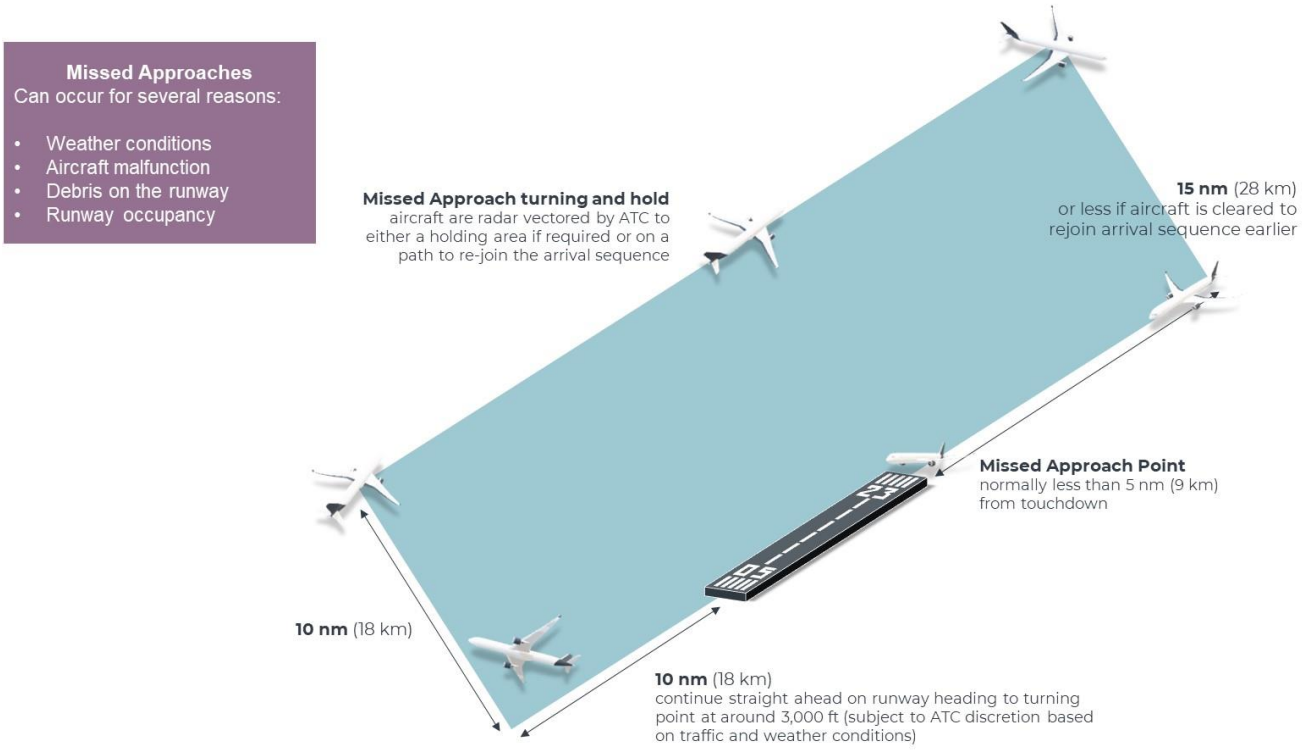


Figure 7.14 Missed approach procedure schematic

7.6 Airspace classification

The WSI would have a control zone and control area under an appropriate airspace classification. This classification would provide a level of control appropriate for the type and volume of air traffic proposed to operate at the airport. This airspace also provides containment for the flight paths and STARs and SIDs of arriving and departing aircraft in accordance with buffers prescribed by CASA, to safely separate them from other aircraft operating in the airspace and from terrain.

The proposed adjustments to the existing airspace structure in the Sydney Basin to accommodate the project are reflected in the change from the current arrangement (refer to Figure 7.15) compared to the proposed arrangement (refer to Figure 7.16), including the Lower Level (LL) of controlled airspace.

The existing control zones are further explained in Chapter 4 (Project setting) and key changes to the airspace structure are explained in Chapter 6 (Project development and alternatives). The changes required for other airspace users and associated proposed airspace structure is described in Chapter 8 (Facilitated changes). These proposed adjustments would be refined, prepared and submitted as part of the final airspace design. Possible training areas have also been identified but are subject to a separate change proposal.

The containment for WSI would vary during the hours of Sydney (Kingsford Smith) Airport's curfew, driven by the differing operational requirements both at Sydney (Kingsford Smith) Airport (curfew) and WSI (noise abatement). An additional control area is required to contain procedures supporting night flight paths at WSI including the facilitation of RRO.

During the day, this integration of WSI control area with the existing Sydney control area provides a logical, safe and workable solution balancing the need to provide equitable access to various airspace users.

As the new areas of containment would be controlled airspace, a clearance from air traffic control to transit, or to land or take off from a private airport within this airspace will be required.

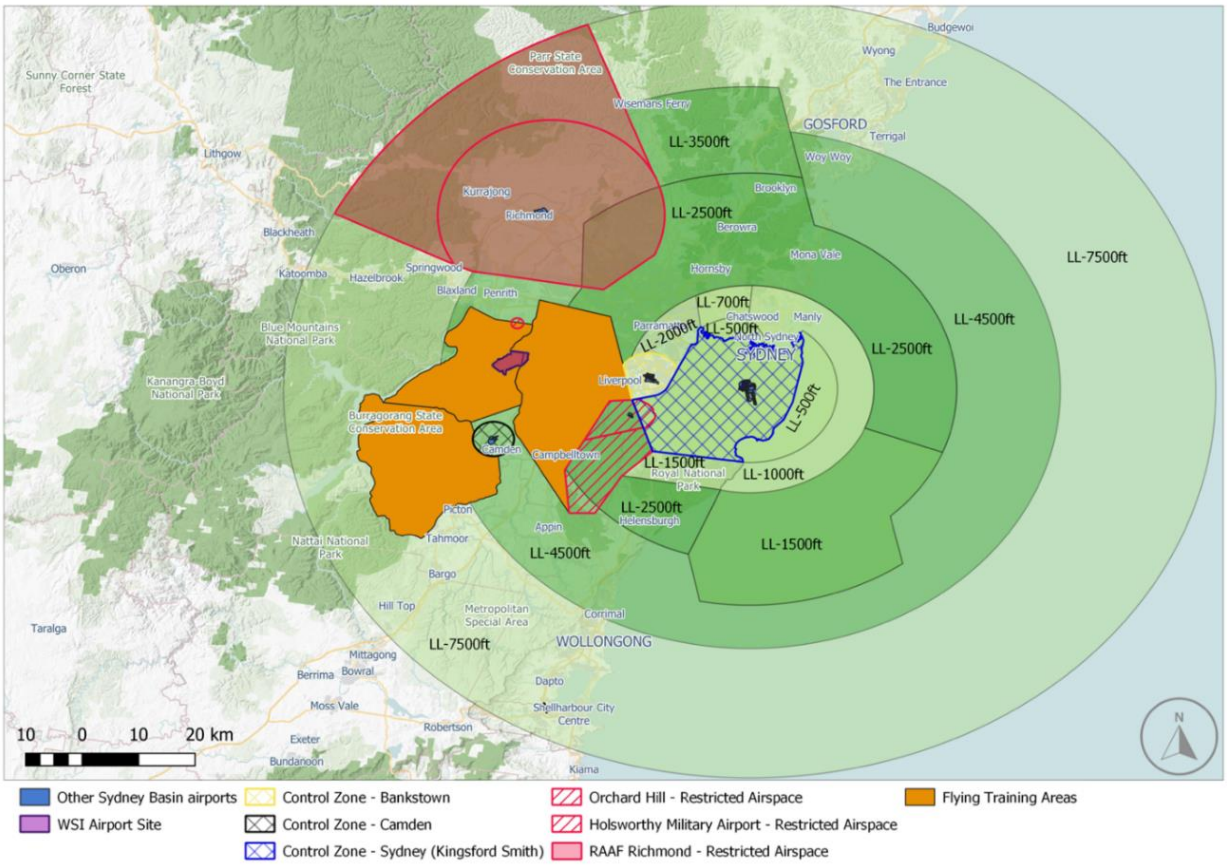


Figure 7.15 Current Sydney Basin control area and control zone boundaries including the Lower Level (LL) of controlled airspace

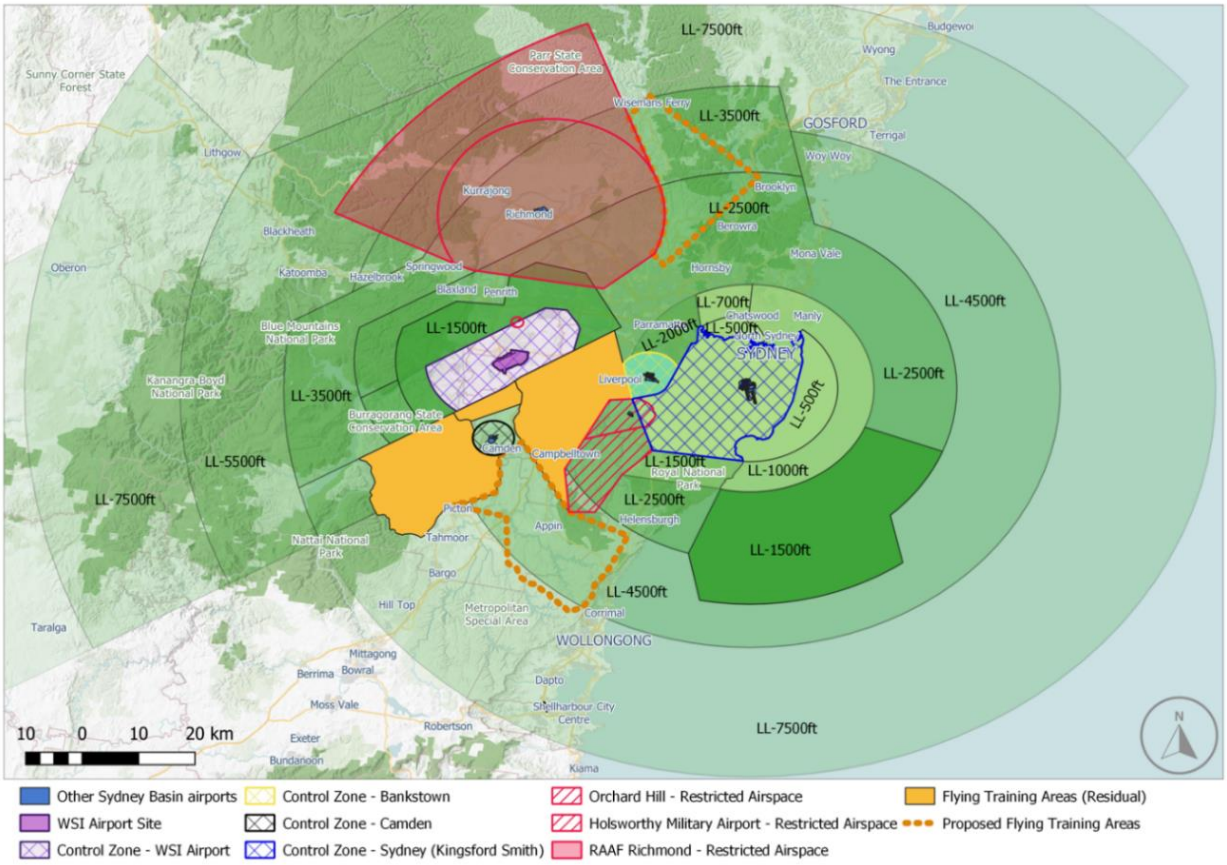


Figure 7.16 Proposed Sydney Basin control area and control zone boundaries including the Lower Level (LL) of controlled airspace

Chapter 8 Facilitated changes

This chapter provides a description of changes required to the Sydney Basin airspace to enable the new flightpaths and airspace for WSI. These adjustments are facilitated by the preliminary flight paths and airspace design (the project) and are required prior to the opening of WSI in 2026 to ensure the safe and efficient use of airspace once WSI's single runway operations commence.

The integration of WSI's new flight paths into the existing Sydney Basin airspace has been achieved through the adoption of strategic separation assurance or 'Safety by Design' principles in the proposed adjustments. This means aircraft will be separated from each other according to the flight routes and the type of air traffic service being provided.

The changes are limited to affecting only those flight paths to and from Sydney (Kingsford Smith) Airport, Bankstown Airport, Camden Airport and RAAF Base Richmond that currently use the airspace that would be required for WSI operations (principally in the west and north-west of the Sydney Basin). This includes 3 flying training areas associated with Bankstown and Camden Airports, and one low level transit route that would be repositioned to the west of WSI. This chapter also described an allowance for transit over WSI once operational.

Key characteristics of the changes include:

- new and adjusted Instrument flight Rules (IFR) procedures
- modified climb and descent gradients
- new and modified procedure waypoints – position and altitude requirements
- changes to Visual Flight Rules (VFR) operations and possible new flying training areas
- adjusted transit routes for enroute aircraft.

All changes other than flying training areas will be confirmed as part of the WSI airspace change proposal (refer to Chapter 6 (Project development and alternatives). In terms of the flying training areas, the final proposed detail and ultimate procedures will not be confirmed until completion of a separate airspace change proposal, depending on the extent of the change.

This chapter is supported by Technical paper 13: Facilitated changes (Technical paper 13). Information in this chapter forms part of the project description (otherwise described in Chapter 7 (The project)) and provides the basis of the impact assessment in Chapter 21 (Facilitated impacts).

8.1 Overview

Changes to the Sydney Basin airspace are required to safely integrate the WSI control area and flight paths while providing for safe and efficient operations for all aircraft in the Sydney Basin (referred to as facilitated airspace changes). This chapter describes the current flight paths and other operations to be impacted and the proposed facilitated airspace changes.

The adjustments have been minimised to the extent practicable and have been considered in terms of safety, national security (Defence), efficiency, equity of airspace access, existing aircraft operating standards, and impacts on the surrounding communities and environment (as described in Chapter 6 (Project development and alternatives)). For the Sydney (Kingsford Smith) Airport Standard Instrument Departures (SIDs) and Standard Instrument Arrivals (STARs), particular consideration was given to minimising changes to flight paths which exist to safely control the high volume of demand and the spread of noise in the Sydney Basin. Further details in the separation assurances that are embedded in the design of the proposed changes are provided in Section 8.1.1.

Integration would be required with all existing flight paths in the Sydney Basin that:

- service the needs of Sydney (Kingsford Smith) Airport, Bankstown and Camden Airports and RAAF Base Richmond
- support transiting aircraft overflying the Sydney Basin
- service the local flying training areas already in existence for military, civil training and commercial general aviation activities.

The proposed facilitated airspace changes relate to:

- Runway 25 SIDs from Sydney (Kingsford Smith) Airport to the west, north-west, north and east (Section 8.2.1.1)
- Runway 34L SID (waypoint KADOM) (jet) departures from Sydney (Kingsford Smith) Airport to the south, west, north and east (Section 8.2.1.2)
- Runway 34L SID (waypoint RICHMOND) (jet) from Sydney (Kingsford Smith) Airport Runway 34L to the west and north-west (Section 8.2.1.3)
- non-jet SIDs from Sydney (Kingsford Smith) Airport to the west or north-west (Section 8.2.1.6)
- non-jet STAR (AKMIR STAR) from the west to Sydney (Kingsford Smith) Airport (Section 8.2.2.1) (occasionally used by jets)
- adjustments to Bankstown SIDs (Section 8.3)
- introduction of Bankstown Airport STARs (Section 8.3)
- introduction of Camden Airport STARs (Section 8.4)
- introduction of RAAF Base Richmond SIDs and STARs (Section 8.5)
- other miscellaneous and minor procedure changes, including:
  - STARs (BOREE and RIVET) to Sydney (Kingsford Smith) Airport (Section 8.2.2)
  - Runway 07 departures from Sydney (Kingsford Smith) Airport to the west and north-west (Section 8.2.1.4)
  - Runway 07 Initial Approach Fix (IAF) for Sydney (Kingsford Smith) Airport (Section 8.2.1.5)
  - lower altitude transit flights (Section 8.6)
- Sydney Basin airspace VFR operations (Section 8.7)

Key characteristics of the changes include:

- new and adjusted IFR procedures
- modified climb and descent gradients
- new and modified procedure waypoints – position and altitude requirements
- changes to VFR operations and possible new flying training areas
- adjusted transit routes for enroute aircraft.

The adjustments would be introduced in 2026 on a scheduled Aeronautical Information Regulation and Control (AIRAC) date, prior to the official opening of WSI. Introduction of these changes ahead of WSI's opening will allow pilots and air traffic control to adjust their systems and become familiar with changes to current procedures before WSI traffic is introduced, and minimise the likelihood of conflicts or incidents in the airspace.

The description of each change has been developed on a high-level understanding of the procedures and processes that can be expected to operate and is based on the current level of design. All changes other than flying training areas will be confirmed as part of the WSI airspace change proposal (refer to Chapter 6 (Project development and alternatives).
In terms of the flying training areas, the final proposed detail and ultimate procedures will not be confirmed until completion of a separate change proposal, depending on the extent of the change.

Further:

- identifiers for new waypoints (NB010, NB013, NB033, etc.) are temporary and would be replaced by a designated 5 letter alpha character for waypoints as part of the detailed design phase and implementation of the proposed adjusted procedures (for example 'AKMIR')
- figures depicting the adjustments in this chapter show the nominal centreline for each flight path. Aircraft would be dispersed across this flight path.

8.1.1 Aircraft separation

Civil Aviation Safety Authority's (CASA's) Manual of Standards Part 172 – Air Traffic Services sets the minimum separation requirements for aircraft (vertical or lateral) which are applied in the design of SIDs and STARs. Where these standards are ensured by the design of SIDs and STARs incorporating altitude restrictions, flight paths are said to be designed with strategic separation assurance, referred to as "Safety by Design".

In Australia, aircraft flying under IFR in controlled airspace must be separated by 1,000 feet (ft) (305 metres (m)) vertically unless they are separated horizontally by 3 nautical miles (nm) (5.6 kilometres (km)).

8.2 Sydney (Kingsford Smith) Airport

There are no proposed changes to the Sydney (Kingsford Smith) Airport's noise sharing runway modes. It has been a functional requirement of this project to enable WSI and Sydney (Kingsford Smith) Airport to be able to operate independently with no changes to the noise sharing mechanisms in place for Sydney (Kingsford Smith) Airport.

There are no changes to aircraft noise sharing arrangements as they are currently implemented for Sydney (Kingsford Smith) Airport traffic. To ensure the safe integration of the proposed WSI flight paths there would be adjustments to specific arrival or departure STARs and SIDs for Sydney (Kingsford Smith) Airport as outlined in the following sections.

8.2.1 SIDs

8.2.1.1 Runway 25 (jet) departures to the west, north-west, north and east

Current

Currently jet aircraft departing Runway 25 use the Sydney Two Departure (Radar) SID. This is for aircraft departing to either western and north-western destinations via waypoint KADOM or waypoint RICHMOND or to northern and eastern destinations via waypoint SHORE. Runway 25 is used around 4 per cent of the year.

The initial track for all jet departures is to maintain the Runway 25 track until leaving 1,500 ft (460 m) on climb. At this point aircraft are to take up the heading assigned by air traffic control with the take-off clearance.

For western and north-western destinations, from a position around 10 nm (19 km) west of Sydney (Kingsford Smith) Airport departing aircraft are assigned either a right turn to a north-westerly heading or, depending on separation requirements with other aircraft in the Sydney Basin, given clearance to track direct to either waypoint KADOM or waypoint RICHMOND, depending on its destination.

For northern and eastern destinations, once above 1,500 ft aircraft are assigned a right-turn to a north-westerly heading and then either radar vectored to their outbound enroute track or cleared to waypoint SHORE.

A military parachute training area exists within the RAAF Base Richmond Restricted Airspace and when activated to high levels, flight paths that track via Richmond are not immediately available to aircraft departing Sydney (Kingsford Smith) Airport. Aircraft are tracked towards waypoint KADOM until either above the parachuting activity or west of the parachuting areas when they would either continue under radar vectors or be cleared to track directly to an enroute waypoint.

These jet departure operations are depicted in Figure 8.1, Figure 8.2 and Figure 8.3 and described in full in Appendix A of Technical paper 13.

Proposed

For aircraft with western and north-western destinations, the airspace in the west of the Sydney Basin would no longer be available as it is required for WSI flight paths. Aircraft departing from Runway 25 for waypoint KADOM and waypoint RICHMOND would now have their track and altitude defined by a new SID to ensure separation assurance is provided with WSI aircraft.

The new SID would initially follow the existing SID path and maintain the Runway 25 track until reaching 1,500 ft. At 1,500 ft aircraft would turn right and track direct to the new waypoint NB010. This part of the proposed SID is designed to replicate the existing radar vectoring tracks used for northern and eastern departure tracks as closely as possible. At the new waypoint NB010, aircraft would:

- turn left and track via a series of new waypoints (NB011, NB012, NB033) to waypoint KADOM (refer to Figure 8.1) or
- track to a new waypoint (NB013) and then direct to waypoint RICHMOND (refer to Figure 8.2).

These changes are described in full in Appendix A of Technical paper 13.

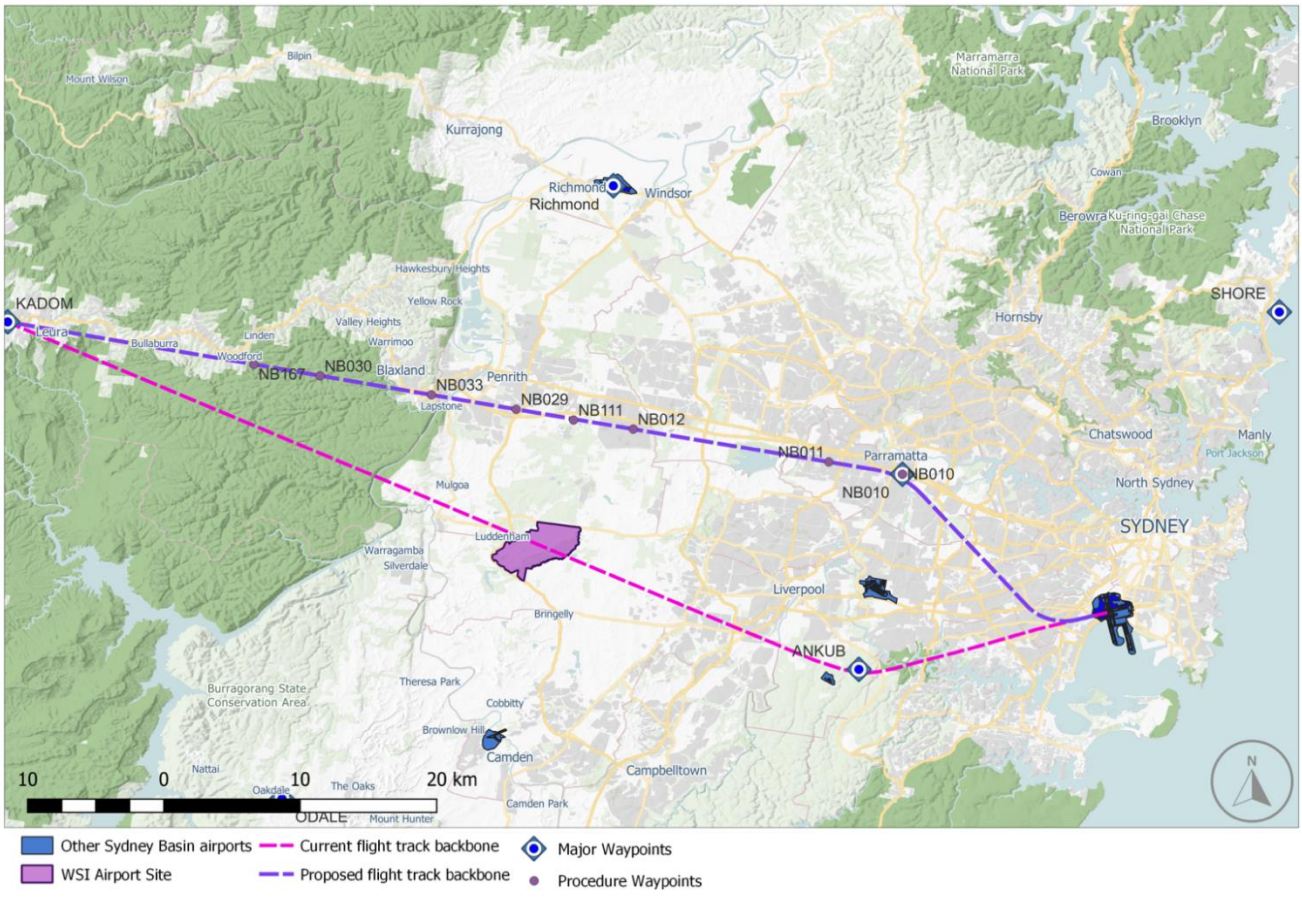


Figure 8.1 Sydney (Kingsford Smith) Airport Runway 25 KADOM SID – Current and proposed

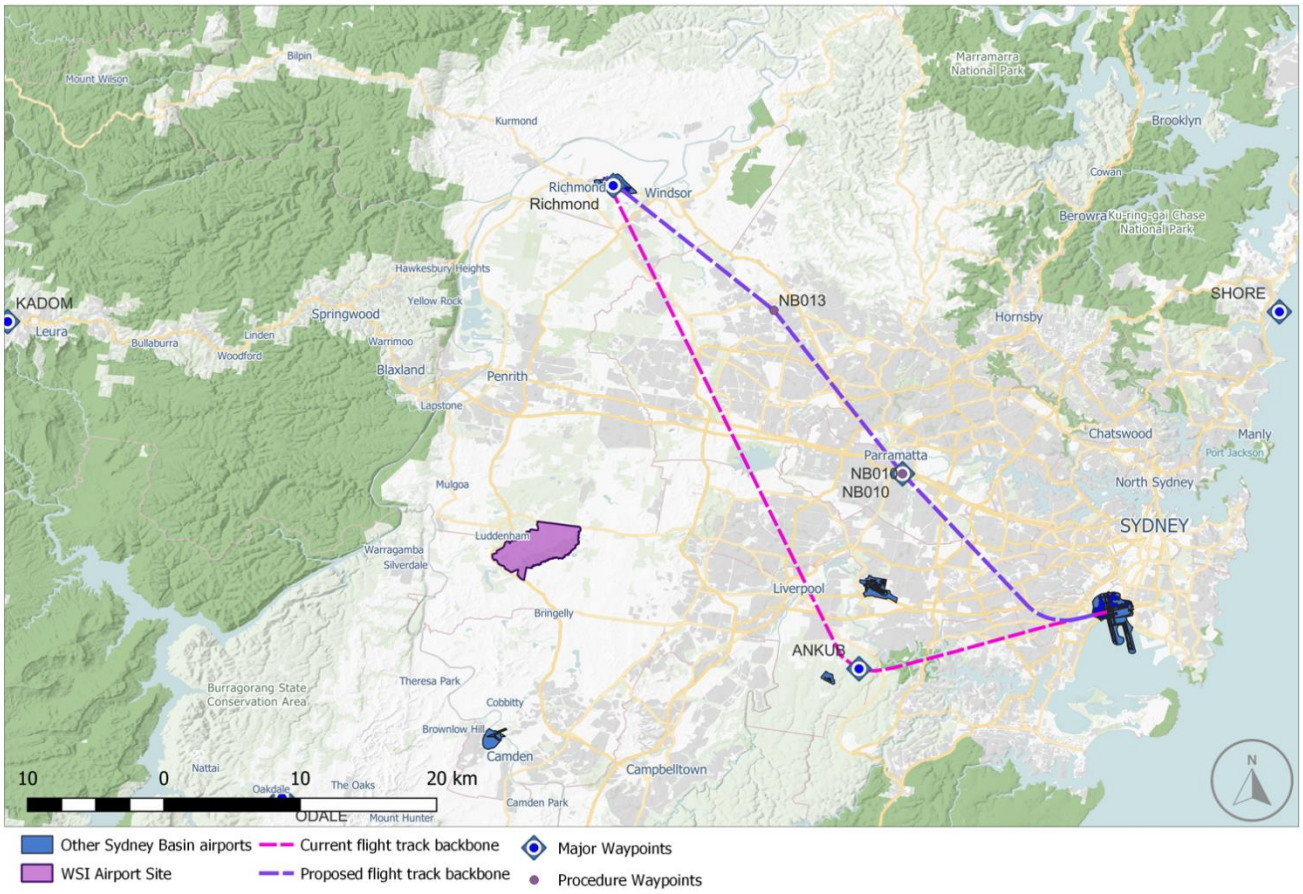


Figure 8.2 Sydney (Kingsford Smith) Airport Runway 25 RICHMOND SID – Current and proposed

For northern and eastern destinations, a new SID with altitude restrictions is required to ensure separation assurance is provided for departing aircraft from WSI and Sydney (Kingsford Smith) Airport. The existing waypoint SHORE (located on the coast around 16 nm (30 km) north of Sydney (Kingsford Smith) Airport) has been chosen as a suitable point to end a new SID as it is common to both these segments of flight. The key changes via waypoint SHORE are:

- the new SID would initially follow the existing radar SID path and maintain the Runway 25 track until reaching 1,500 ft (460 m). At 1,500 ft (460 m), aircraft would turn right and track direct to the new waypoint NB010. This part of the proposed SID is designed to replicate the existing flight path as close as possible
- at new waypoint NB010 aircraft would track via the new waypoints NB170 and NB065 to waypoint SHORE, where aircraft would transition to the enroute track.

Altitude restrictions at waypoints NB170 and NB065 would ensure strategic separation with northern arrivals for both WSI and Sydney (Kingsford Smith) Airport. The volume of traffic and the limited width of airspace available between military restricted airspace associated with RAAF Base Richmond and RAAF Base Williamtown airports to the north of Sydney would mean that a large amount of radar vectoring of aircraft on the Runway 25 northern and eastern SIDs would be required to ensure tactical separation of all aircraft. Three arrival tracks and 3 departure tracks cross each other in this section of airspace.

Once aircraft are north of waypoint NB010, aircraft can be expected to be processed in the manner in which they are currently. This would include areas currently overflown by radar vectored aircraft with additional areas to the west and north of the new SID. This would provide a similar distribution of aircraft to current operations. When traffic levels are high and airspace complexity warrants aircraft may proceed via the purple flight path shown in Figure 8.3 and be subject to SID altitude restrictions.

Based on advice provided by Airservices Australia, the adoption of the proposed change to the Runway 25 SHORE SID would undergo a series of utilisation stages as described in Appendix A in Technical paper 13.

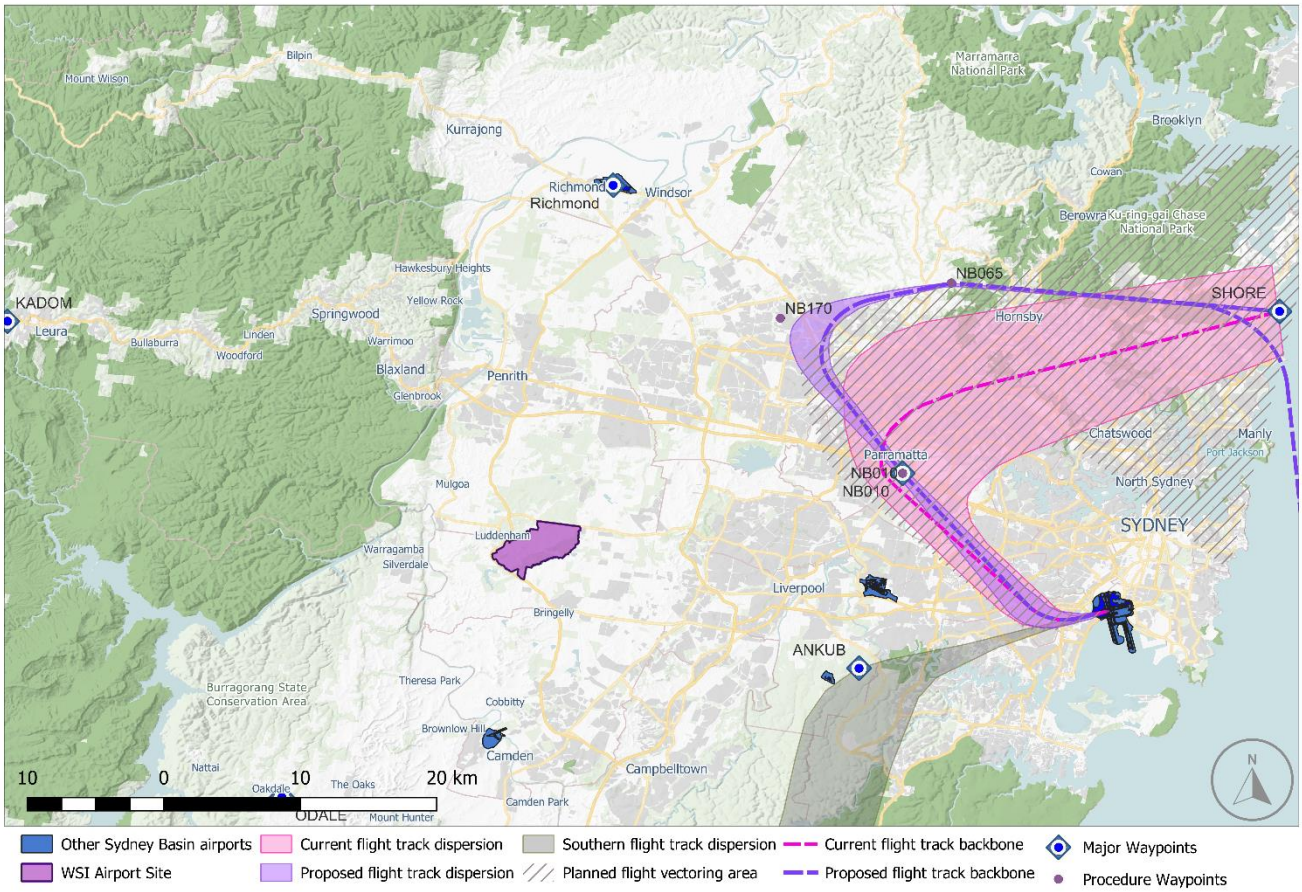


Figure 8.3 Sydney (Kingsford Smith) Airport Runway 25 SHORE SID – Current and proposed

8.2.1.2 Runway 34L (waypoint KADOM) (jet) departures to the south, west, north and east

Current

Jet aircraft currently use Runway 34L South West Departures (jets) SID which tracks west to waypoint KADOM and south to Wollongong (waypoint WOL). The tracking requirements are common until aircraft reach 10 nm (19 km) from Sydney (Kingsford Smith) Airport.

Aircraft departing Runway 34L and cleared via this SID must follow the procedure as published in the Australian AIP DAP. This involves operating on the Runway 34L track (335 degrees) until reaching 800 ft. At 800 ft the aircraft must commence a turn to the left and track of 290 degrees.

At 10 nm (19 km) from Sydney (Kingsford Smith) Airport, aircraft for waypoint KADOM turn left and track direct to waypoint KADOM.

The western track to waypoint KADOM connects to one of several enroute tracks for domestic and international destinations. This SID crosses the northern flight paths to and from WSI at relatively low-level altitudes.

The southern track has very limited use by wide-body jet aircraft departing for Melbourne and Johannesburg, South Africa as these aircraft are unable to use the shorter Runway 34R. This is typically around one or 2 flights per day.

Based on data obtained from Airservices Noise and Flight Path Monitoring System (NFPMS) there are approximately 164 departure movements departing off Runway 34L and using the current procedures when Sydney (Kingsford Smith) Airport is operating for the entire day in the Runway 34 direction (northerly operations).

Proposed

The flight path, the climb gradient and/or altitude requirements of this SID are not specific enough or require adjustments to achieve a strategic separation assurance with the proposed new WSI flight paths. In response to this, the following key changes are required:

- Runway 34L South-West Departures (Jets) would be modified to reflect minor alignment changes and to include new waypoints to allow defined altitude climb requirements to be established at known positions. This would be renamed as Runway 34L KADOM SID.
- As well as a transition for aircraft tracking west via waypoint KADOM, the modified SID would contain an amended transition to allow the limited number of aircraft needing to track to the south via waypoint TONTO**,** and a new transition to allow aircraft to track to the east via waypoint SHORE**.**
- All 3 transitions have a common track and altitude requirements until passing the new waypoint NB010. At NB010 aircraft for eastern destinations via waypoint SHORE would track via the new waypoints NB170 and NB065 to waypoint SHORE. From waypoint SHORE a series of oceanic transitions would take aircraft to all eastern destinations. This flight path design replaces the eastern transition for aircraft departing Runway 34L which currently commences on the Runway 34L RICHMOND SID.
- There would be a reallocation of departing traffic from the Runway 34L RICHMOND SID to this SID when the military parachute training area is activated within the RAAF Base Richmond Restricted Airspace.

The adoption of the proposed Runway 34L KADOM SID SHORE transition for jet aircraft would undergo a series of utilisation stages as outlined in Appendix B of Technical paper 13.

Figure 8.4 shows the current Runway 34L South-West Departures (Jets) SID through waypoint KADOM for departures to the west and how the current and proposed procedure tracks are closely aligned. The current transition leg for the lightly used southern departures which is positioned just beyond waypoint NB010 has been moved significantly further along the procedure track in the direction of waypoint KADOM. A turn to the south is now initiated at proposed waypoint NB033 at the base of the Blue Mountains at altitudes above 10,000 ft, positioning the initial left-turn manoeuvre and southern leg of the transition over parts of the Greater Blue Mountains Area (GBMA).

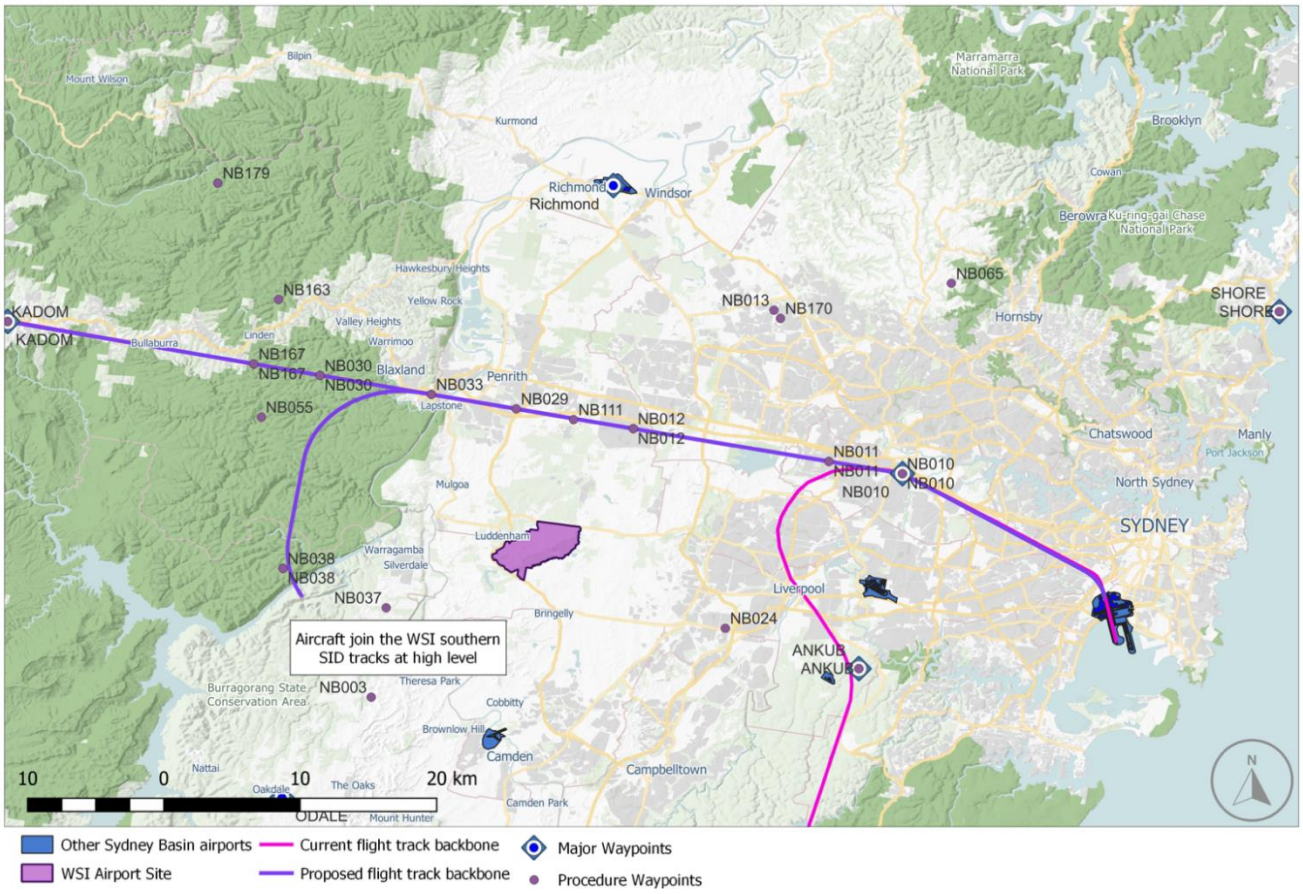
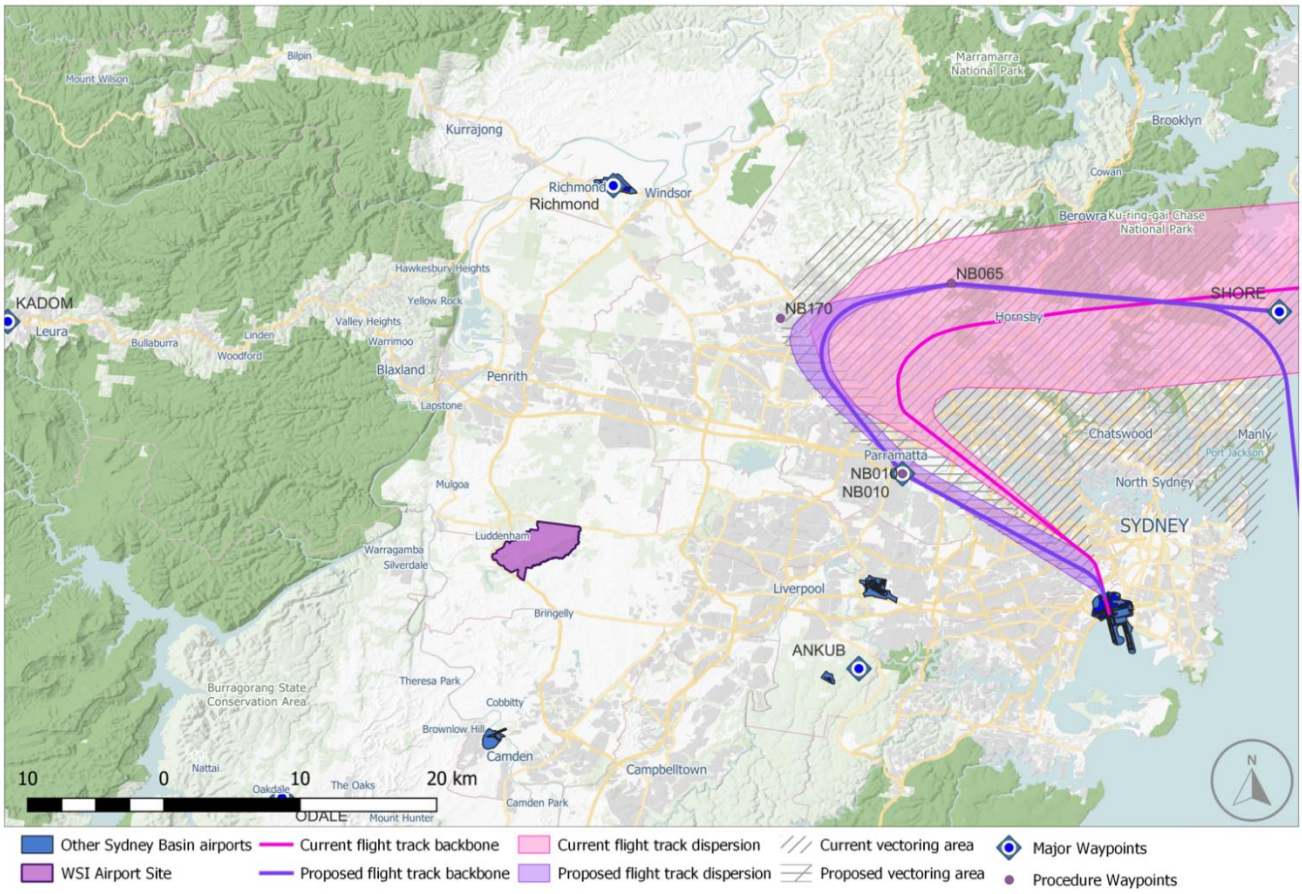


Figure 8.4 Sydney (Kingsford Smith) Airport Runway 34L KADOM SID – existing and proposed arrangements

Figure 8.5 shows the proposed change to east (oceanic) departures off Sydney (Kingsford Smith) Airport Runway 34L, reallocating those east-bound (oceanic) flights to the proposed Runway 34L KADOM SID with a transition at waypoint NB010 through waypoints NB065 and SHORE. Waypoint NB170 is a fly-by waypoint, and so aircraft would normally remain south of this position when heading towards waypoint SHORE.



Note: The proposed radar vectoring area in above figure depicts an extension to the west. In future operations the radar vectoring area would include the existing area and the extended area.

Figure 8.5 Sydney (Kingsford Smith) Airport Runway 34L KADOM to SHORE SID for eastern destinations – existing and proposed

8.2.1.3 Runway 34L (waypoint RICHMOND) departures to the west and north-west

Current

The Runway 34L RICHMOND SID is a high-use departure flight path and involves a track to the north-west passing overhead RAAF Base Richmond before splitting into several enroute tracks to domestic and international destinations. As the left turn from runway heading at 1,500 ft (460 m) along this track is not the same point for all aircraft (for example, due to different aircraft types, aircraft weights), there is a spread of tracks which converge overhead RAAF Base Richmond.

The SID also provides a transition for aircraft departing to northern and eastern destinations via radar vectoring by air traffic control. Radar vectoring commences at the arc off the SID at approximately 12 nm (22 km) from Sydney (Kingsford Smith) Airport. Aircraft for the east may be turned off the SID at or after this point, resulting in a large variation of tracks over northern Sydney.

The current SID crosses the new northern flight paths to and from WSI at relatively low-level altitudes.

Around 54 movements per day use this procedure for destinations to the north and west when operations are in the Runway 34L direction for the whole day.

These departure operations are depicted in Figure 8.6 and described in full in Appendix C of Technical paper 13.

Proposed

To accommodate arrivals to both Runway 05 and Runway 23 at WSI from the north and to facilitate "Safety by Design". The altitude restriction for aircraft flying the Runway 34L RICHMOND SID from Sydney (Kingsford Smith) Airport is to be above 6,000 ft (1.8 km) but below 11,000 ft (3.4 km) at the crossing point with the WSI arrival flight path.

Some minor adjustments to track specifications and an altitude restriction at a specific point along the Runway 34L RICHMOND SID are required.

The key aspects as shown in Figure 8.6 are:

- the proposed Runway 34L RICHMOND SID has been designed to replicate the existing SID as far as possible while meeting the requirements to safely cross the WSI northern arrivals
- the proposed SID retains the first turn away from the Runway 34L heading at 1,500 ft (460 m). The new waypoint NB013 has been designed to maintain the spread created by the 1,500 ft (460 m) left turn for as long as possible, and to provide a position on track where aircraft must comply with the altitude restriction of 10,000 ft (3 km) to safely separate them from WSI arrivals
- using historical flight tracking information, waypoint NB013 has been placed in the centre of the current lateral track spread at the furthest possible point from Sydney (Kingsford Smith) Airport to ensure the required separation and "Safety by Design" outcome.

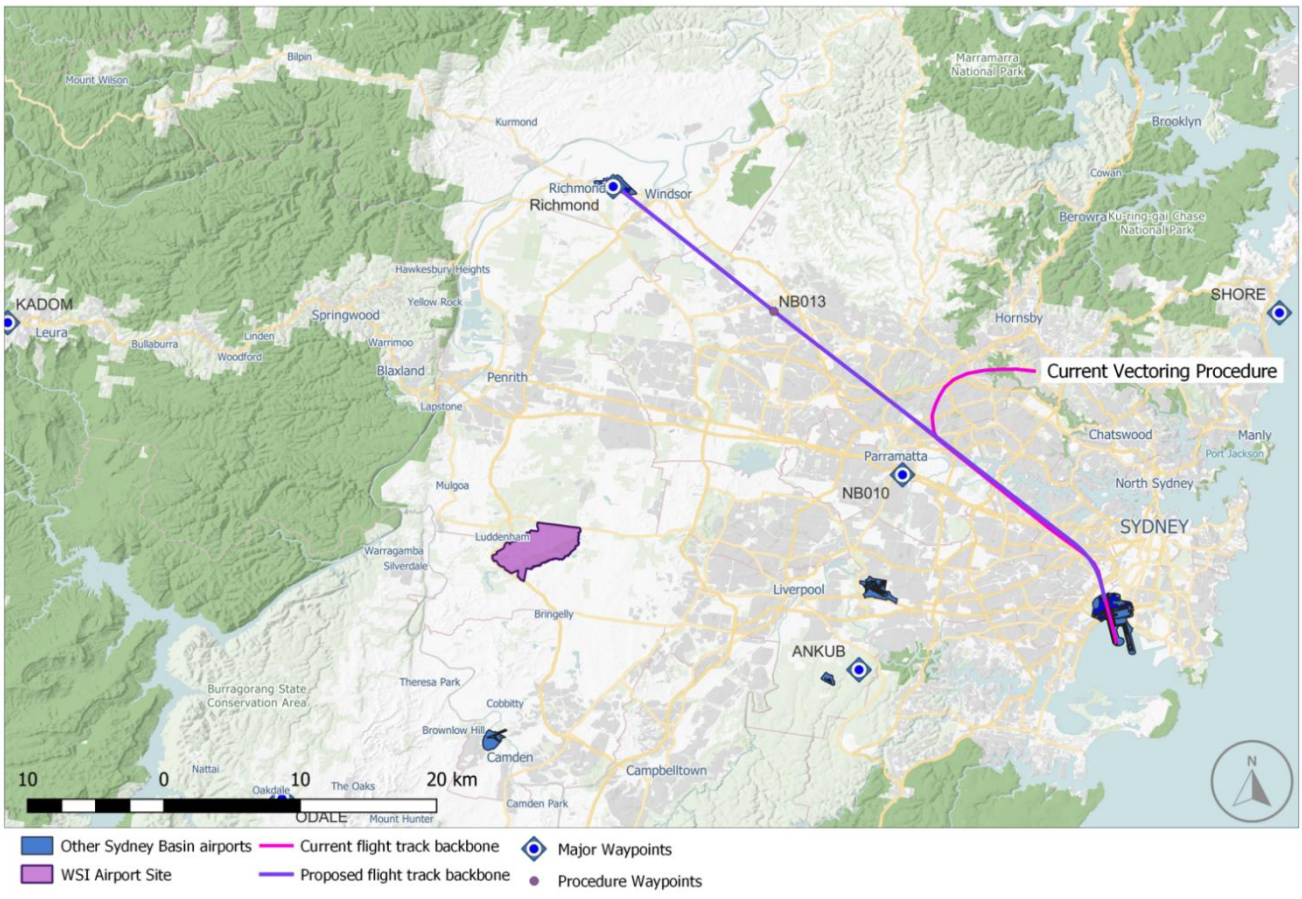


Figure 8.6 Sydney (Kingsford Smith) Airport Runway 34L RICHMOND SID – current and proposed

8.2.1.4 Runway 07 departures west and north-west

Current

Jet aircraft departing Runway 07 at Sydney (Kingsford Smith) Airport and tracking via Richmond or KADOM SID are currently radar vectored to their enroute initial track. Runway 07 has a low level of usage (less than one per cent of total annual movements).

Once east of the coast, aircraft bound for northern and southern destinations have specific tracking instructions to their next waypoint, but eastern, north-western and western departures are radar vectored to their next waypoint. In the case of eastern departures this is due to a multitude of possible destinations. For aircraft heading west, there is a need to cross multiple northern arrival paths for Sydney (Kingsford Smith) Airport.

Air traffic control noise abatement procedures also require jet aircraft to be at or above 5,000 ft (1.5 km) before aircraft cross the NSW coastline for the second time.

These departure operations are described in full in Appendix J of Technical paper 13.

Proposed

Two new SIDs have been developed to provide separation assurance with WSI and Sydney (Kingsford Smith) Airport aircraft. These are similar to existing radar vectored tracks and formalise an altitude restriction at the NSW coastline set for aircraft that have departed Runway 07 for west and north-west destinations. The initial departure track for the proposed SIDs from the runway threshold would be the same as the existing SID until aircraft are east of the NSW coast.

The altitude restriction has been revised to require aircraft to be above 10,000 ft as aircraft cross the waypoint SHORE and to be above 15,000 ft as aircraft cross the new waypoint NB170.

The proposed Runway 07 SIDs are depicted in Figure 8.7.

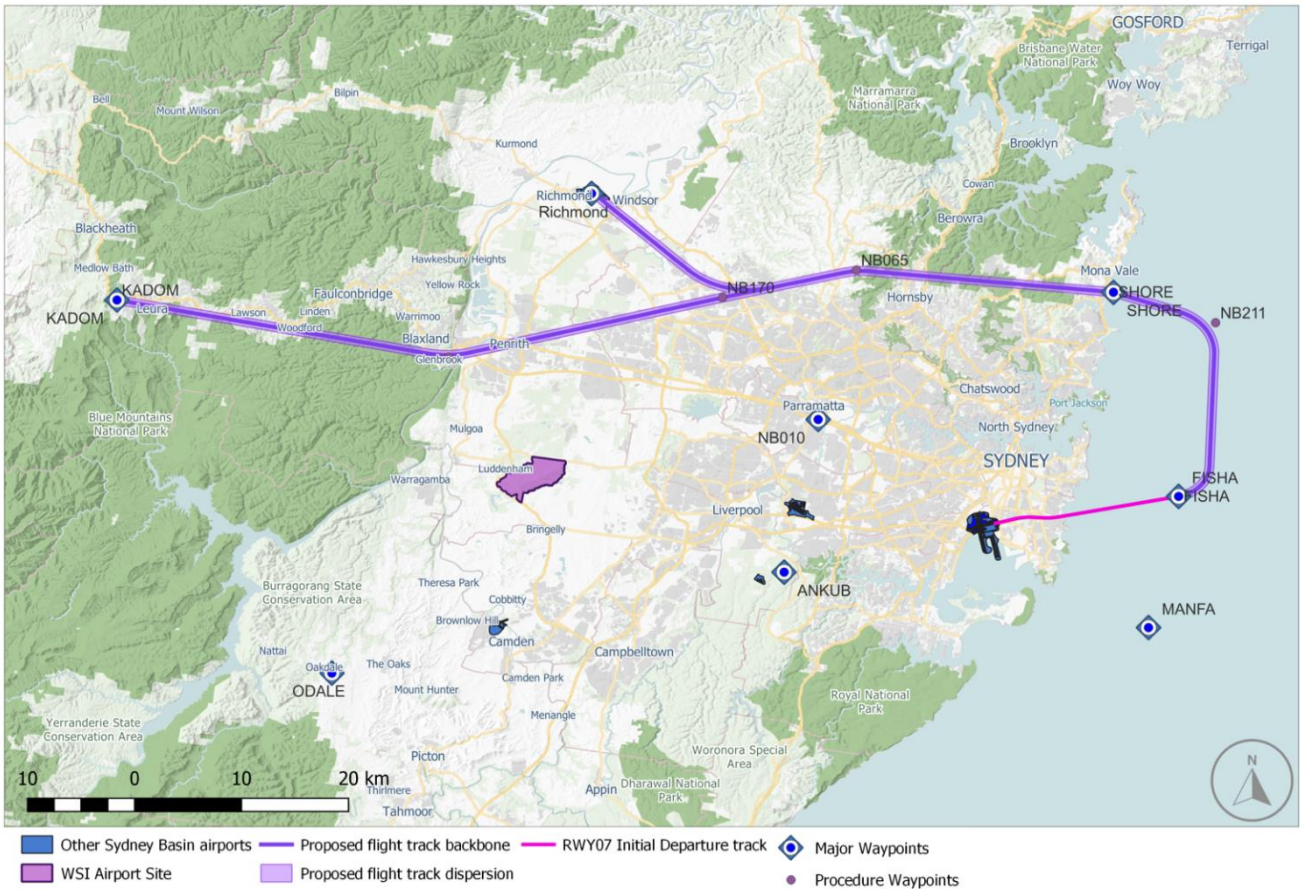


Figure 8.7 Sydney (Kingsford Smith) Airport Runway 07 SIDs – proposed

8.2.1.5 Runway 07 Initial Approach Fix

Current

Under ILS conditions aircraft arriving to Runway 07 are radar vectored into a position which allows them to intercept the ILS at existing waypoint ANKUB at an altitude of 3,000 ft. To allow aircraft a period of descent stability prior to waypoint ANKUB, radar vectoring can extend out to around 16 nm (29 km) from the airport.

Proposed

A new waypoint (NB253) would be introduced that establishes a secondary IAF with a vertical restriction. This minor change would ensure that there is vertical separation assurance with WSI non-jet departures turning right from the WSI Runway 05 when the Sydney (Kingsford Smith) Airport Runway 07 ILS is in use. The new waypoint NB253 allows for an intercept altitude of 4,000 ft. The new waypoint is on the current flight path of aircraft arriving from the north that are radar vectored for the ILS approach.

The proposed Runway 07 IAF is depicted in Figure 8.8.

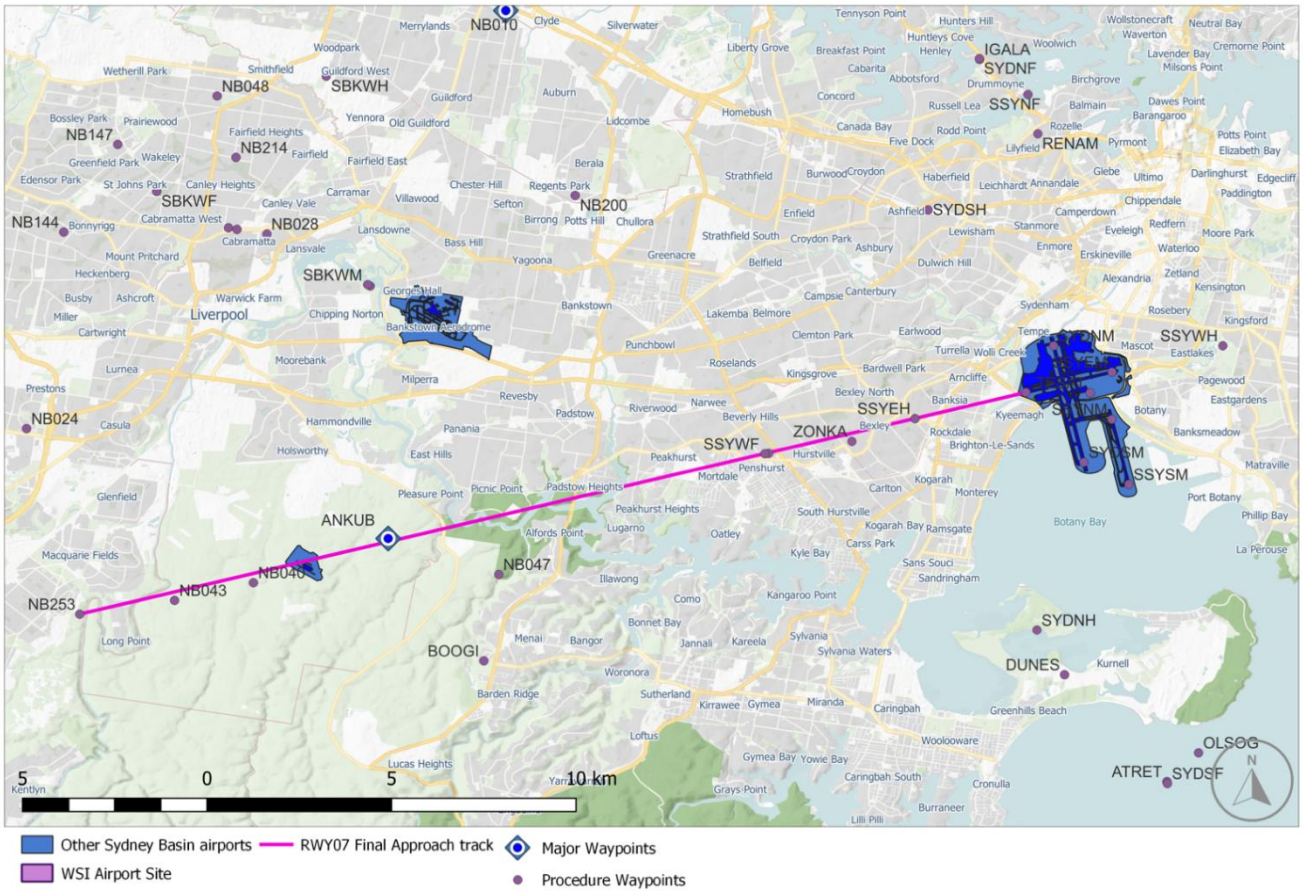


Figure 8.8 Sydney (Kingsford Smith) Airport – proposed Runway 07 initial approach fix

8.2.1.6 Non-jet departures to the west and north-west

Current

Several airlines operate non-jet services from Sydney (Kingsford Smith) Airport to various interstate and intrastate destinations. Departures with western and north-western destinations would be affected by WSI flight paths. The normal departure runway for these aircraft is Runway 34L, 16R, 25 or 07.

Non-jet departures with western and north-western destinations are assigned the Sydney Two Departure (Radar) SID. They are radar vectored by air traffic control to the first waypoint – either KADOM, SOFAL or RIC covering a large portion of the north-west quadrant of the Sydney Basin airspace.

Proposed

Aircraft operating to western and north-western destinations cannot be processed through or around WSI traffic via radar vectors with the required level of strategic separation assurance (“Safety by Design”). Accordingly, a set of non-jet SIDs have been developed for these aircraft from Sydney (Kingsford Smith) Airport to safely interact with WSI aircraft.

Key features of this change are:

- a new SID (non-jet ANKUB SID) has been designed to commence overhead the existing waypoint ANKUB, located around 10 nm (19 km) to the south-west of Sydney (Kingsford Smith) Airport
- the operation by non-jet departures to waypoint ANKUB remains the same as the current operation from all Sydney (Kingsford Smith) Airport runways. After flying their initial take-off assigned heading, all non-jet departures from Sydney (Kingsford Smith) Airport runways to the west and north-west would be radar vectored to a position where they can track directly to waypoint ANKUB, subject to separation with other aircraft

- from ANKUB, all non-jet aircraft would follow a common track via the proposed new waypoints NB024, NB037, and NB038, and aircraft would be required to reach specific altitudes at NB024 and NB037. The proposed new waypoints and altitude requirements would result in less lateral dispersion and increased concentration of non-jet departure operations over parts of the Sydney Basin. The altitude requirements at the new waypoints would result in non-jet aircraft flying a vertical profile that is similar to current typical operations
- non-jet SIDs remain south of the airspace required for WSI until approximately 15 km west of WSI (waypoint NB038), where a turn can be made to join the enroute flight segments for western or north-western destinations.

The adoption of the proposed non-jet ANKUB SID would undergo a series of utilisation stages as outlined in Appendix D of Technical paper 13.

Figure 8.9 shows the proposed non-jet ANKUB SID compared with existing non-jet radar tracks. In March 2019, there was an average 30 non-jet flights daily to western and north-western destinations. It is expected that this would increase to around 35 movements by 2030, of which around 20 movements would utilise the proposed new SID procedure. The remainder would be radar vectored.

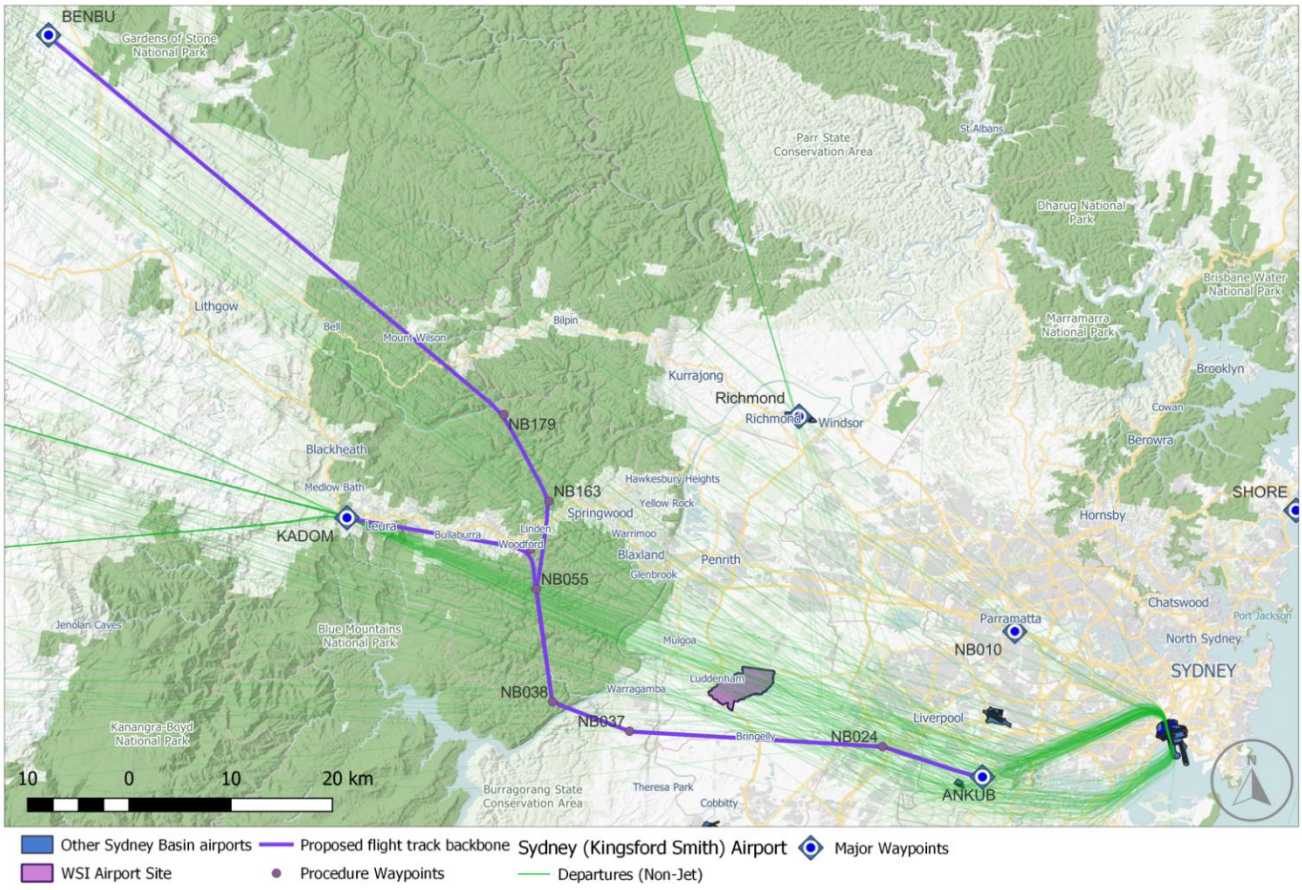


Figure 8.9 Sydney (Kingsford Smith) Airport – existing non-jet radar tracks and proposed non-jet ANKUB SID

8.2.2 STARs

8.2.2.1 AKMIR STAR (formally ODALE STAR)

Current

Non-jet aircraft arrive at Sydney (Kingsford Smith) Airport from the south and west, and track from enroute flight paths to join the ODALE STAR. This STAR is effectively a straight line from waypoint ODALE located approximately 33 nm (61 km) south-west of Sydney (Kingsford Smith) Airport.

The ODALE STAR provides lateral and vertical guidance to pilots to allow air traffic control to safely integrate these aircraft into the Sydney (Kingsford Smith) Airport arrival sequence. Jets are not permitted to plan via ODALE but may occasionally be assigned the ODALE STAR by air traffic control for traffic management purposes. There is a requirement for aircraft to be below 7,000 ft by waypoint MITSA, which is around 20 nm (37 km) from Sydney (Kingsford Smith) Airport.

Outbound aircraft from WSI on SIDs to southern destinations must cross the ODALE STAR to join the main outbound traffic stream from the Sydney Basin.

Proposed

The existing ODALE STAR flight path does not provide sufficient space for jet aircraft departing WSI to climb above the jet and non-jet arrivals to Sydney (Kingsford Smith) Airport from the south and west.

To achieve this within the constrained airspace in this part of the Sydney Basin, the ODALE STAR procedure would be moved laterally to the south-east to facilitate southbound aircraft departing WSI (both runways).

The adjusted STAR (renamed AKMIR STAR) would cross the proposed new southern flight paths from WSI.

Key features of this change are:

- enroute tracks would continue to connect to the STAR at waypoint AKMIR and aircraft would be required to maintain the lateral and vertical constraints of the STAR unless weather is hazardous or otherwise directed by air traffic control
- a deviation of around 3.2 nm (5.9 km) at is extremity south of the existing ODALE STAR flight path between waypoint AKMIR and existing waypoint MITSA is required to maintain separation assurance from WSI traffic (refer Figure 8.10)
- new or amended vertical constraints are required for several waypoints along the STAR, including existing waypoint MITSA (which results in aircraft being 2,000 ft higher than what is currently required on ODALE STAR, potentially delivering noise reductions between AKMIR and MITSA). This is designed to allow both jet and non-jet aircraft to undertake a fuel-efficient continuous descent operation (CDO) from cruise level to the higher target descent altitude of 9,000 ft at waypoint MITSA
- from waypoint MITSA the AKMIR STAR re-joins the track alignment of the current ODALE STAR to Sydney (Kingsford Smith) Airport from which the current procedures of air traffic control clearance and radar vectoring are maintained for all runway approaches.

The current arrival tracks and proposed displacement of the ODALE (AKMIR) STAR is shown in Figure 8.10.

The proposed adjusted AKMIR STAR will continue to be used occasionally by jet aircraft.

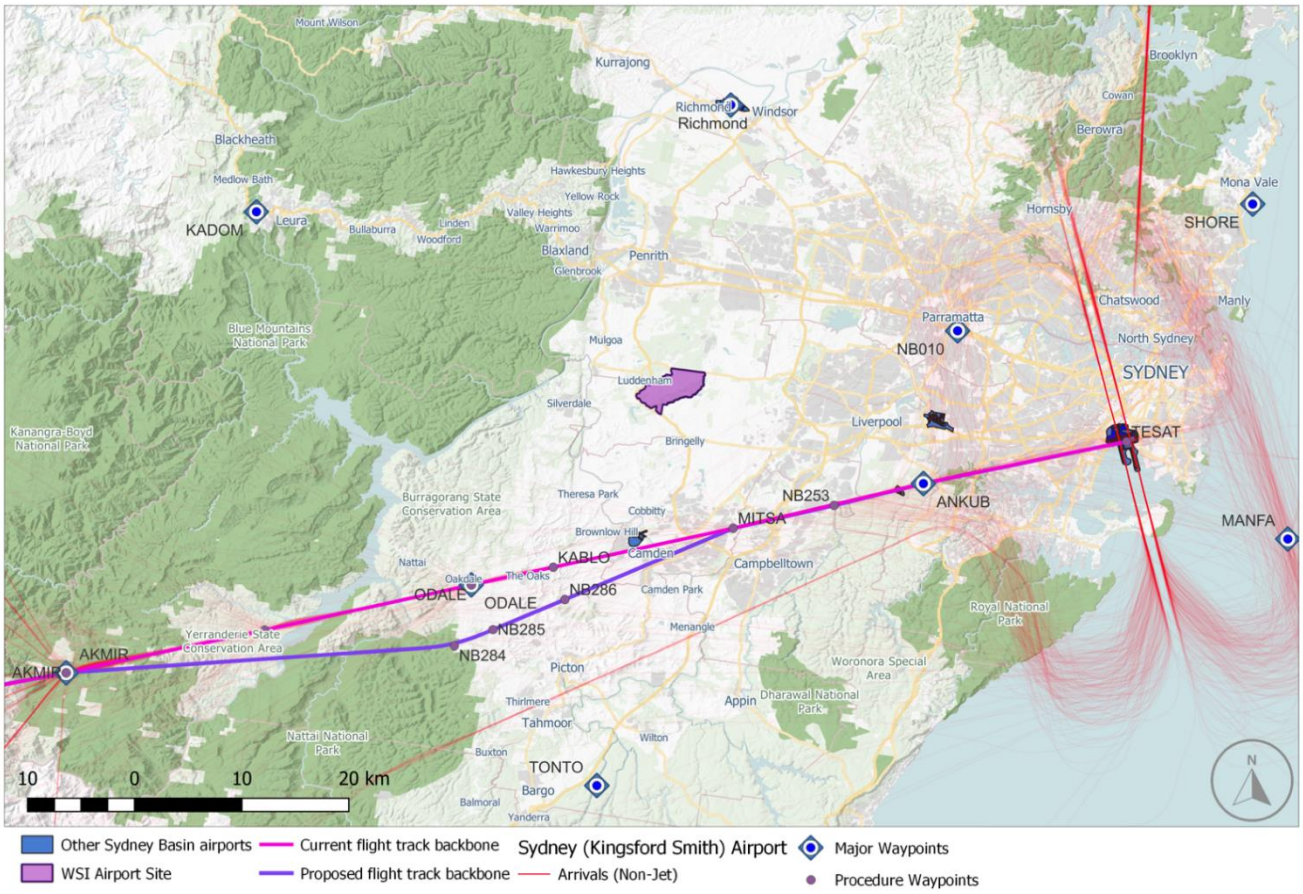


Figure 8.10 Sydney (Kingsford Smith) Airport – current ODALE STAR, current arrival tracks and the new AKMIR STAR

8.2.2.2 Adjusted RIVET and BOREE STAR

Current

Sydney (Kingsford Smith) Airport RIVET STAR is an inbound jet arrival track from the south and west. The BOREE STAR is an inbound jet arrival track from the north. On occasion, air traffic control re-routes non-jet aircraft via the RIVET and BOREE STARs.

The AIP Departures and Approach Procedure (DAP) sets track and altitude restrictions for each STAR. For the RIVET STAR the critical altitude constraint is for aircraft to be below 9,000 feet (ft) by waypoint TAMMI, which is located 20 nm (36 km) from Sydney (Kingsford Smith) Airport. For the BOREE STAR the critical altitude constraint is for aircraft to be below 9,000 ft by waypoint BEROW, which is located 20 nm (36 km) from Sydney (Kingsford Smith) Airport.

Both STARs provide a continuous descent operation (CDO) from cruise altitude to 9,000 ft. Below 9,000 ft, descent is subject to air traffic control clearance.

Proposed

In order to join the major outbound route to the south from the Sydney Basin, WSI aircraft on its southern departure flight paths need to safely cross the arrival aircraft on the RIVET STAR. Safe and predictable separation is also required between aircraft on the BOREE STAR, aircraft flying to WSI and aircraft crossing to RAAF Base Richmond.

To establish separation assurance and ensure a "Safety by Design" outcome, the RIVET STAR (refer to Figure 8.11) and the BOREE STAR (refer to Figure 8.12) would be adjusted as follows:

- a new waypoint (NB017) between RIVET and TAMMI at which point Sydney (Kingsford Smith) Airport arrival aircraft on the RIVET STAR would be required to be below 14,000 ft and above 9,000 ft
- a new waypoint (NB252) between BEKLO and BEROW at which point Sydney (Kingsford Smith) Airport arrival aircraft on the RIVET STAR would be required to be below 12,000 ft.

This would allow all aircraft types to adopt a CDO and continue to meet the target altitude requirement of below 9,000 ft by waypoint TAMMI (for RIVET STAR) and BEROW (for BOREE STAR). As most aircraft currently operate within these altitude block requirements in the vicinity of these new waypoints, these proposed adjustments are simply mandating current practice.

The requirement for aircraft to be below 9,000 ft at waypoint TAMMI and BEROW for RIVET STAR and BOREE STAR respectively and the subsequent radar vectored descent would not change. This is because the altitude restriction is fixed and remains a requirement to facilitate noise sharing runway mode arrangements (refer to Section 8.2).

The new waypoints NB017 and NB252 do not result in any lateral changes to the RIVET and BOREE STARs respectively.

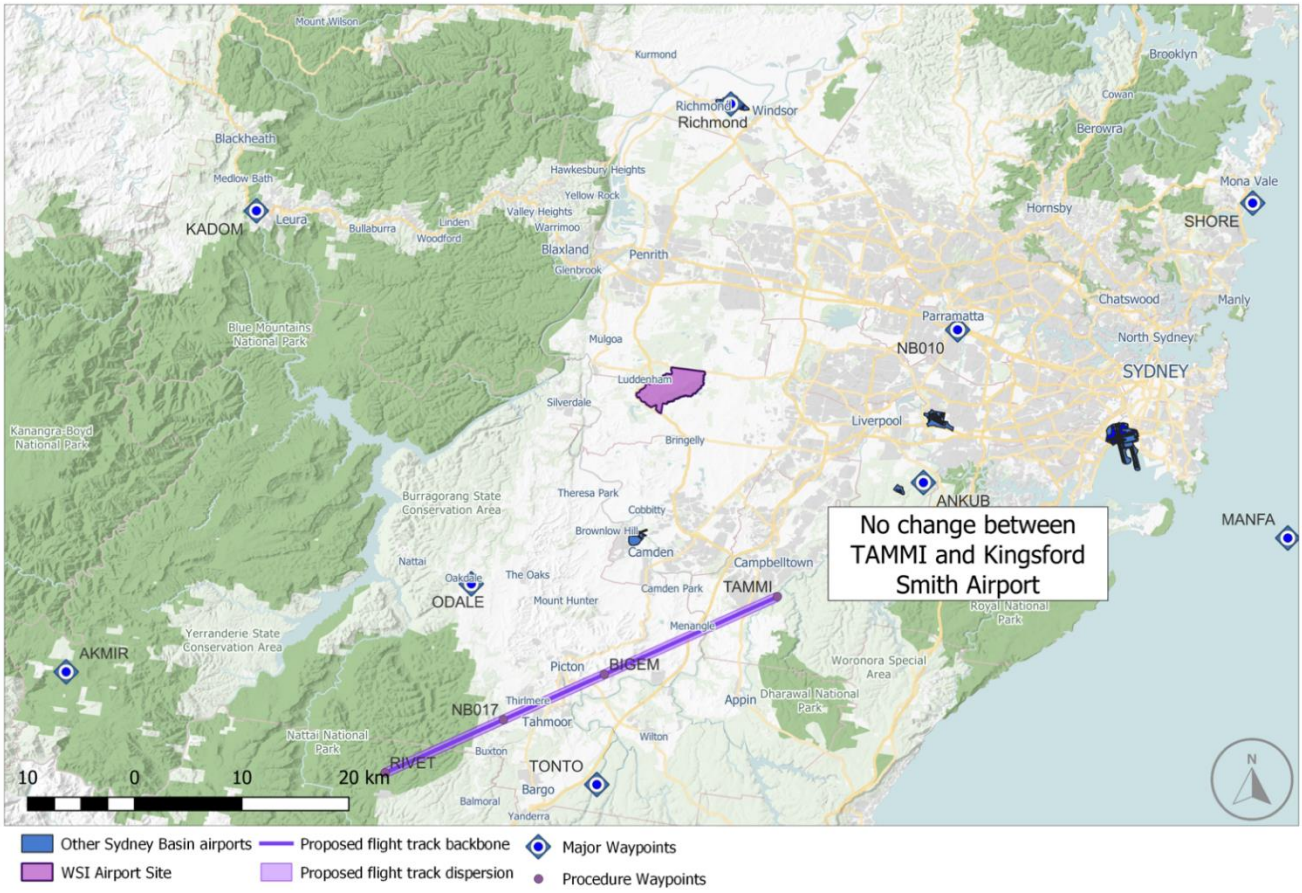


Figure 8.11 Sydney (Kingsford Smith) Airport – the adjusted RIVET STAR

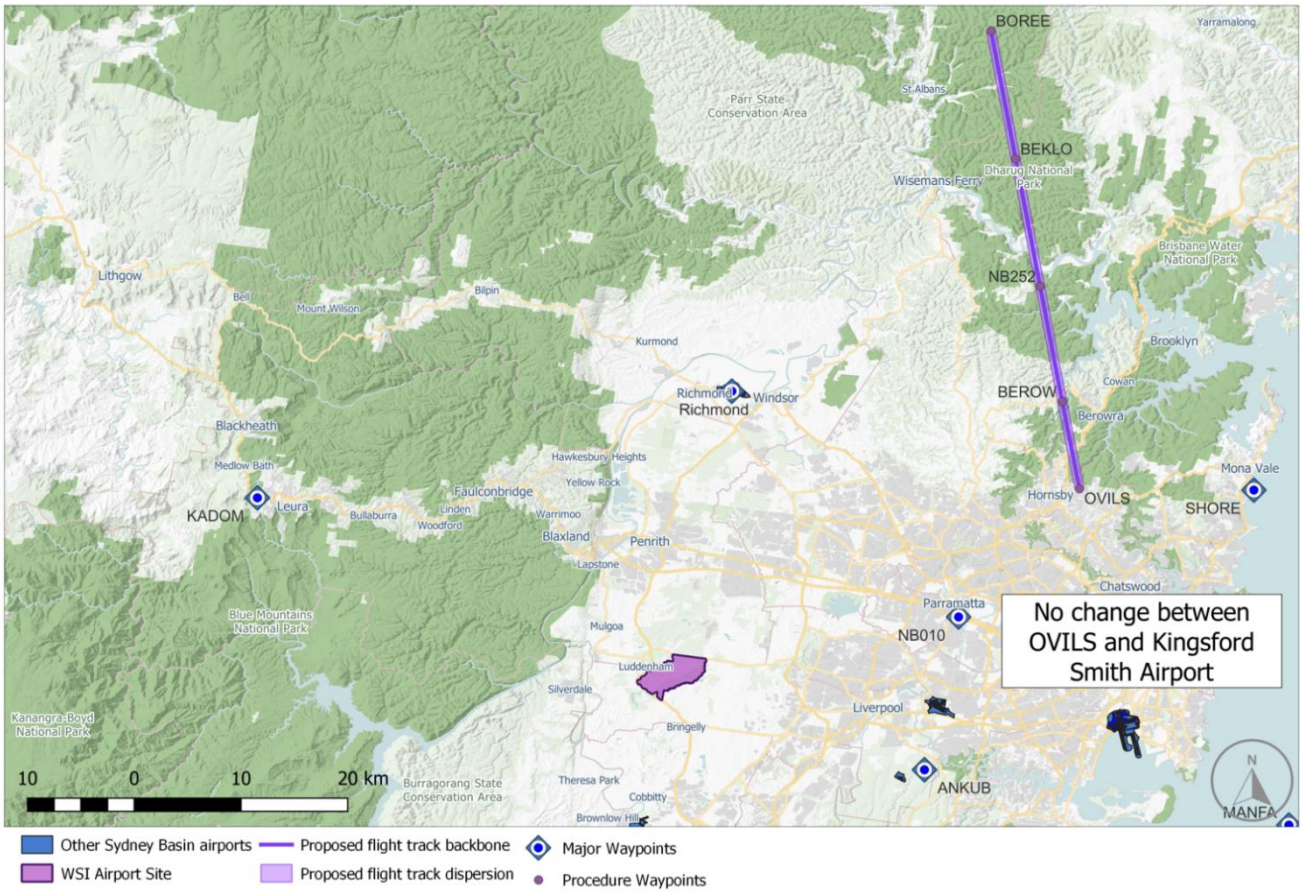


Figure 8.12 Sydney (Kingsford Smith) Airport – the adjusted BOREE STAR

8.3 Bankstown Airport

Bankstown Airport caters for a wide range of general aviation activities (both fixed wing and helicopter) as described in Chapter 4 (Project setting). Most of the aircraft operating are single or twin-engine piston aircraft and helicopters operating in visual conditions under VFR as described later in Section 8.7. A minority of aircraft operate under IFR, such as jets and turbo-prop aircraft. This section outlines the proposed changes for IFR aircraft.

It is expected that the Bankstown control zone (CTR) will be enlarged slightly to contain IFR procedures. Air traffic control will continue to manage aircraft tracking as they do today.

8.3.1 Current

Aircraft to and from Bankstown Airport operate under IFR through the surrounding control area (CTA), interacting with other aircraft in CTA in the Sydney Basin.

IFR aircraft normally depart Bankstown Airport via a SID that provides an initial track to the north-west. Once the aircraft reaches 3,000 ft (1 km) it is radar vectored to its enroute track.

Aircraft that arrive under IFR plan to either fly directly from their last enroute waypoint or via one of the IFR approach routes that terminate at Bankstown Airport.

Three non-precision approach (NDB and RNP) procedures (which uses lateral guidance but not vertical guidance) exist for Bankstown Airport. Two procedures, RNP 11C and NDB 11C provide approaches for aircraft from westerly and southerly directions while one (NDB-A) procedure provides approaches from the north and east. The NDB-11C and NDB-A procedures are rarely flown. The RNP 11C also shares much of its route with the Westmead Hospital RNP approach from the same direction. The IFR procedures from the west are also used by IFR capable aircraft for the purposes of training.

8.3.2 Proposed

The introduction of WSI flight paths reduces the airspace available to the west of Bankstown Airport and requires changes to how aircraft operate in controlled and uncontrolled airspace to and from Bankstown Airport.

To provide for separation assurance, a set of adjusted SIDs and new STARs for aircraft operating under IFR at Bankstown Airport is required.

The new instrument approaches (RNP) would also be introduced to allow aircraft arriving via the new STARs to complete a safe approach and landing.

Adjustments are also proposed for IFR flights that need to transit overhead WSI. This is discussed in Section 8.6.

8.3.2.1 IFR Departures

Figure 8.13 shows the proposed IFR aircraft SIDs (shown as purple tracks and hatching) alongside the current configuration of departure tracks inside the Bankstown Airport control zone (shown as green). The departure tracks shown represents departures over one month (March 2019).

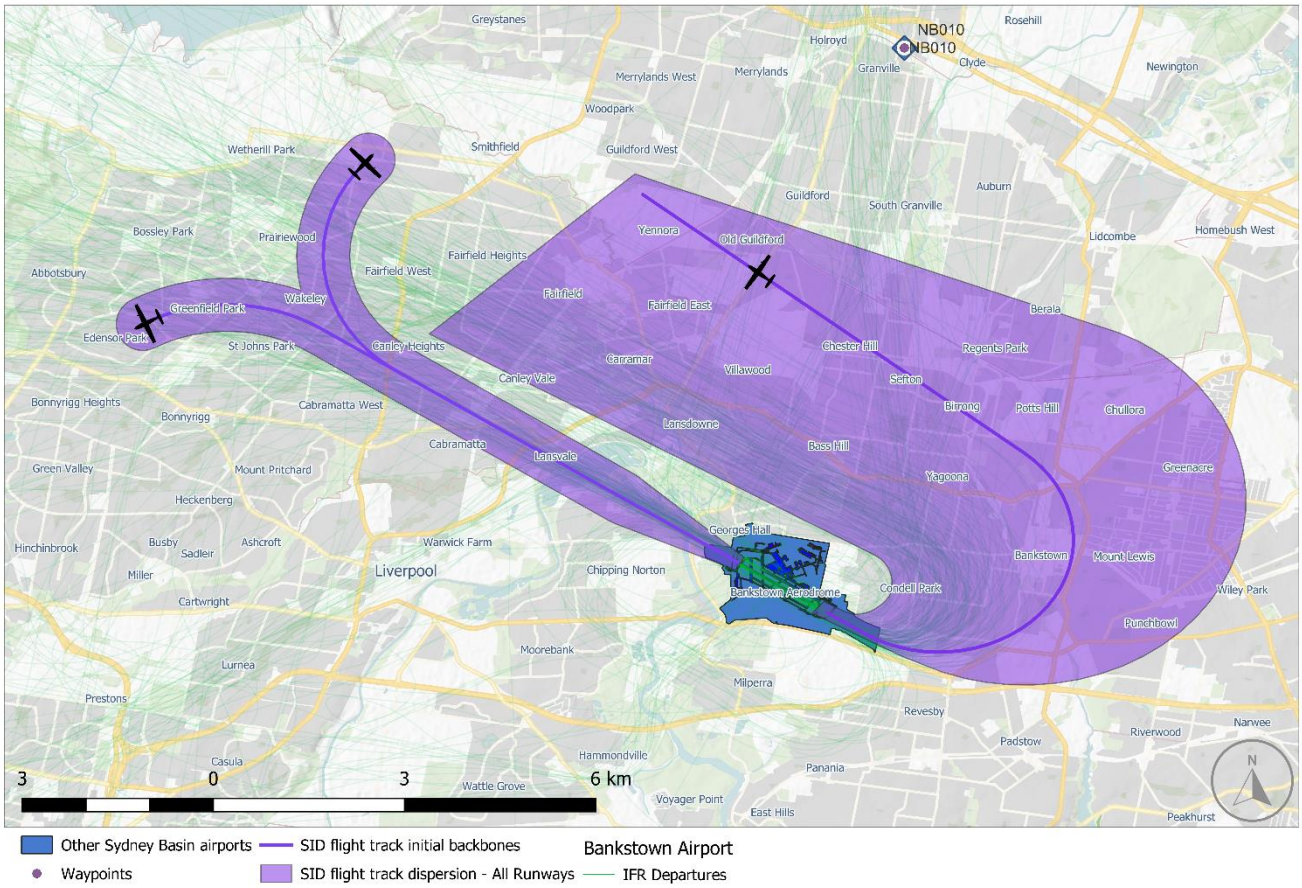


Figure 8.13 Bankstown Airport – current departures (green) and future initial SID tracks

New SIDs are proposed for both Runway 11C and Runway 29C that would take aircraft in a northerly or southerly direction safely around the WSI aircraft manoeuvring area.

The basic initial tracking requirements of the current Runway 11C and Runway 29C SID have been retained (refer to Figure 8.13). New outer tracks (Figure 8.14) have been designed to ensure separation assurances ("Safety by Design") between WSI and Bankstown Airport aircraft.

Aircraft would generally be tactically radar vectored from the last SID waypoint (waypoint NB013 to the north and waypoint NB148 to the south) to their first enroute waypoint, but may be radar vectored from any point along the SID to provide the required separation assurance.

Where the level of air traffic control workload proves to be too high in managing this radar vectoring, the nominal SID path may be altered to reflect the air traffic control standard vectoring path.

Proposed waypoints and flying heights above terrain are provided in Annexure G of Technical paper 13. Aircraft would typically be around 1,450 ft to 2,450 ft depending on the waypoint.

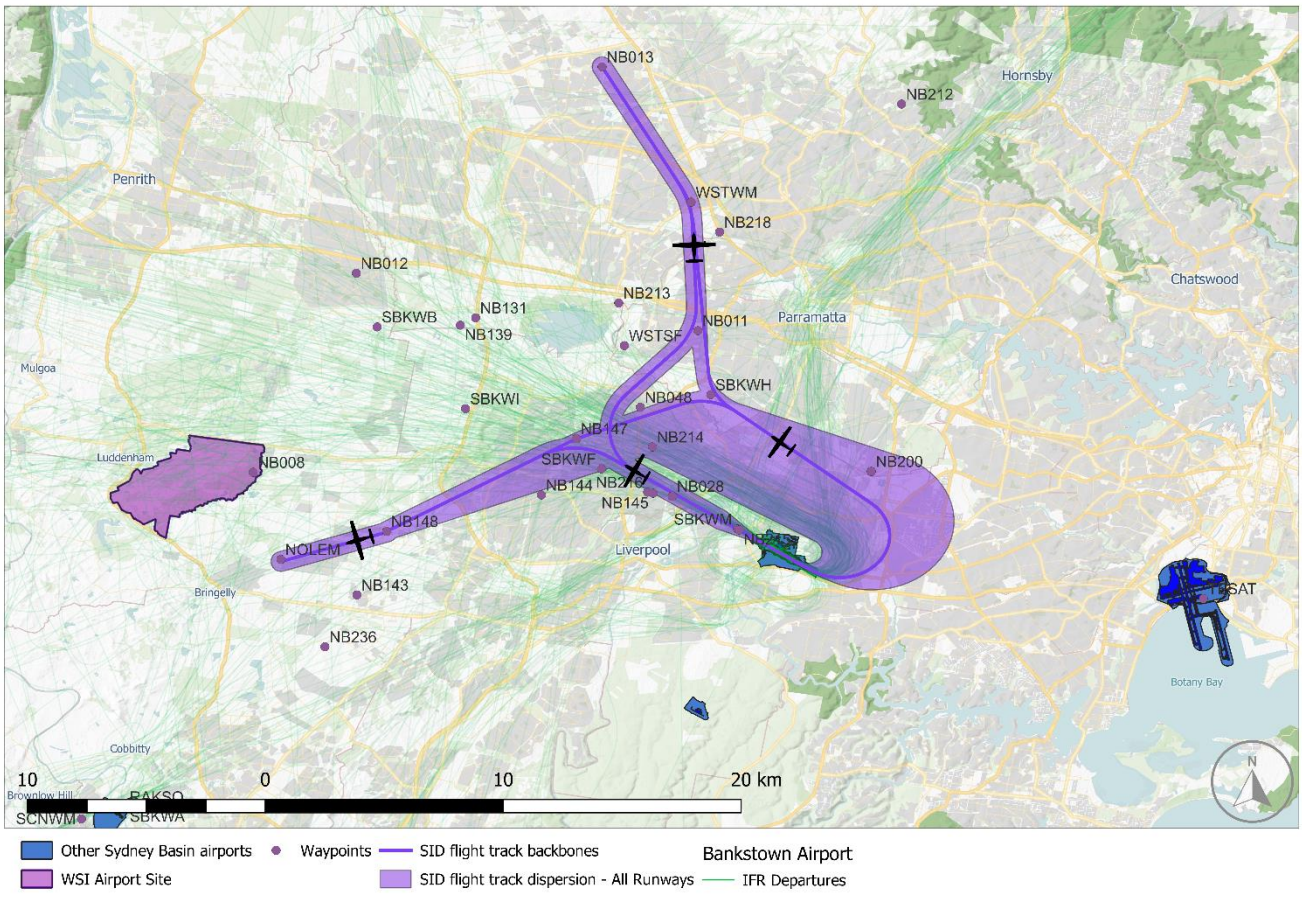


Figure 8.14 Bankstown Airport – proposed outer SID tracks

8.3.2.2 IFR arrivals

To provide safety assurance with WSI flight paths, 4 new STARs that are integrated with RNP approaches are proposed for aircraft arriving at Bankstown Airport (refer to Figure 8.15). Arrivals from the north, west and south-west (initial sections shown in purple on Figure 8.15) would connect directly to an RNP approach (shown in red). From the east aircraft would be radar vectored to intercept an RNP approach. The changes to RNP approaches are described in Section 8.3.2.3.

To ensure separation with WSI and other Sydney Basin airspace traffic, altitude requirements have been placed at waypoints on each STAR and RNP approach procedure as follows and as further specified in Annexure G of Technical paper 13:

- for the northern STAR/RNP approach, aircraft are to be below 8,000 ft at waypoint NB258, below 2,000 ft at waypoint NB217, and below 1,500 ft at waypoint NB218
- for the western STAR/RNP approach, aircraft are to be below 9,000 ft at waypoint WYATT, below 6,000 ft at waypoint NB234, and below 5,000 ft at waypoint NB235. At waypoint NB235 the track becomes common with the south-western STAR/RNP approach
- for the south-western STAR/RNP approach, aircraft are to be below 9,000 ft at waypoint AKMIR, below 6,000 ft at waypoint WELSH and below 5,000 ft at waypoint NB235 where the track becomes common with the western STAR/RNP approach. Aircraft may be below 2,500 ft from waypoint RAKSO which is located overhead Camden Airport.

Once in place, all IFR aircraft flight planning to Bankstown Airport must include the appropriate STAR commencement waypoint as part of their flight planned route.

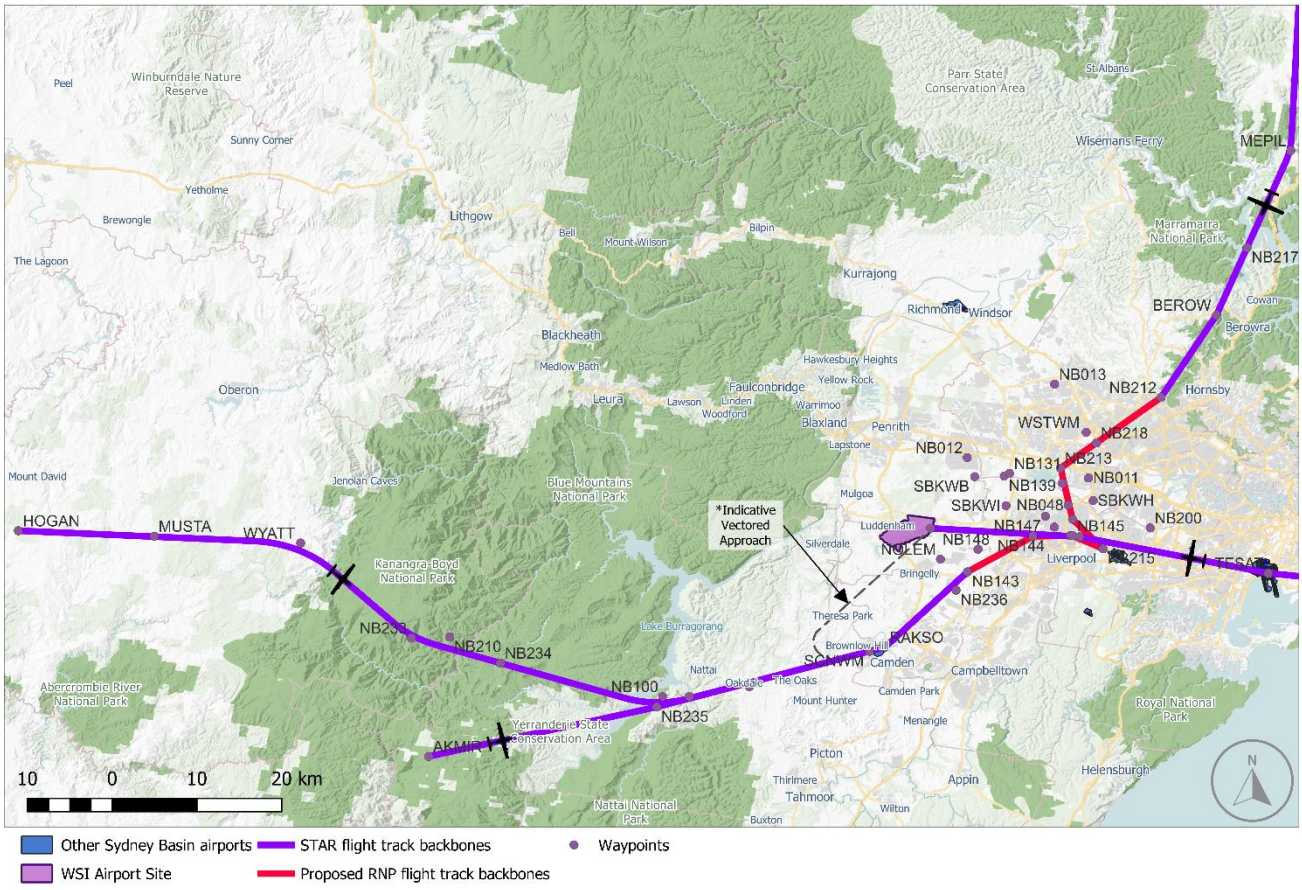


Figure 8.15 Bankstown Airport – proposed STARs and integrated RNP approaches

8.3.2.3 RNP approaches

The current IFR approaches to Bankstown Airport from the west (RNP Runway 11C and NDB Runway 11C) do not provide separation assurance with WSI aircraft.

Two new RNP approaches with short segments slightly offset from the Runway 11C/29C centreline have been proposed to ensure access to Bankstown Airport for IFR aircraft in weather conditions that require an instrument approach.

When traffic levels, weather, or other factors dictate, aircraft may hold on the STARs prior to the commencement point of the approaches.

The final alignment of the RNP approaches from the north and south may move further east to comply with flight procedure design standards but would retain similar architecture.

The offset and lateral difference from the current RNP approaches is shown at Figure 8.16.

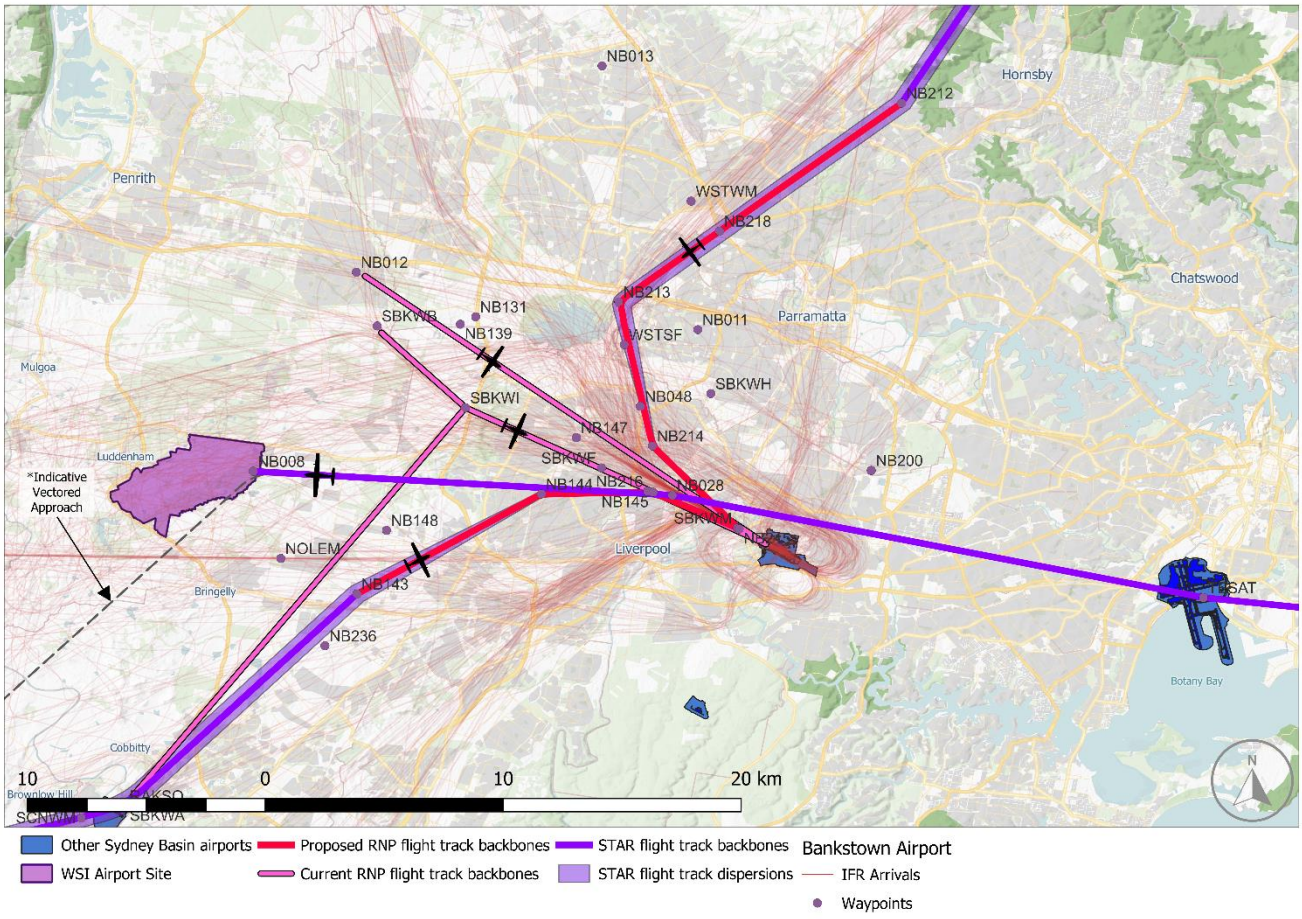


Figure 8.16 Bankstown Airport – current and proposed RNP and NDB approaches (with current IFR arrival tracks) versus proposed RNP approaches

8.4 Camden Airport

Camden Airport is a general aviation, emergency services, sport and recreational aviation airport catering for a wide range of general aviation movements (fixed wing, helicopters and gliders). Further information on its operation is described in Chapter 4 (Project setting).

This section outlines the changes to IFR arrival procedures for Camden Airport. VFR operations associated with Camden Airport are described later in Section 8.7. No changes are proposed for current circuit flying procedures or IFR departures.

8.4.1 Current

Camden Airport's operations are principally conducted under VFR conditions and these aircraft largely contain their operation to uncontrolled airspace. Of the approximate 265 movements a day to and from Camden Airport (March 2019), around 10 of these movements were completed under IFR.

An instrument approach does exist for the limited number of instrument flights that operate at Camden Airport. Any aircraft that is within the Sydney Basin control area requiring to make an instrument approach is radar vectored by air traffic control towards the Camden RNP instrument approach (RNP W). Any aircraft operating in uncontrolled airspace proceeds under its own navigation to the RNP instrument approach.

8.4.2 Proposed

A set of new STARs are proposed for aircraft arriving from the east, north and west to Camden Airport to ensure separation assurance exists once WSI is operational (refer to Figure 8.17 for the proposed STARs and associated waypoints). IFR arrival procedures for aircraft arriving from the south and south-west would generally continue as they do currently. However, a change to the instrument flight procedure to allow operations to continue, albeit at a lower level from that direction may be required. Where aircraft in this area may be at or above 5,400 ft, they may now be at 4,500 ft.

Each STAR terminates in a position that allows the aircraft to intercept a transition leg of the RNP approach. Aircraft arriving from the:

- north would track via waypoint NB059, at which point aircraft would be at 6,000 ft to 10,000 ft
- west would track via waypoint WYATT, at which point aircraft would be at 9,000 ft or lower
- east would track via waypoint TESAT to waypoint NB008, at which point aircraft would be at 10,000 ft. From this waypoint, aircraft would be directed by air traffic control via radar vectors. This is expected to be used less than 10 times a year.

Two waypoints NB234 and NB235 have altitude restrictions in place and the RNP approach have an altitude requirement, as provided in Appendix H of Technical paper 13.

All aircraft arriving from the east, north and west to the airport through controlled airspace are likely to be processed via the new STARs. As per current procedures, arriving aircraft may still manage their own tracking via visual fixes to Camden Airport when conditions allow for visual flight.

A minor adjustment is proposed to the RNP instrument approach, which would replace the arrival leg from waypoints SC2WC to SC2WI with an arrival leg located slightly further south via waypoint NB235 (at which point, aircraft would be at 5,000 ft or lower).

No changes are required for the initial flight segment for departing aircraft operating under IFR. However, departures to the north and north-west would need to avoid controlled airspace for WSI once aircraft have left the Camden Airport control zone, if remaining within uncontrolled airspace. Procedures for remaining in uncontrolled airspace and accessing the CTA would remain the same.

Adjustments are also proposed for IFR flights that need to transit overhead WSI. This is discussed in Section 8.6.

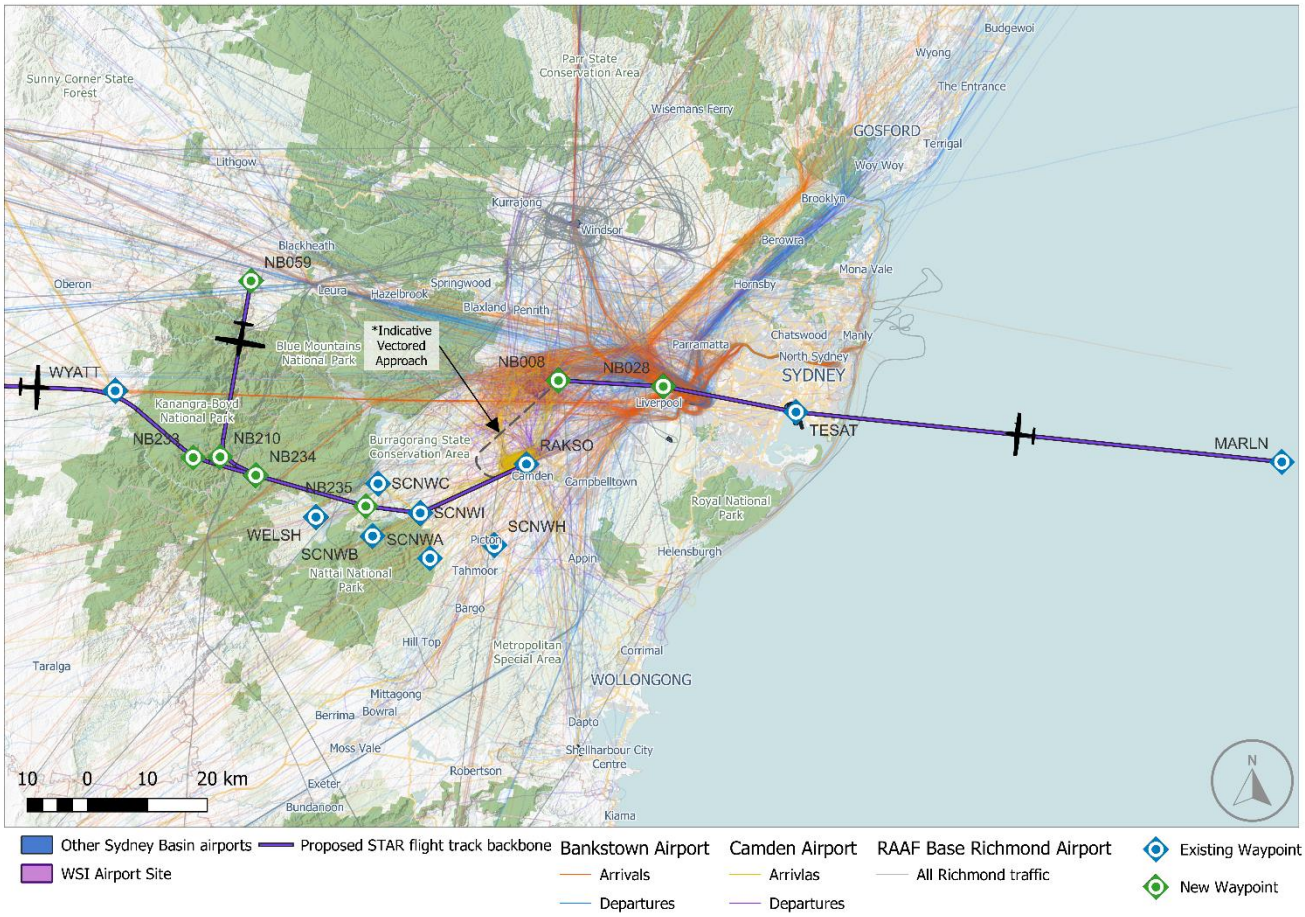


Figure 8.17 Camden Airport – current IFR flight paths to/from Camden Airport and proposed IFR STARs

8.5 RAAF Base Richmond

At RAAF Base Richmond aircraft arrive from and depart to many Australian military bases and civil destinations (domestic and international). Air traffic control management for this airport is described in Chapter 4 (Project setting).

8.5.1 Current

For departures, aircraft operating under IFR are normally allocated the Richmond Three Departure (Radar) SID. This SID stipulates a track to be flown from either end of Runway 10/28 until the aircraft reaches 1,000 ft, at which point it would turn to its assigned heading. It would then be cleared to track directly to an enroute waypoint or be safely separated with other Sydney Basin aircraft by radar vectoring until a clearance to an enroute waypoint is possible.

For arrivals, aircraft may operate under VFR or IFR. Those operating under IFR have 5 approach options (provided in Appendix F of Technical paper 13), of which only one is available for civilian aircraft (Runway 28 – ILS). Air traffic control radar vector aircraft from a position on its descent track to the starting point required by the appropriate approach requirement. Subject to local traffic requirements and pilot requests for training purposes, holding patterns associated with these approaches can also be used at levels above 2,500 ft.

Some aircraft associated with this airport are processed by air traffic control through the airspace that is required for WSI operations.

The military restricted airspace that is associated with RAAF Base Richmond facilitates military training flights on a regular basis. For training purposes military pilots may operate on random tracks not associated with any SID/STAR or flight planned route, and not under any radar vectors by air traffic control.

8.5.2 Proposed

A new SID is proposed to cater for eastern (for example New Zealand) and some southern (e.g., Royal Australian Navy Base Albatross (near Nowra) departures to ensure separation between RAAF Base Richmond and WSI aircraft as well as other operations in the Sydney Basin airspace. Several new STARs are also proposed.

The Richmond Three Departure (Radar) SID would still be used, and there would be no change to:

- the final approach paths to either end of Runway 10/28 at RAAF Base Richmond
- the existing initial departure track or the local noise preferred procedures for aircraft flying the SID.

8.5.2.1 Departures

The proposed SID would require aircraft to manoeuvre to the north of the RAAF Base Richmond runway and climb within the RAAF Base Richmond restricted airspace (refer to Figure 8.18). Once above 10,000 ft aircraft leave the RAAF Base Richmond restricted airspace and track above all proposed WSI and Sydney (Kingsford Smith) Airport operations within the Sydney Basin airspace and then track to overfly Sydney (Kingsford Smith) Airport at 13,000 ft or above. Aircraft on this SID would have a restriction to be above 13,000 ft by waypoint NB251.

It is expected that most aircraft would be cleared to an enroute waypoint prior to waypoint TESAT once separation with Sydney (Kingsford Smith) Airport aircraft has been assured. This would result in a similar dispersion of aircraft to current operations but at a higher altitude.

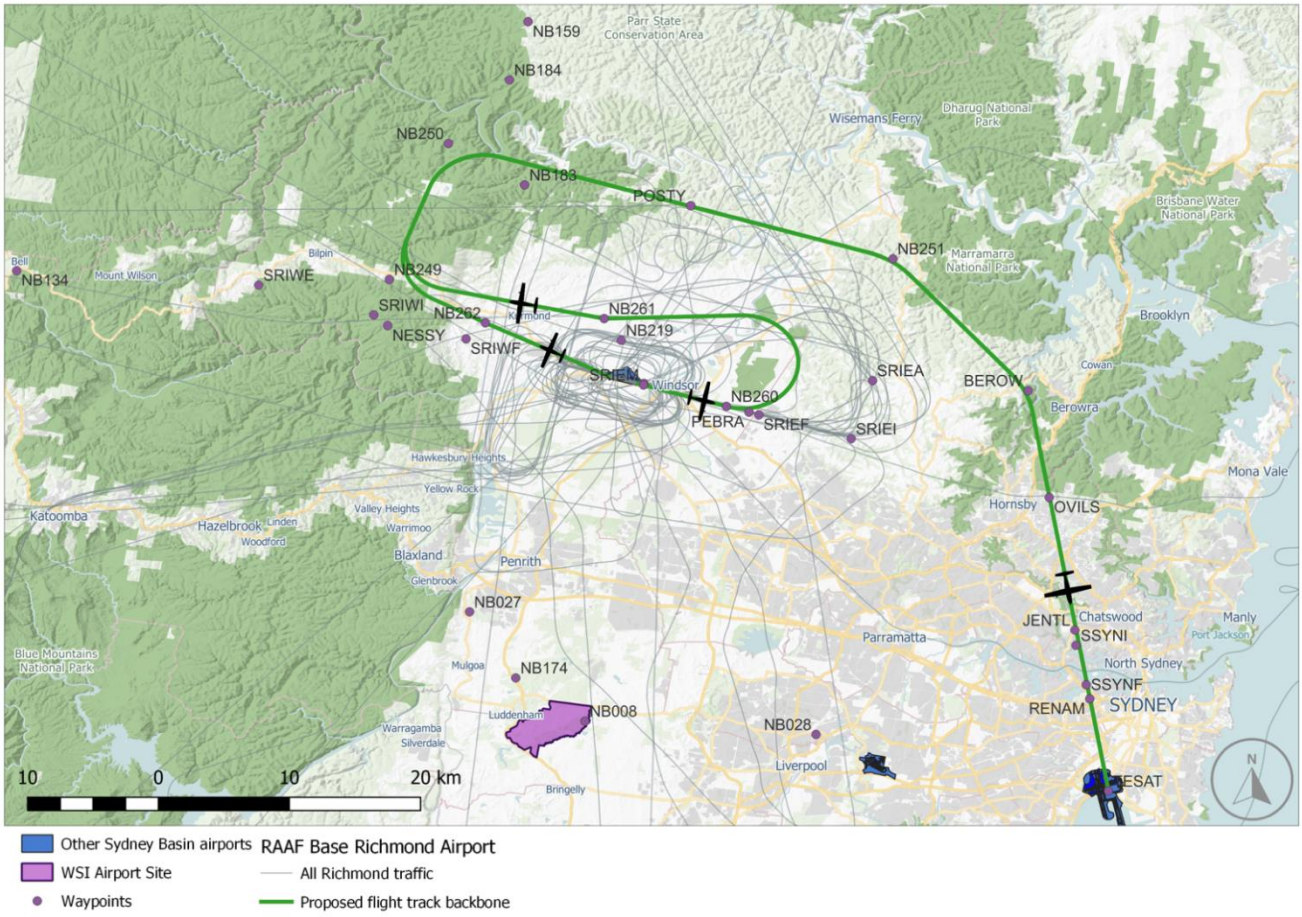


Figure 8.18 RAAF Base Richmond – exitsing flight tracks and proposed eastern SID

8.5.2.2 Arrivals

Four new STARs are proposed to separate RAAF Base Richmond operations from WSI operations and other Sydney Basin operations to ensure Safety by Design outcomes (refer to Figure 8.19). The STARs would connect to the existing final approach procedures.

The proposed eastern STAR has been designed for aircraft to overfly the Sydney Basin at high altitudes (over waypoint TESAT and then a series of waypoints). Once aircraft on this STAR enter the RAAF Base Richmond restricted airspace (at a high altitude), the proposed STAR replicates the current radar vectoring tracks as closely as possible to intercept the instrument approaches to either end of Runway 10/28. This STAR would also be used by southern arrivals to RAAF Base Richmond and a series of vertical restrictions are included at various waypoints.

The proposed south western/western STAR would require aircraft from the south-west to track via a new route from waypoint RUPEM where it would join the current route used by arrivals from the west (e.g. from Bathurst) to RAAF Base Richmond. Aircraft would then be radar vectored to the appropriate approach procedure. Aircraft that currently arrive from the south west and track overhead Katoomba would now arrive via the new STAR near Mount Wilson. No altitude restrictions are proposed on this new STAR and aircraft are able to program a CDO based on the nominated runway.

Two new STARs are also proposed to provide separation assurance with aircraft on descent from the north to all Sydney Basin airports. The first is for aircraft arriving from the north and the other is specifically for aircraft arriving from RAAF Williamtown (a commonly used military route). The tracks are segregated until waypoint NB184, are common till waypoint NB183 and then separate again to position aircraft for the appropriate approach to either runway direction. No altitude restrictions are proposed on new STARs and aircraft are able to program a CDO based on the nominated runway. Transitions to existing and modified instrument flight procedures established by Defence requirements would be included.

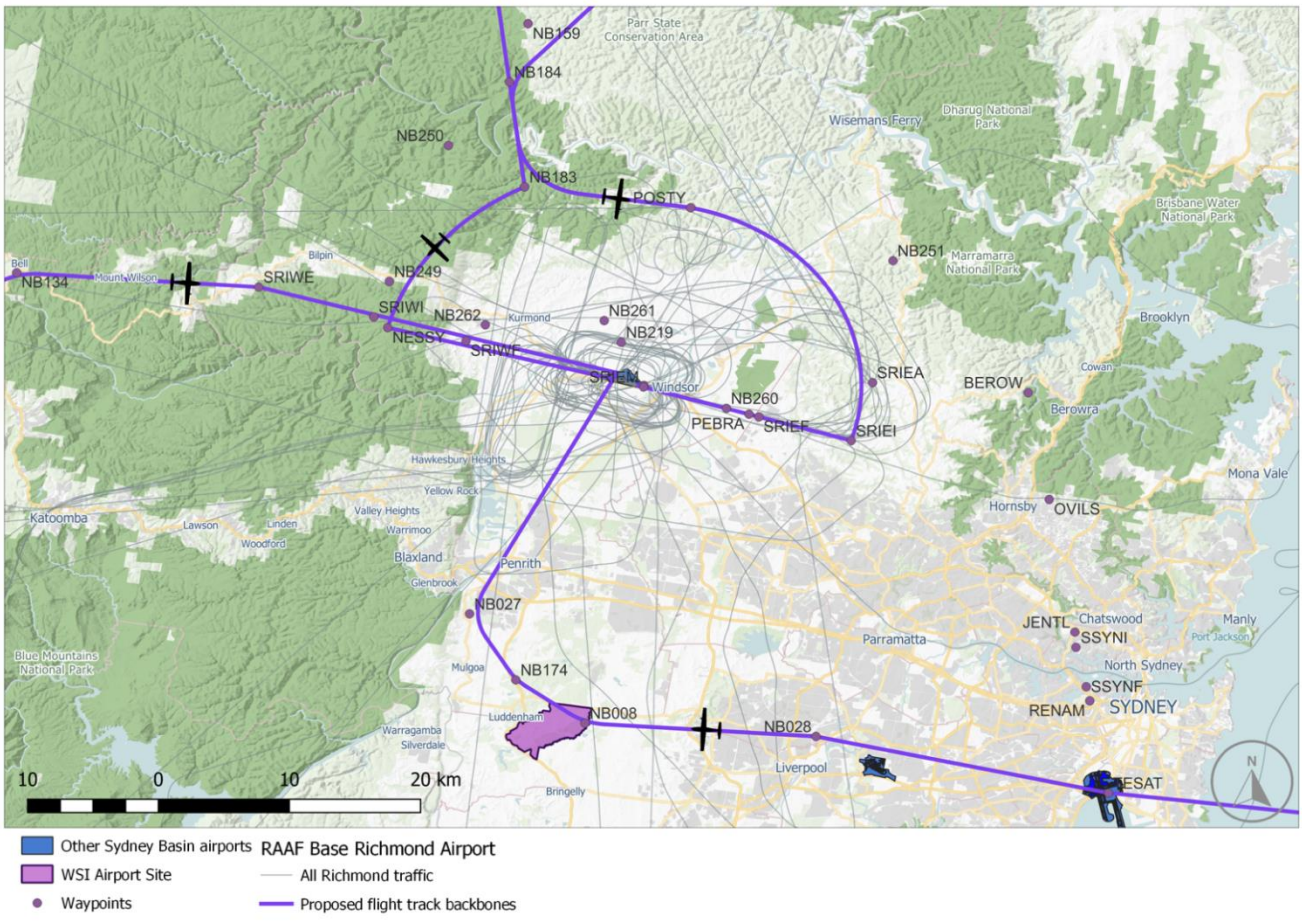


Figure 8.19 RAAF Base Richmond – existing radar flight tracks and proposed IFR arrivals

8.6 Low altitude transit flights

There are flights which transit the Sydney Basin airspace at an altitude below 10,000 ft. Any flights transiting above 28,000 ft (8.5 km) are managed by the enroute air traffic control sector and do not require any adjustments or special procedures as a result of the project. However low altitude transiting aircraft would need to be safely handled as they cross the WSI controlled area airspace.

8.6.1 Current

Low altitude transiting flights can occur 24-hours a day, 7 days a week.

For aircraft capable of operating at 10,000 ft or higher, the basic current method of processing these aircraft is to bring aircraft towards Sydney (Kingsford Smith) Airport utilising established arrival flight paths. Aircraft are then processed outbound on established Sydney (Kingsford Smith) Airport departure flight paths. This process would continue following the commencement of operations at WSI.

8.6.2 Proposed

While the process of overflying Sydney (Kingsford Smith) Airport has been maintained (where possible), some amendments are required to accommodate WSI flight paths for aircraft flying below 10,000 ft.

8.6.2.1 Western IFR transit flights

A low altitude transit route to the west of WSI is proposed that would be used predominantly by non-pressurised piston-engine aircraft that normally operate at altitudes between the Lowest Safe Altitude (LSALT) and 10,000 ft (refer to Figure 8.20). The transit route would be available at all times. If transiting aircraft are within controlled airspace, aircraft would be separated by air traffic control. If flying in uncontrolled airspace, procedures exist to ensure aircraft fly at segregated altitudes depending on their direction of flight.

Further detail is provided in Appendix J of Technical paper 13.

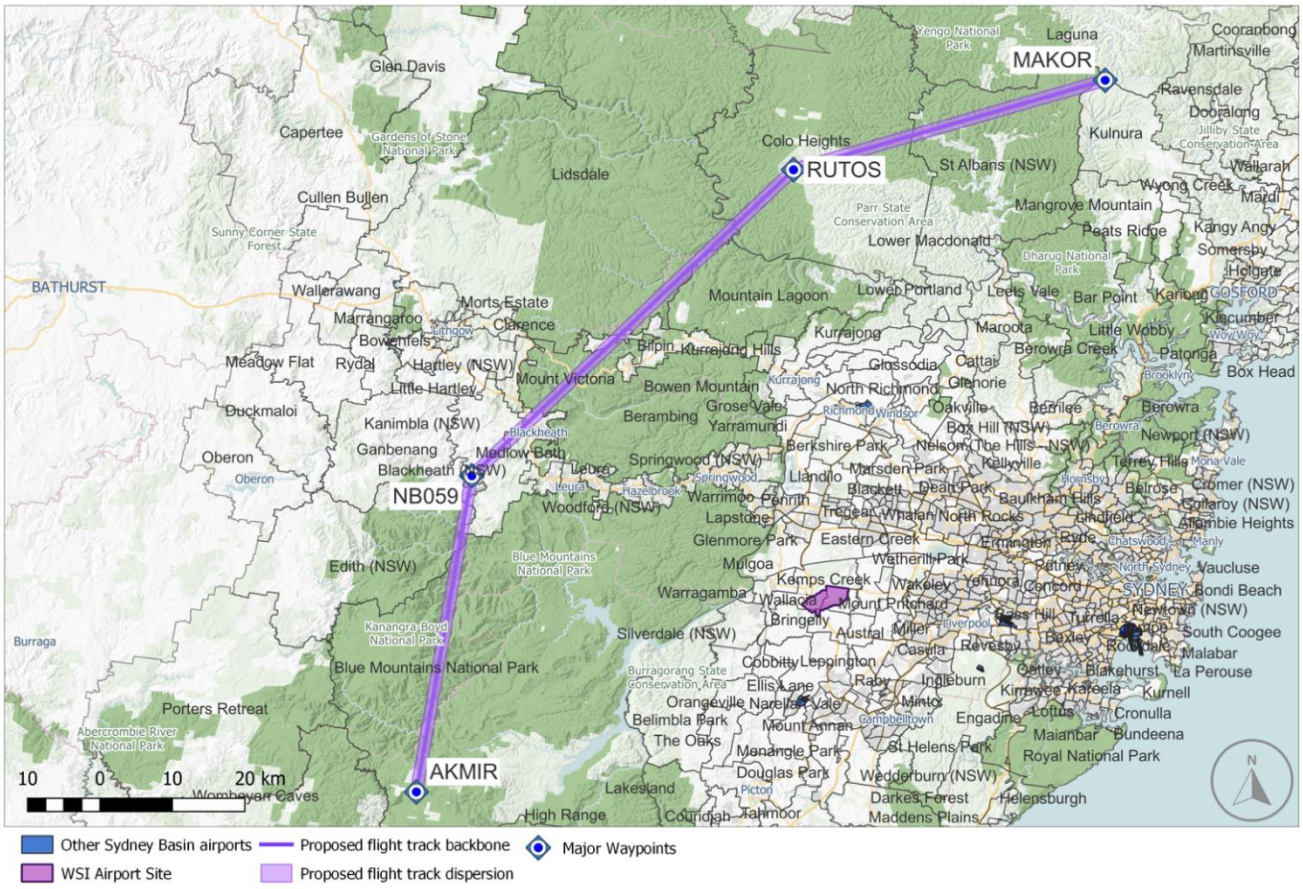


Figure 8.20 Proposed low altitude transit flight route with suburb overlay

8.6.2.2 IFR transit flights overhead WSI

Provision would be included to enable general aviation aircraft using IFR to transit overhead WSI from Bankstown Airport and Camden Airport at and above 4,000 ft. The precise final location of any transit route would be finalised following an evaluation of the final detailed design of WSI flight paths. This location would primarily take into account safety and environmental considerations.

The proposed transit route could be flown in either direction and is expected to be operated at altitudes above 4,000 ft. This route would be flown infrequently when WSI traffic levels permit and would primarily be flown by emergency response aircraft.

Further detail is provided in Appendix J of Technical paper 13.

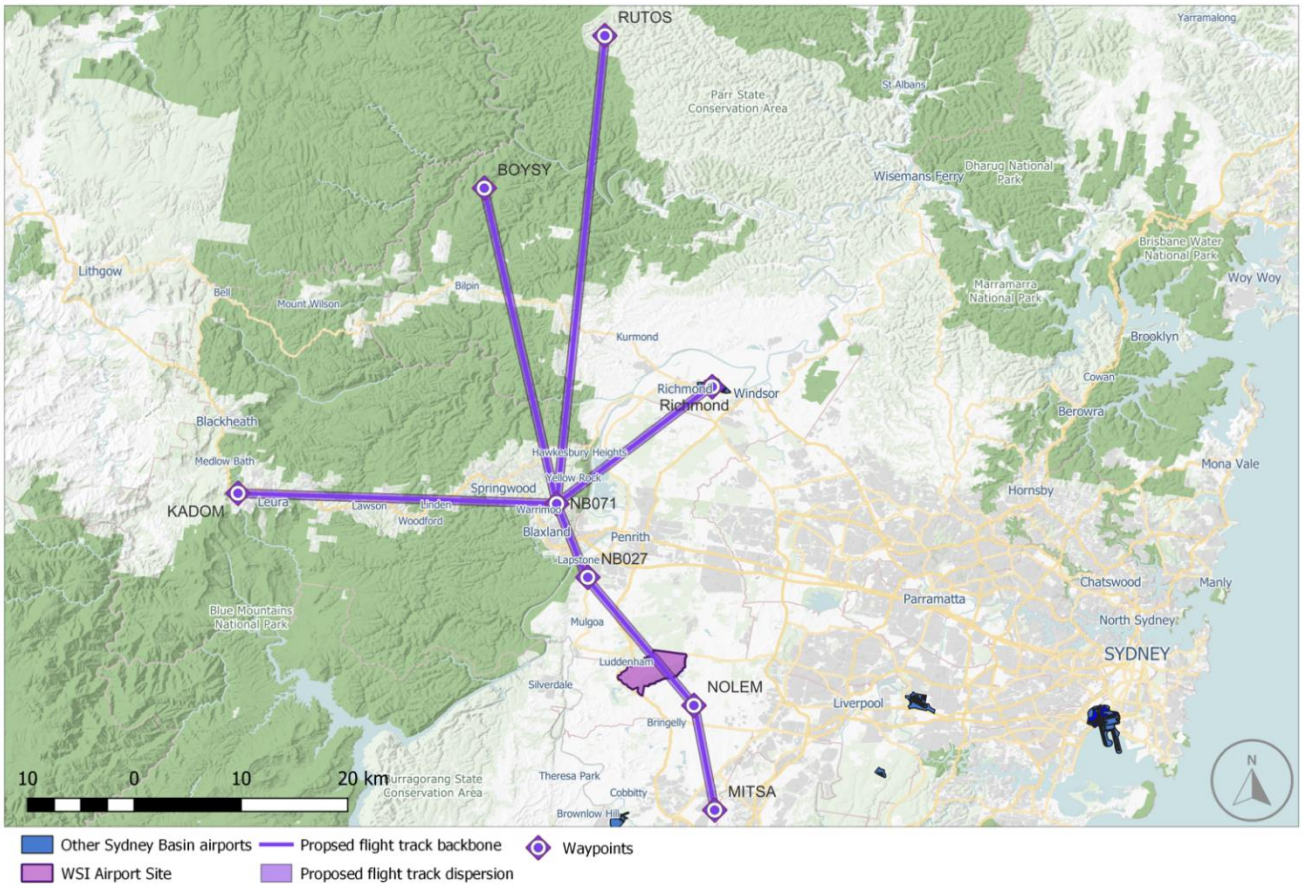


Figure 8.21 Proposed IFR transit route overhead WSI

8.7 Visual Flight Rule aircraft changes

8.7.1 Current

Many types of flights occur in uncontrolled airspace, including helicopters, parachute operations, emergency services and sports and private general aviation. These aircraft are generally smaller, single or twin-engine piston aircraft operating in visual conditions under VFR. Most of these aircraft are undertaking some form of flying training, either in specifically designated areas or as the start or end of an extended cross-country navigational training flight beyond the Sydney Basin. While some training flights transit the Sydney Basin, for example, Tamworth to Shellharbour, many of these training flights start and end at Bankstown Airport and to a lesser degree, Camden Airport.

8.7.1.1 Airspace boundary extents

Figure 8.22 shows the current airspace boundary extents with VFR departure and arrival routes and flying training areas (including their lateral and vertical boundaries) and lower level of the overlying controlled airspace surfaces. The Airport Site is depicted in this figure to illustrate the location of WSI in the context of current VFR activity.

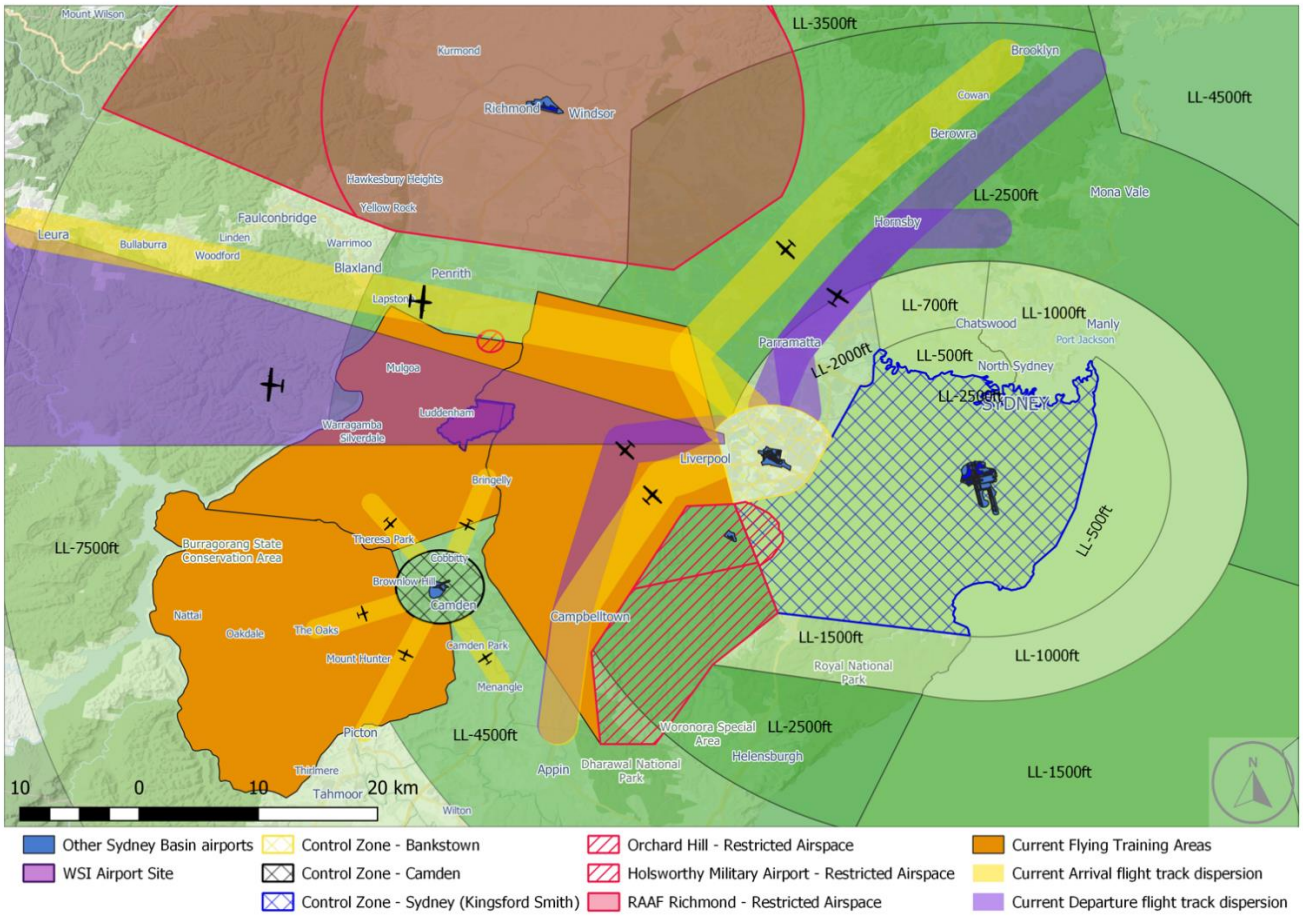


Figure 8.22 Current Sydney Basin – Airspace Control Area and Control Zone boundaries including the Lower Level (LL) of controlled airspace with current VFR departure and arrival routes

Most of the flights at Bankstown and Camden Airports operate under VFR and contain their operations either to the control zone (circuit training), the associated danger area (flying training) or the surrounding uncontrolled airspace (travel flights). A travel flight involves leaving the vicinity of an airport and tracking to another destination airport (for example, from Bankstown Airport to Tamworth Airport) or returning to the origin airport after leaving and re-entering the Sydney Basin airspace (such as 'joy flights').

8.7.1.2 Flying training

There are significant flying training activities that occur in the Sydney Basin area. There are currently 3 flying training areas in the vicinity of Bankstown and Camden Airports (refer to Figure 8.22) which are regularly used by the flight training community.

Their extents are described in Chapter 4 (Project setting).

8.7.1.3 Arrival and departure tracks, including access to flying training areas

Bankstown Airport

The Bankstown Airport Aeronautical Information Package (AIP) En-Route Supplement (ERSA) entry defines requirements for VFR aircraft wishing to depart the Bankstown Airport control zone (CTR) into uncontrolled airspace. The initial departure tracks are shown in Figure 8.22 and further described in Appendix I of Technical paper 13. Once clear of the CTR, aircraft are then free to use a track to the flying training area that avoids the prescribed inbound routes.

All aircraft leaving the existing flying training areas and tracking to Bankstown Airport should do so either via the TWO RN radio mast just south of Liverpool, or via Prospect Reservoir.

There are no specific tracks to or from Bankstown Airport for VFR flights in a westerly or southerly direction, except for the requirement for arriving aircraft to plan the last segments of their flights to travel via the TWO RN radio mast or Prospect Reservoir. Specific tracks are identified for aircraft travelling north due to the already constrained airspace to the north of Bankstown Airport.

Aircraft on cross-country navigational training exercises from airports outside the Sydney Basin (for example, Cessnock to Wollongong) can access the training areas west of Bankstown Airport as part of their training exercise to undertake some specific training activity as part of their flight.

In March 2019, there was estimated to be around 175 flight movements per day that were associated with aircraft using Bankstown Airport to access flying training areas.

Camden Airport

There are no specific routes for VFR travel and training navigational flights to follow once they have departed the Camden Airport CTR. When providing directions for VFR arriving aircraft at Camden Airport, aircraft track via and report at Mayfield, Bringelly, Menangle, Picton or The Oaks.

8.7.1.4 Gliding

A considerable part of VFR flying within the Camden Airport CTR is associated with gliding. Specific procedures for gliding operations are published in ERSA. There would be no change to these operating procedures.

8.7.2 Proposed

Due to the location of WSI, a large volume of the airspace used for dedicated flying training and a commonly used cross-country navigational training route would no longer be available.

Some alternate areas which could be utilised for flying training have been identified which airspace users may elect to adopt after the implementation of WSI airspace. However, where flying training organisations elect to conduct their training in future is a matter for individual organisations. Two new flight paths to the west of Bankstown Airport have been proposed to replace the current cross country navigational route.

No changes to circuit training at Bankstown or Camden airports are proposed.

As VFR flights do not currently fly on nominated routes, do not need to file a flight plan and are not tracked by air traffic control, the number of aircraft that may use the proposed routes or use the possible training areas based on current behaviour cannot be definitely stated. Assumptions for the purposes of the assessment have been identified in Appendix I of Technical paper 13.

8.7.2.1 New airspace boundary extents

Figure 8.23 shows the proposed airspace boundary extents with new departure and arrival routes and possible flying training areas, including their lateral and vertical boundaries and lower level of the controlled airspace surfaces.
The lateral and vertical dimensions of the CTRs for Bankstown and Camden airports may change to maintain safety levels. Any changes to the CTRs for these airports would be subject to separate assessment.

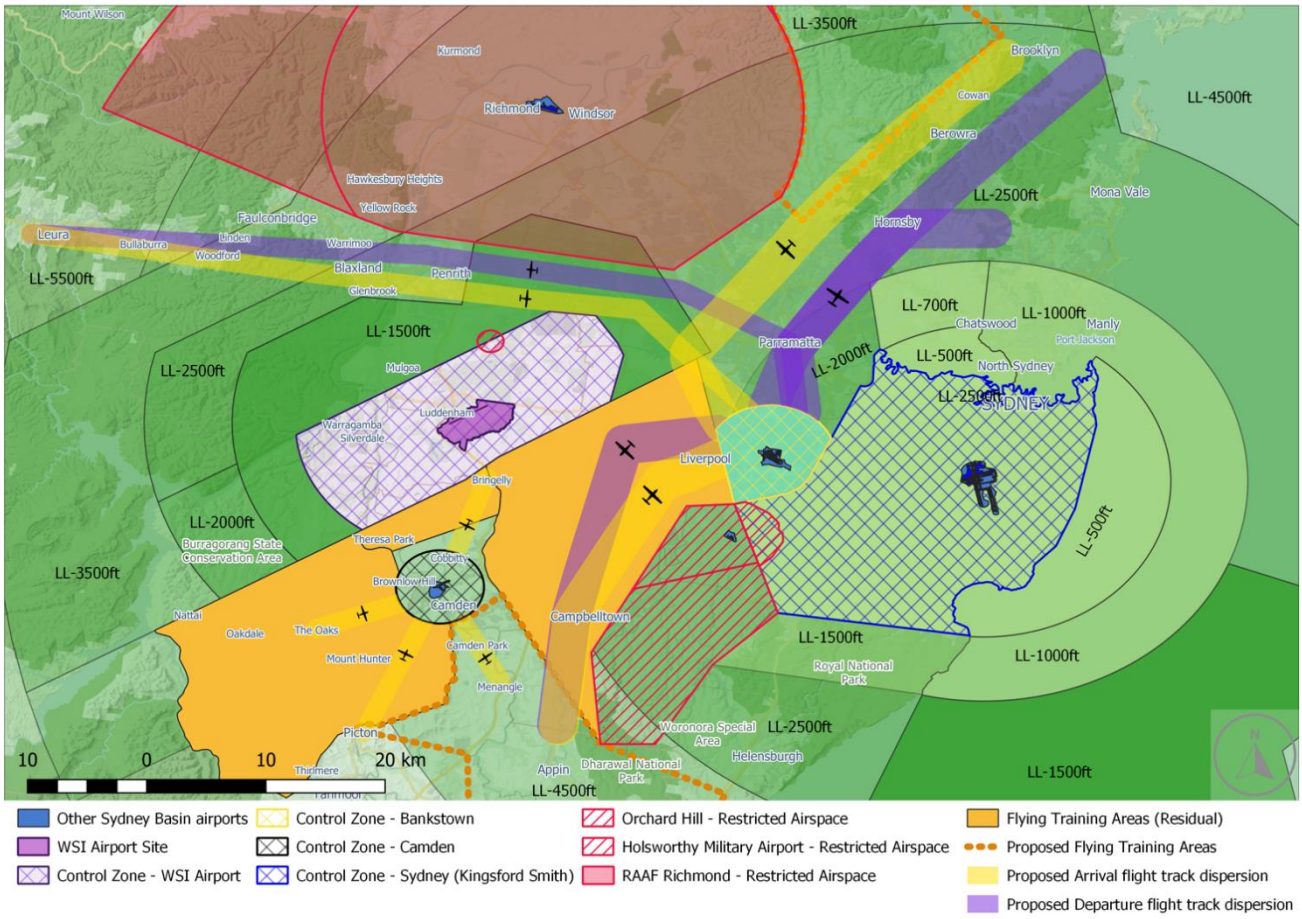


Figure 8.23 Proposed Sydney Basin – Airspace Control Area and Control Zone boundaries including the Lower Level (LL) of controlled airspace with proposed VFR departure and arrival routes

8.7.2.2 Future possible flying training areas

The existing flying training areas (refer to Figure 8.22) have their lateral boundaries significantly reduced in the future (refer to Figure 8.23) and would form 2 possible smaller areas. The residual areas would retain their vertical dimensions and lower level altitudes imposed on training activities.

The 2 possible (new) flying training areas being considered are located to the north-east of the RAAF Base Richmond Restricted Airspace (northern training area) and to the south of Camden Airport (southern training area) (refer to Figure 8.23). The exact location and extents of these areas are subject to ongoing discussion with Bankstown and Camden Airport operators and other stakeholders.

CASA may declare the proposed future flying training areas as 'Danger Areas' as per the existing flying training areas.

Bankstown Airport

Training aircraft wanting to access the possible southern training area and the remaining segments of the existing south-western training areas would be able to use the existing departure and arrival procedures and flight paths currently in use. Aircraft wanting to access the proposed new northern training area would need to transit to and from that area via the existing northern VFR transit routes.

Camden Airport

Flights from Camden Airport wishing to use the residual and possible training areas would still have access via the existing Camden Airport CTR exit procedures.

8.7.2.3 Travel flights and navigational training exercises

Bankstown Airport

Two new and more northerly VFR routes than the current are proposed for aircraft tracking to and from the west of Bankstown Airport to accommodate WSI operations (refer to Figure 8.23 compared to Figure 8.22).

Departing aircraft that choose to operate directly in a westerly direction would still use the existing Bankstown Airport CTR exit procedures and then track via the Parramatta Central Business District and Blacktown. The aircraft would then transit through the narrow corridor between RAAF Base Richmond Restricted Airspace and the new WSI CTR. Alternatively, some pilots may choose to initially track to the south of WSI controlled airspace before tracking towards a western destination as this allows earlier access to higher altitudes.

Arriving aircraft that choose to operate directly from the west are expected to track north of the Great Western Highway to Prospect Reservoir and remain south of the RAAF Base Richmond Restricted Airspace, and then via existing VFR arrival procedures to the airport. This is an existing arrival route for some of the aircraft currently flying to Bankstown Airport from western and north-western departure points.

For Bankstown Airport, departing aircraft may leave the proposed route once west of Emu Plains and track to the north-west or south-west towards their destination. Similarly, arriving aircraft can operate on dispersed routes west of Emu Plains and only need to join the proposed arrival route by Emu Plains.

Aircraft using these new routes would have altitude restrictions as shown in Figure 8.23.

Aircraft intending to operate to and from the north and south of Bankstown Airport can expect to operate on similar routes as used currently. Continuing safety work in consultation with operators may require a reversal of the direction of traffic for the southern routes.

Camden Airport

As outlined earlier within this section, the degree of change to VFR travel or navigation flying training for aircraft travelling to or from the north due to the introduction of WSI is unknown. Without obtaining an air traffic control clearance, VFR flights would be unable to access the new WSI controlled airspace to the north of Camden Airport. However, by remaining in uncontrolled airspace beneath the new control areas, VFR aircraft could access northern destinations by tracking between the WSI and Bankstown Airport CTRs and using the northern transit routes north of Bankstown Airport. This route would be available in both directions although in a congested section of uncontrolled airspace.

Travel flights with a specific northern destination could still be able to transit that relatively complex piece of airspace either by requesting an air traffic control clearance to use the overlying controlled airspace or remain in uncontrolled airspace and track around and under the relevant CTRs and controlled airspace zones.

Travel flights with a specific western and north-western destination may also choose to remain in uncontrolled airspace and transit to the west of the WSI CTR.

The inbound track via Mayfield would no longer be available and it is probable that the arrival track via Bringelly would be seldom used as it is very close to the boundary of the future WSI control zone (refer to Figure 8.23). All other fixed wing VFR flying (including circuits) within the Camden Airport CTR and surrounding airspace would remain unchanged.

8.7.2.4 Gliding

The constraints imposed by the WSI controlled airspace to the north of Camden Airport would have some effect on gliding operations in this area due to lower limit of the overlying control areas. There would be no change to gliding activity to the south and west of Camden Airport.

8.7.2.5 VFR overflights of WSI

VFR overflight of WSI is expected to be available in the initial years of operation, and is expected to be used primarily by emergency services aircraft.

Such aircraft would require an air traffic control clearance and the tracks have been designed to provide easy visual identification and to facilitate separation of the VFR aircraft with arriving and departing aircraft at WSI. Figure 8.24 shows these proposed overflight tracks which can be used in either direction.

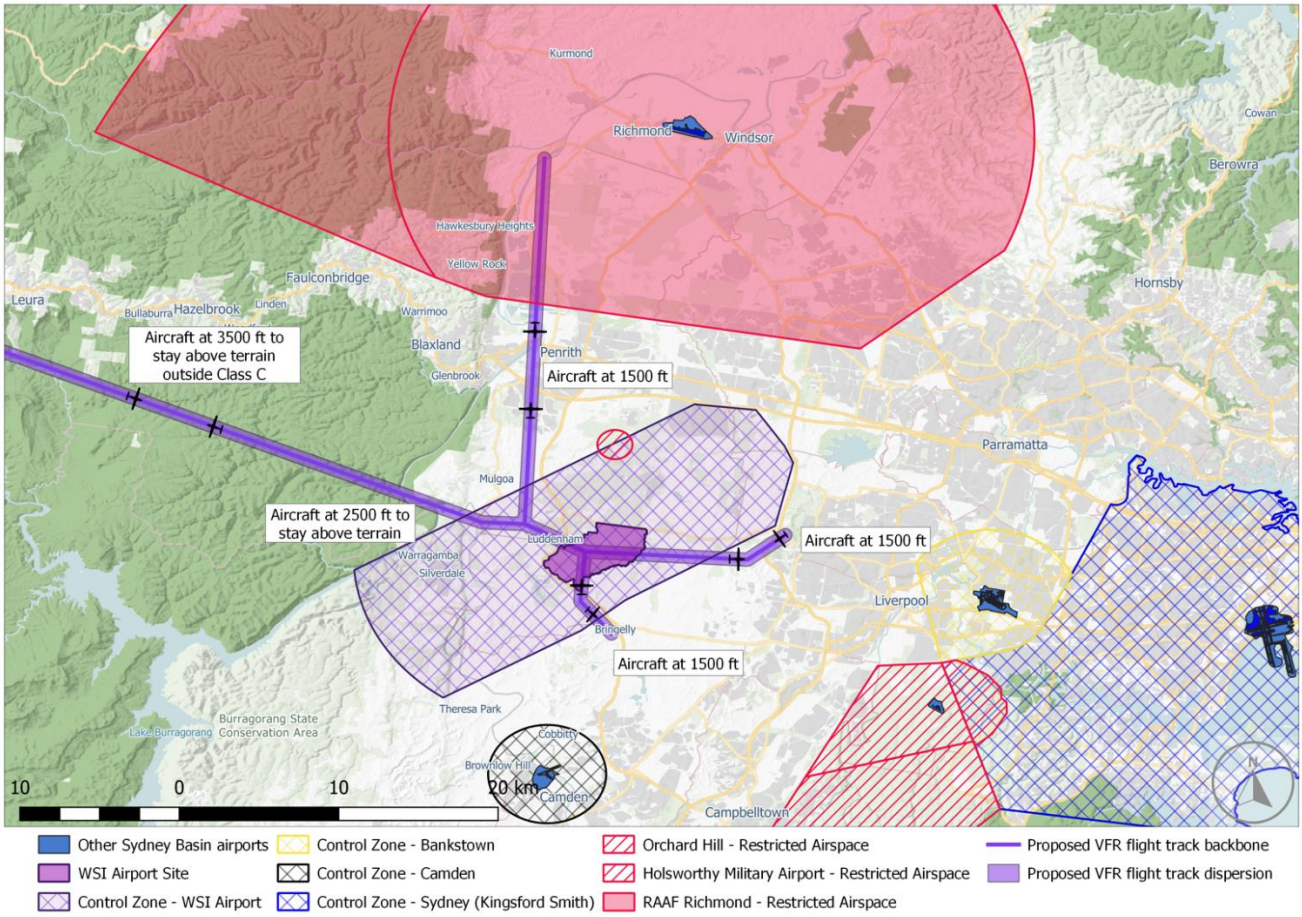


Figure 8.24 Proposed VFR overflights of WSI

8.8 Summary of changes

Table 8.1 provides the name of each change and its key characteristics along with a reference to where they are detailed in Technical paper 13.

Table 8.1 Changes and their characteristics

Name of change	Change characteristics					Technical paper 13 reference
	New or adjusted lateral changes	New or adjusted vertical changes	Modified climb and descent gradients	New and modified procedure waypoints	Changes to Sydney VFR operations	
Sydney (Kingsford Smith) Airport						
Runway 25 SIDs (jet)	✓	✓	✓	✓		Appendix A
Runway 34L KADOM SIDs (jet)	✓	✓	✓	✓		Appendix B
Runway 34L RICHMOND SIDs (jet)	✓	✓	✓	✓		Appendix C
Runway 07 SID	✓	✓	✓	✓		Appendix J
Runway 07 IAF				✓		Appendix J
Non-jet departures to the north and north-west	✓	✓	✓	✓		Appendix D
AKMIR STAR	✓	✓	✓	✓		Appendix E
RIVETT and BOREE STAR				✓		Appendix J
Other operations						
All IFR changes proposed at Bankstown Airport	✓	✓	✓	✓		Appendix G
STARs at Camden Airport	✓	✓	✓	✓		Appendix H
Departures and arrivals at RAAF Base Richmond	✓	✓	✓	✓		Appendix F
VFR operations in the Sydney Basin airspace	✓	✓			✓	Appendix I
Sydney Basin low altitude transit routes	✓			✓		Appendix J

Chapter 9 Community and stakeholder engagement

This chapter provides an overview of the consultation activities undertaken with community and key stakeholders for the project in the development of this Draft EIS. This includes an outline of:

- the overarching engagement plan, including principles, objectives and identified stakeholders
- engagement activities undertaken to date and feedback received
- the consultation requirements outlined in the draft EIS Guidelines issued by the Minister for the Environment and Water (outlined in Section 9.1 below)
- how feedback has been addressed in the Draft EIS
- planned engagement activities for the public exhibition period for the Draft EIS and subsequent assessment and determination.

Aircraft Overflight Noise Tool engagement program

It should be noted that this Draft EIS does not include feedback received from 27 June 2023, when the preliminary flight paths were released for viewing prior to the Draft EIS exhibition process.

Commentary made on the preliminary flight paths from 27 June 2023 will be recorded and noted in the Final EIS.

All interested parties who made a comment on the preliminary flight paths from 27 June 2023 will be encouraged to provide feedback during the statutory exhibition process for this Draft EIS.

9.1 Minister's EIS guidelines

As per the guidelines for the content of a Draft EIS, specific recommendations were made in relation to consultation:

CONSULTATION

The EIS must include discussion of all consultation about the action, including:

a) any consultation that has already taken place;
b) proposed consultation about relevant impacts of the action;
c) if there has been consultation about the proposed action, any documented response to, or result of, the consultation;
d) identification of affected parties, including a statement mentioning any communities that may be affected and describing their views; and
e) a description of how consultation was used in identifying and assessing impacts to heritage.

The department recommends the following publications are considered in planning and undertaking consultation, particularly with Indigenous communities:

- *Engage Early – Indigenous engagement guidelines*
- *Working Together: Managing Commonwealth Heritage Places.*
- *Working Together: Managing National Heritage Places*
- *The principles of the Burra Charter for best-practice heritage standards.*

9.2 Engagement Plan for the Draft EIS

An Engagement Plan for the Draft EIS was prepared to support the development of this Draft EIS. The Engagement Plan was developed through the following process:

- interviews/meetings with government and aviation stakeholders
- peer review process including 2 rounds of workshops and feedback from the Communications Branch of the Department, Airservices Australia and WSA Co
- alignment with the International Association for Public Participation (IAP2) Core Values and Public Participation Spectrum
- desktop research and lessons learnt from other related engagement programs (such as Brisbane Airport, Melbourne Airport, Airservices Australia, Heathrow Airport Expansion, Berlin Brandenburg Airport, Dusseldorf Airport, Vancouver International Airport and Vienna Airport).

The Engagement Plan considers community and key stakeholder feedback based on research and consultation conducted in 2022 and early 2023. This included:

- panel survey (research)
- focus groups (research)
- community information stalls
- community information stalls survey
- briefings, meetings and interviews with key stakeholders, including elected representatives from all levels of government, council staff, State Government representatives, First Nations Knowledge Holders, aviation stakeholders, local businesses, residents and community representative/special interest groups.

The key findings of the research and consultation activities indicated:

- awareness of the flight path design project is moderate to high, but level of interest only moderate and level of knowledge and understanding is low to moderate
- key issues of interest relate to the flight path location and impacts on individuals, communities and the environment, particularly noise, 24/7 operations and Blue Mountains World Heritage
- communications preferences highlighted by members of the community focused on letterbox drop as the preferred method of communication, followed by social media and traditional media. Website, councils, pop-ups and liaison with community groups also received support. Further suggestions included email, SMS and mail
- CALD communities have nuanced communication requirements
- some people are sceptical about the integrity of consultation on flight paths given their complexity and the short amount of time between public exhibition and WSI opening
- community members tend to express appreciation when the project team is at a public event
- key stakeholders are keen to ensure their networks are kept up to date about the project.

9.2.1 Engagement principles

The Engagement Plan defines 6 principles which have guided engagement activities for the project throughout 2022 and 2023 (refer to Figure 9.1 below). The principles were generated in response to insights received through stakeholder interviews, desktop research and lessons learnt from other projects, as well as the IAP2 Core Values (IAP2 Australasia, 2019).

Figure 9.1 Engagement principles

9.2.2 Engagement objectives

The objectives of the Engagement Plan for the Draft EIS are to:

- build awareness and educate impacted communities and key stakeholders about the airspace and flight path design process, proposed changes and how it will impact them through information that's relevant, timely, consistent, coordinated, and accessible
- ensure impacted communities and key stakeholders understand how their feedback can influence airspace and flight path design
- ensure impacted communities and key stakeholders feel they've had the opportunity to have their say during public exhibition of the Draft EIS and encourage them to do so.

9.2.3 Engagement phases

The Engagement Plan defines 5 phases of engagement for the Draft EIS , with each phase involving a particular focus for engagement. Figure 9.2 below provides an overview of the 5 phases.

Figure 9.2 Engagement phases and approach

9.2.4 Phases 1, 2 and 3 – pre-exhibition engagement

WSI represents one of the most significant infrastructure projects in Australia for decades. The impacts of the new airport's flight paths are likely to be experienced across Western Sydney, the Blue Mountains, as well as other parts of Greater Sydney and its surrounds.

The engagement approach has been designed to:

- inform community and key stakeholders about the project and its processes
- encourage participation in the conversation
- allow the development of the Draft EIS to benefit from community and key stakeholder knowledge and understanding of specific needs.

9.2.5 Stakeholder identification

Stakeholder groups were identified by those who may be potentially affected by or have an interest in the project. This includes members of the community, First Nations groups and individuals, special interest groups and organisations, businesses, government agencies, local governments and other authorities.

Table 9.1 below broadly categorises stakeholders into 2 groups, the community and key stakeholders, and outlines specific engagement objectives relevant to each group.

The 'community' stakeholder group has been further segmented according to distance from airport.

Table 9.1 Stakeholder groups relative to distance from WSI

Stakeholder groups	
Key stakeholders: • government agencies • local MPs • local government • First Nations groups and individuals • special interest groups and organisations • aviation groups • other authorities.	**Community:** • Forum on Western Sydney Airport (FOWSA) • Group A: those impacted by flight paths within a 15 km radius of WSI • Group B: those impacted by flight paths within 15–30 km from WSI • Group C: those impacted by flight paths within 30–50 km from WSI • Group D: those impacted by flight paths within 50–85 km from WSI • Community representative and WSI interest groups.

Engagement objectives
• To ensure understanding of project milestones, flight path impacts and mitigations, and approach for engagement • To test and refine the engagement approach • To ensure consistency of messaging and, where applicable, engagement activities • To understand local concerns and preferences • To keep abreast of how concerns are being addressed • To test emerging flight path design and provide input to key methodologies and decisions, as required, to reduce the risk at implementation • To educate on technical process and considerations, as well as EIS process • To leverage existing networks • To encourage well-informed public submissions. • To build understanding, raise awareness and respond to concerns • To fill the 'information void' and minimise project unknowns, speculation and misinformation • To provide opportunity for residents, businesses and landowners to understand how flight path design may impact them • To explain how earlier feedback has been considered and responded to in design, including efforts to reduce community impact.

9.2.6 Stakeholders and engagement tools

Engagement with key stakeholders has been ongoing throughout the development of the Draft EIS. Ensuring key stakeholders are informed and able to assist their broader communities in accessing information about the project has been a strong focus of the Engagement Plan to date. Table 9.2 below lists the stakeholders that have been engaged and the tools and techniques used.

Table 9.2 Key stakeholder engagement undertaken during the preparation of the Draft EIS

Stakeholder group	Stakeholder	Engagement tools and techniques
Australian Government	• Prime Minister • Minister for Infrastructure, Transport, Regional Development and Local Government • Minister for the Environment and Water • Minister for Finance • Shadow Ministers • Local Members of Parliament • Department of Infrastructure, Transport, Regional Development, Communications and the Arts • WSA • Airservices Australia • Civil Aviation Safety Authority (CASA) • Department of Agriculture, Water and the Environment/Department of Climate Change, Energy, the Environment and Water • Department of Defence.	• Briefings and interviews with key groups • Peer-to-peer meetings, as required • Participation in existing Communications Interface Coordination Group meetings • Establishment and regular meetings of an Engagement Advisory Group • Representation at project partners' engagement events and in communications collateral • Formal correspondence.

Stakeholder group	Stakeholder	Engagement tools and techniques
NSW Government	• Premier • Minister for Planning • Minister for Western Sydney • Minister for Infrastructure, Cities and Active Transport • Local State MPs • Transport for NSW • Sydney Metro • Department of Planning and Environment • Western Parkland City Authority • Sydney Water Corporation • Department of Premier and Cabinet • Greater Cities Commission • Infrastructure NSW • Water NSW • Western Sydney Parklands Trust • Environment Protection Authority • Department of Education • NSW Health • South-Western Sydney Local Health District • Western Sydney Local Health District.	• Briefings and interviews with key groups • Peer-to-peer meetings, as required • Participation in existing Communications Interface Coordination Group meetings • Representation at project partners' engagement events and in communications collateral • Formal correspondence.
Local government	• Blacktown City Council • Blue Mountains City Council • Camden Council • Campbelltown City Council • Fairfield City Council • Hawkesbury City Council • Liverpool City Council • Penrith City Council • Wollondilly Shire Council • Canterbury-Bankstown City Council • Cumberland City Council • The Hills Shire Council • City of Parramatta Council • Sutherland Shire Council.	• Briefings and interviews with GM, mayor and/or councillors • Peer-to-peer briefings and meetings with council staff • Formal correspondence • Distributing communications via existing council channels • Attendance at council run events, as appropriate.

Stakeholder group	Stakeholder	Engagement tools and techniques
Aviation	• General Aviation Advisory Network • Aeria Management (formerly Sydney Metro Airports (Bankstown and Camden)) • Sydney (Kingsford Smith) Airport • Regional Aviation Association Australia • NSW Rural Fire Services • NSW Fire & Rescue • NSW Police • NSW Ambulance • Australian Federal Police • Board of Airline Representatives of Australia (covers international airlines) • Airlines • Freight companies (DHL, FedEx, Toll etc) • Flying schools • Corporate charter organisations • Recreational flying companies and individuals • Sport aviation groups.	• Briefings and interviews with key groups • Briefings via existing forums, including Forum on Western Sydney Airport, General Aviation Advisory Network, Board of Airline Representatives of Australia, Sydney Metro Airports (Bankstown and Camden) consultative groups and Sydney Airport consultative groups • Email updates • Distributing communications via existing stakeholder channels.
First Nations	• Deerubbin Local Aboriginal Land Council • Gandangara Local Aboriginal Land Council • Murru Mittigar • Dharug strategic management group • Darug Tribal Aboriginal Corporation • Darug Custodian Aboriginal Corporation • Dharug Ngurra Aboriginal Corporation • Western Sydney Aboriginal Regional Alliance • Tharawal Local Land Council • Tharawal Aboriginal Corporation • Cubbitch Barta • Gundungurra Tribal Council Aboriginal Corporation • Gundungurra Aboriginal Heritage Association • Blue Mountains Aboriginal Culture and Resource Centre • Blue Mountains World Heritage Advisory Committee • Metropolitan Local Aboriginal Land Council • La Perouse Local Aboriginal Land Council • Dharug Knowledge Holders • Dharawal Knowledge Holders • Gundungurra Knowledge Holders.	• Email correspondence and briefings with Local Aboriginal Land Councils, Aboriginal Corporations and other relevant organisations • Interviews (one on one and small groups) • Offers to present at group meetings • Follow up phone calls • Interviews with Knowledge Holders.

Stakeholder group	Stakeholder	Engagement tools and techniques
Peak bodies, think-tanks and advocacy groups	• Tourism and Transport Forum • Committee for Sydney • Western Sydney Leadership Dialogue • Infrastructure Partnerships Australia • Urban Development Institute of Australia • Urban Taskforce • Property Council of Australia • CEDA (Committee for Economic Development of Australia) • Business Western Sydney • National Growth Areas Alliance • Western Sydney Business Connection • Regional Development Australia • Aerotropolis Multiversity (the University of Newcastle, UNSW Sydney, the University of Wollongong, Western Sydney University and TAFE NSW) • Shelter NSW • Multicultural NSW • Ethnic Communities' Council of NSW Inc.	• Emails • Briefings and interviews with key groups • Presenting at key stakeholder group events, as appropriate • Distributing communications via existing channels.
Environment and Blue Mountains	• UNESCO • Australian Conservation Foundation • The Nature Conservancy Australia • NSW National Parks (Blue Mountains Branch) • Nature Conservation Council of NSW • Blue Mountains Conservation Society • Greater Blue Mountains World Heritage Area Advisory Committee (GBMWHAAC) • Mulgoa Valley Landcare Group • Environmental Defenders Office NSW • Environmental Health Australia • Friends of the Earth Australia • National Parks Association of NSW • Give a Dam • Greater Sydney Landcare Network • The Colong Foundation for Wilderness • Blue Mountains Accommodation and Tourism Association • Mount Wilson Progress Association • Mount Irvine Progress Association • Blue Mountains World Heritage Advisory Committee • Residents Against Western Sydney Airport (RAWSA).	• Briefings and interviews with key groups • Presenting at key stakeholder group events, as requested • Email updates • Distribution of targeted collateral.

Stakeholder group	Stakeholder	Engagement tools and techniques
Tourism	• Destination NSW • Tourism Australia • Tourism and Transport Forum • Australian Tourism Export Council • Blue Mountains Accommodation and Tourism Association • Australian Attractions • Business Events Sydney.	• Briefings • Presenting at key stakeholder group events, as requested • Email updates • Distributing communications via existing stakeholder channels.
Forum on Western Sydney Airport (FOWSA)	FOWSA was established to link the community, government and the WSA Co and is made up of members representing: • up to 10 community representatives • up to 5 local government representatives • one NSW Government representative • one regional airport operator representative • up to 2 representatives of general aviation users • up to 2 representatives of the major airlines • up to 2 persons with connections to relevant representative agencies or organisations • an independent Chair • ex-officio members and other members.	• Presenting at FOWSA meetings • Distributing communications via existing stakeholder channels.
Community representative groups	• Western Sydney Aerotropolis, Community Consultative Committee (CCC) and Commissioner • Luddenham Progress Association • Ethnic Communities Council of NSW • Mulgoa Valley Landcare • Wallacia Progress Association • Mount Wilson Progress Association • Mount Irvine Progress Association • Residents Against Western Sydney Airport (RAWSA).	• Briefings and interviews with key groups • Email updates • Distributing communications via existing channels.
Chambers of Commerce	• Wentworth Falls Chamber of Commerce and Community • Katoomba Chamber of Commerce and Community • Penrith Valley Chamber of Commerce • Fairfield City Chamber of Commerce • Campbelltown Chamber of Commerce • Camden Chamber of Commerce and Industry • Liverpool Chamber of Commerce and Industry • Narellan Chamber of Commerce • Blue Mountains Business Chamber • Greater Blacktown Business Chamber • Blaxland and Districts Chamber of Commerce • Sydney Hills Chamber of Commerce.	• Email updates • Distributing communications via existing chamber channels.

Stakeholder group	Stakeholder	Engagement tools and techniques
Health and education services	• Luddenham Public School • Holy Family Primary School • Wallacia Public School • South Western Sydney Local Health District • Luddenham Medical Centre • Bush Babies Pre-School Warrimoo.	• Emails • Interviews.

9.2.7 Consultation activities

Key stakeholder and community engagement that was undertaken up until mid-June 2023 is summarised below.

Table 9.3 Summary of stakeholder and community engagement activities

Tool/technique	Description
Email subscribers	More than 700 community members have subscribed to the email updates database.
Stakeholder briefings	During Phase 2 engagement, briefings were held with 16 stakeholder and community organisations. These included: • WSA Co (21/11/2022) • Business Western Sydney (8/11/2022) • Independent Community Commissioner for the Western Sydney Aerotropolis and Orchard Hills (16/11/2022) • Wallacia Progress Association (22/11/2022) • Luddenham Progress Association (7/12/2022) • Greater Blue Mountains World Heritage Protection Area Advisory Committee (12/12/2022) • Blue Mountains Accommodation and Tourism Association (24/11/2022) • Wollondilly community forum (28/11/2022) • Western Sydney Aerotropolis Community Consultative Committee (29/11/2022) • Ethnic Communities Council of NSW (7/12/2022) • Mount Wilson Progress Association (5/12/2022) • Mount Irvine Progress Association (5/12/2022) • Mulgoa Valley Landcare Inc. (7/12/2022) • Luddenham Progress Association (7/12/2022) • Sydney Metro Airports tenants (12/12/2022) • Residents Against Western Sydney Airport (15/12/2022). Briefings were declined from: • Western Sydney Community Forum (no response received) • Blue Mountains Conservation Network (nominated RAWSA as their representative) • Cumberland Conservation Network (declined) • Luddenham Landowners Consortium (representative is part of Aerotropolis CCC). During Phase 3 engagement, 2 briefing times were offered to 28 business, environment and industry stakeholder groups. 5 stakeholder groups registered to attend.

Tool/technique	Description
	These included representatives from: • Western Sydney Leadership Dialogue (8/05/2023) • Property Council of Australia (9/05/2023) • Environmental Health Australia (8/05/2023) • Tourism and Transport Forum (8/05/2023) • Australian Attractions (8/05/2023). During Phase 3 engagement, briefings were also held with the following stakeholder and community organisations: • Western Sydney Aerotropolis Community Consultative Committee (15/03/2023).
First Nations	During Phase 2 engagement, we engaged with 13 First Nations groups including Traditional Owners and LALCs from the Dharug, Dharawal and Gundungurra nations. • Uncle Shane Smithers, Traditional Owner (Dharug) • Aunty Julie Jones, Traditional Owner (Dharug) • Raelene Lock, Traditional Owner (Dharug) • Aunty Jacinta Tobin, Traditional Owner (Dharug) • Aunty Carina Norman, Traditional Owner (Dharug) • Aunty Vanessa Possum, Traditional Owner (Dharug) • Steve Randall, LALC (Derubbin Land Council) • Aunty Glenda Chalker, Traditional Owner (Dharawal) • Rebecca Chalker, Traditional Owner (Dharawal) • Peter Williams, Traditional Owner (Dharawal) • Aunty Barb Simms, Traditional Owner (Gundungurra) • Aunty Yvonne Simms, Traditional Owner (Gundungurra) • Kazan Brown, Traditional Owner (Gundungurra) • David King, Traditional Owner (Gundungurra).
Council briefings	During Phase 2 engagement, 8 Council briefings were undertaken by DITRDCA. These included: • Liverpool City Council (17/11/2022) • Blue Mountains City Council (21/11/2022) • Fairfield City Council (22/11/2022) • Camden City Council (23/11/2022) • Penrith City Council (24/11/2022) • Campbelltown City Council (28/11/2022) • Wollondilly Shire Council 29/11/2022) • Penrith City Council Councillors (5/12/2022). Briefings were also offered to Blacktown City Council and Hawkesbury Shire Council. During Phase 3 engagement, 3 follow-up briefings were undertaken by DITRDCA at the request of councils. These included: • Camden City Council Councillors (15/03/2023) • Fairfield City Council Mayor (29/03/2023) • Blue Mountains City Council Councillors (18/04/2023).

Tool/technique	Description
State MP briefings	During Phase 2, a briefing were held on 8 November 2022, 9 November 2022 and 14 November 2022 with State MPs including: • Jacqui Binns, Member for Wollondilly • Stuart Ayres, Member for Penrith • Edmond Atalla, Member for Mount Druitt • Robyn Preston, Member for Hawkesbury • Trish Doyle, Member for Blue Mountains • Office of the Member for Camden • Office of the Member for Granville.
Government briefings	During Phase 2, briefings were held with 11 government organisations. These included: • Department of Planning and Environment (9/11/2022 and 16/11/2022) • Department of Premier and Cabinet (9/11/2022) • Australian Noise Ombudsman (21/11/2022) • Multicultural NSW (23/01/2023) • NSW EPA (9/11/2022) • Schools Infrastructure NSW (9/11/2022) • Western Parkland City Authority (9/11/2022) • Western Sydney Parklands Trust (9/11/2022) • Department of Education (9/11/2022) • South-Western Sydney Local Health District (9/11/2022) • Western Sydney Local Health District (9/11/2022).
The Forum on Western Sydney Airport (FoWSA)	FOWSA meetings have continued to be held since 2017. Four meetings were held between 2022 to mid-2023. Information about FOWSA, including meeting minutes are available at www.westernsydneyairport.gov.au
Community Information Stalls	During Phase 2 engagement, 17 community information stalls were held across greater Western Sydney between 11 October 2022 and 1 December 2022. More than 2,600 people were engaged across all locations, which included: • Westpoint Blacktown (11/10/2022) • St Marys Shopping Village (12/10/2022) • Glenbrook Rotary Markets (15/10/2022) • Silverdale Shopping Centre (16/10/2022) • Wetherill Park Shopping Centre (20/10/2022) • Katoomba Village (21/10/2022) • Liverpool Plaza (26/10/2022) • Richmond Marketplace (27/10/2022) • Narellan Town Centre (29/10/2022) • Campbelltown Mall (30/10/2022) • Penrith Plaza (19/11/2022)

Tool/technique	Description
	• Dam Fest 2022 (20/11/2022) • Parklea Markets (25/11/2022) • Springwood Town Square (26/11/2022) • Carnes Hill Marketplace (27/11/2022) • Wollondilly community forum (28/11/2022) • Parramatta Centenary Square (1/12/2022). During Phase 3 engagement, 9 community information and feedback stalls were held across Western Sydney between 18 March 2023 and 17 June 2023. More than 1,100 were engaged across all locations, which included: • Penrith Panthers Leagues Club for open FOWSA meeting (18/03/2023) • Camden Show (25/03/2023) • Hawkesbury Show (29/04/2023 – 30/04/2023) • Wallacia Festival (29/04/2023) • Fairfield Multicultural EID Festival (30/04/2023) • Glenbrook Rotary Markets (06/05/2023) • Chithirai Festival (07/05/2023) • Blacktown City Festival Streets Alive & Parade (27/05/2023) • WSA Open Day (17/06/2023).
Survey	During Phase 2, community members who attended community information stalls were invited to complete a survey to understand their concerns and values. In total, 804 surveys were completed. This included: • 350 completed at community information stalls • 454 completed by community members outside of community information stalls.
Research surveys	1,000 Panel surveys (80% phone; 20% online) were completed in October 2022 with randomly selected and representative residents from within 50 km radius of the WSI site. 500 Pulse surveys (80% phone; 20% online) completed in May 2023 with residents from within 50 km radius of the WSI site. This research has been designed to support engagement for development and exhibition of the Draft EIS, through establishment of a baseline to inform early engagement activities, and subsequent benchmarking to measure change over time and refine engagement activities. The survey has sought to understand community awareness, understanding and communications preferences relating to the project.
Research focus groups	Four focus groups were held in language to review and seek feedback on collateral developed and communication and engagement preferences.
Project 1800 line (1800 038 160)	No phone calls were received. The number of phone calls received has increased since the release of the preliminary flight paths in June 2023, as the 1800 line has been publicised as one of the primary contact points for the public on the preliminary flight paths and EIS process.
Project email (WSIflightpaths@infrastructure.gov.au)	Approximately 43 emails were received. The number of emails received increased significantly after the release of the preliminary flight paths in June 2023, as the project email has been publicised as one of the primary contact points for the public on the preliminary flight paths and EIS process.

Tool/technique	Description
Project collateral	Project information is available and has continued to be updated as plans have progressed and included in brochures, fact sheets and FAQs. Information has been available in hard copy at engagement events, local council offices and the WSA Co Experience Centre, as well as online. The overarching project brochures have been translated into the 5 most frequently spoken languages in Western Sydney: Arabic, Hindi, Vietnamese, Simplified Chinese and Tagalog. All brochures include information about how to view the information in languages other than English.
Online material	Department website (www.westernsydneyairport.gov.au): This website has provided project information since Phase 2. Online Community Portal (www.WSIflightpaths.gov.au): A dedicated project website has been available since 18 March 2022 and is updated regularly with project information.
Media releases	A media release on the preliminary flight paths was published on 27 June 2023 following the release of the flight paths.
Public Notices	Public notices were published in state and local newspapers to invite community to attend the open FOWSA meeting on 18 March 2023. Public notices were published after 27 June 2023 in state and local newspapers to inform the community of the preliminary flight paths community information and feedback sessions.

9.3 Summary of issues raised and responses to feedback received

Community and key stakeholder engagement to mid-2023 has identified a broad range of key issues. The issues raised by government agencies, authorities, stakeholders and the community are listed in Table 9.4, along with a cross-reference to where they are addressed in the Draft EIS.

Table 9.4 Summary of issues raised and where addressed in the Draft EIS

1: Issue category	2: Issue raised	3: Raised by	4: Response	5: Where this is addressed in this Draft EIS
Benefits				
Tourism	• Tourism providers are interested in better understanding the opportunities to raise awareness of Western Sydney as a destination, and market themselves better. • Opportunity identified to increase the overnight stay frequency in the Blue Mountains region. • There needs to be better collaboration between Destination NSW and Western Sydney councils. There are perceived funding imbalances between Western and Eastern Sydney (also see section below on *Western Sydney and Blue Mountains integration*).	Blue Mountains City Council Fairfield City Council Liverpool City Council Penrith City Council Wollondilly Shire Council Business Western Sydney GBMWHAAC Tourism and Transport Forum Australian Attractions Community members	Tourism benefits are derived from the airport itself rather than the flight paths. Although not specifically addressed as a requirement in this Draft EIS, the delivery of WSI will boost tourism, with the airport providing better accessibility to destinations across Western Sydney and the Blue Mountains. As part of the ongoing engagement for the delivery of WSI, the DITRDCA also facilitates ongoing engagement with key agencies and councils.	Economic and social impacts at the local, regional, and national levels are outlined in Technical paper 10: Social and Technical paper 11: Economic.

1: Issue category	2: Issue raised	3: Raised by	4: Response	5: Where this is addressed in this Draft EIS
Housing needs	• Recognition that WSI would likely encourage the development of more housing supply to the area, which was identified as a key need.	Liverpool City Council Business Western Sydney Community members	Social impacts such as housing needs relating to the to the expected population change in the area are being considered. Impact of the airport itself on housing supply is not part of the project however the consideration of potential social impacts associated with housing supply is provided in the social impact assessment for the EIS.	Potential social and economic impacts for communities and areas that may be affected by the project are outlined in Technical paper 10: Social and Technical paper 11: Economic.
Property values	• Mixed speculation about the impact that WSI would have on property prices, with the some stating they felt it could lead to an increase in value. However, this was dependent on location, flight paths, and proximity to the airport.	Liverpool City Council Business Western Sydney Property Council of Australia members Community members	While the potential economic changes to the local housing market, are not specifically related to this EIS, as they are dependent on a private market, broader impacts for regional and local communities including impacts on demographic characteristics due to redevelopment or changes in land values are being considered. Technical paper 10: Social discusses impacts to livelihoods resulting from people's perception of changes to property values. Technical paper 11: Economic discusses expected impacts on or changes in land values.	Economic and social impacts both positive and negative, are outlined in Technical paper 10: Social and Technical paper 11: Economic.

1: Issue category	2: Issue raised	3: Raised by	4: Response	5: Where this is addressed in this Draft EIS
Employment	• Interest in understanding more about employment markets, how locals can access these, and whether jobs will be held for locals. • Recommendation to better communicate the scale of employment opportunities and the types of employment that will be sought after WSI opens. • Recommendation to better communicate how small and medium businesses will benefit from the Western Sydney International Airport. • Support for the establishment of a major manufacturing hub at the aerotropolis. It was noted that adequate freight connections to surrounding suburbs needed to be put in place to make sure that local communities can capitalise on these. • Some community concern that employment figures are skewed by construction figures and the real numbers will be significantly lower once WSI is operating.	Blue Mountains City Council Camden City Council Campbelltown City Council Fairfield City Council Liverpool City Council Penrith City Council Business Western Sydney Ethnic Communities Council of NSW Western Sydney Leadership Dialogue Community members	Although broader employment opportunities relating to the airport itself are not specifically addressed as a requirement in this EIS, the delivery and ongoing operation of airspace architecture will generate a range of specialised employment opportunities. The airport generates employment opportunities rather than the flight paths. Flight paths can, however. impact land uses depending on industry type. Ground transport (for example, freight) is outside the scope of this draft EIS.	Economic and social impacts including employment opportunities to be generated by the project are outlined in Technical paper 10: Social and Technical paper 11: Economic.

1: Issue category	2: Issue raised	3: Raised by	4: Response	5: Where this is addressed in this Draft EIS
Transport	• Support for better transport connections across Western Sydney and creating a more connected corridor across the Parkland City. • Support for the new Sydney Metro line connecting WSI to the Blue Mountains rail line. • Calls to extend the new Sydney Metro line to the south at Leppington and Campbelltown. • Calls to extend the new Sydney Metro line from St Marys to Rouse Hill. • Noted there is a high level of car dependency in Western Sydney because public transport connections are not easy. • Recommendation to implement the principles of a "30 minute city", noting that this was promised as part of the Western Sydney City Deal. • Flexibility and reduced travel times to an international airport were valued.	Camden City Council Campbelltown City Council Fairfield City Council Penrith City Council Business Western Sydney Western Sydney Leadership Dialogue Blue Mountains Accommodation & Tourism Association Community members	Ground transport is outside the scope of this Draft EIS.	N/A (out of scope) Assessment of the potential traffic, transport and access needs were considered in the 2016 Environmental Impact Statement.
Education, infrastructure and services	• Support for the creation of new education facilities and training spaces for a skilled workforce in Western Sydney. • Excitement for industries, investment and infrastructure that would accompany the aerotropolis.	Fairfield City Council Liverpool City Council Ethnic Communities Council of NSW Community members	Broader planning needs were addressed in previous strategic planning frameworks and are not related to this draft EIS. Opportunities for new education facilities and other industries is outside the scope of this draft EIS.	N/A (out of scope)

1: Issue category	2: Issue raised	3: Raised by	4: Response	5: Where this is addressed in this Draft EIS
Western Sydney Identity	• Recognition WSI was a major city shaping project and would play a role in creating a new identity and character for the Western City Parklands. • Noted surrounding communities require investment and support to establish Western Sydney as a destination, e.g. with conference centres, art centres, football stadiums etc. • Noted that there is an opportunity and need to create prestige around WSI. There is a risk if this is not done, there will be a feeling it is a less desirable airport for Western Sydney and a better one for the East.	Fairfield City Council Luddenham Progress Association Ethnic Communities Council of NSW	Broader planning needs have been addressed in previous strategic planning frameworks and are not related to this Draft EIS.	N/A (out of scope)
Opportunities for cultural input	• Suggestion to increase opportunities for Traditional Owners to provide input into the airport (e.g. incorporating indigenous artwork into the design).	GBMWHAAC	Matters relating to the airport itself are outside the scope of this Draft EIS.	N/A (out of scope)

1: Issue category	2: Issue raised	3: Raised by	4: Response	5: Where this is addressed in this Draft EIS
Operations				
Second runway	• Interest in how the second runway will be taken into consideration in the future, with the comment that the flight paths for the second runway should have been developed now. • Concern adding a second runway will have significant impacts on other airport operations (e.g. Bankstown), with frustration over lack of certainty. • Noted there is some confusion and uncertainty around the second runway within the community. • Interest in the projected timeline for reaching capacity operations at WSI.	Aerotropolis Community Commissioner Fairfield City Council Aerotropolis CCC RAWSA State Members of Parliament Aeria Management Tenants Luddenham Progress Association Community members	A second runway is outside the scope of this draft EIS. Flexibility and expandability were considered in the geometry of the airport and facility layout to allow for its proposed development over the long term in line with increasing demand. Future development is subject to separate regulatory approvals in accordance with *Airports Act 1996* (Commonwealth), including any required environmental assessment.	N/A (out of scope)
Air traffic volume	• Interest in understanding how the volume of air traffic compares to Sydney (Kingsford Smith) Airport. • Doubt as to whether Sydney needs a second airport, with some suggesting capacity needs could be met by Sydney (Kingsford Smith) Airport.	GBMWHAAC Luddenham Progress Association Community members	Western Sydney is one of Australia's fastest growing regions and is Australia's third-largest economy. WSI will cater for ongoing growth and demand for air travel for the region, particularly as Sydney (Kingsford Smith) Airport becomes increasingly constrained over the coming decades.	The need for WSI was outlined in the 2016 EIS. Chapter 2 of the Draft EIS provides an overview of the strategic context and need for the project.

1: Issue category	2: Issue raised	3: Raised by	4: Response	5: Where this is addressed in this Draft EIS
Flight paths	• Concern community and stakeholder groups cannot engage effectively until the flight paths are released and the impacts are understood. There was a desire to see the flight paths and understand the ANEC contours and associated impacts. • Concern the flight paths are already fixed as the runway is already under construction. While some communities further out from WSI may not be impacted, communities that are close to WSI and directly aligned with the runway are likely to have planes overhead. • Desire to have quantified and detailed information about flight paths when the Draft EIS is released including the number of flights over sensitive areas, height and noise. Broad statements need to be avoided. • It was noted that some people who have lived in the area for a long time are getting frustrated as they have been waiting for flight paths to be released for many years. • Recommendation for Draft EIS to show the other flight path options that were assessed. • Noted there is low awareness in the Blue Mountains that the original point merge flight path designs from the 2015/16 EIS have been discarded.	Blue Mountains City Council Fairfield City Council Liverpool City Council Penrith City Council Campbelltown City Council Wollondilly Shire Council Business Western Sydney Luddenham Progress Association Mt Wilson & Mt Irvine Progress Associations RAWSA Wallacia Progress Association Blue Mountains Accommodation & Tourism Association GBMWHAAC Ethnic Communities Council of NSW Australian Noise Ombudsman Aeria Management Tenants FOWSA Community members	The project was referred to the (then) Minister for the Environment and Water in 2021 (EPBC 2022/9143) in accordance with Section 161 of the *Environment Protection and Biodiversity Conservation Act 1999* and Condition 16 of the Airport Plan. In response, the delegate for the Minister for the Environment and Water determined that an EIS would be required and issued the EIS Guidelines on 26 April 2022. This Draft EIS has been prepared to address these requirements. As part of the legislative process a full and transparent consultation process is being undertaken on the proposed flight paths, including the design and mitigations and matters that have been considered.	A detailed assessment of the potential impacts from the proposed flight paths has been undertaken in the technical papers attached to the Draft EIS (Technical papers 1 to 14).

1: Issue category	2: Issue raised	3: Raised by	4: Response	5: Where this is addressed in this Draft EIS
	• There is tension around whether flight paths should be directed over residential/recreational or wilderness areas in the Blue Mountains. • Question on whether the 'Fly Neighbourly' Blue Mountains National Park arrangement will be taken into consideration when developing flight paths and altitudes over the Blue Mountains. • Question on how severe weather will impact flight path design and operation.			
Noise	• Implementing a curfew was supported by many, particularly noting perceived inequity between Sydney (Kingsford Smith) Airport and WSI. • Noise impacts on migrants and families with young children is a concern, noting that there is an increase in this demographic in many Western Sydney LGAs. • Noted many community members chose their homes because they disliked noise, and there is a feeling that this is being ignored or overridden. • Concern that excessive noise over recreational areas could cause people to stop using these spaces.	Blue Mountains City Council Camden City Council Campbelltown City Council Liverpool City Council Wollondilly Shire Council Business Western Sydney Luddenham Progress Association Mt Wilson & Mt Irvine Progress Associations RAWSA Wallacia Progress Association GBMWHAAC	The noise assessment was based on WSI operating on a 24-hour, 7 day a week basis. Noise and potential impacts has been detailed within the EIS in a non-technical manner and include figures and graphics to help explain noise levels in a way that people can understand. The social and health impact assessments has considered noise impacts on different demographics. The Aircraft Overflight Noise Tool which is publicly available online, as noted elsewhere in the Draft EIS) has enabled users to see the indicative altitude of the flight paths, predicted number of flights, and noise mapping at different locations.	Ambient noise studies have been undertaken to inform noise levels at sensitive receivers. This is outlined in Chapter 11 (Aircraft noise) and Technical paper 1: Aircraft noise Technical paper 14: Greater Blue Mountains World Heritage Area Chapter 18 (Social) and Technical paper 10: Social Chapter 20 (Health) and Technical paper 12: Human health Chapter 22 (Cumulative impacts)

1: Issue category	2: Issue raised	3: Raised by	4: Response	5: Where this is addressed in this Draft EIS
	• Noted due to the quietness of many wilderness areas, increases in noise will be much more pronounced and need to be carefully monitored. • Noted that impacts of the Blue Mountains landscape on noise need to be taken into consideration. • Concern people are being told that modern aircraft will be quieter, with the sense that this is misleading and will not be a large noise reduction. Noted that Sydney (Kingsford Smith) Airport aircraft can already be heard in the Blue Mountains and WSI will likely operate at much lower heights. • There were questions on whether there are noise limits set under the EPBC Act and how noise minimisation practices would be quantified. • Noted the importance of ensuring all people who are impacted by noise are engaged with, to ensure that communities are not surprised by changes. • Suggestion to consider the cumulative impacts of noise from the broader aerotropolis, as the community often does not differentiate between different levels of government.	Ethnic Communities Council of NSW Australian Noise Ombudsman NSW Government Departments Community members	The WSI brochure "noise assessment" to accompany the Aircraft Overflight Noise Tool has been made available in several languages and is supported by the Translating and Interpreting Service (TIS National). Impacts (in particular, noise) on the Blue Mountains are discussed in Technical paper 14: Greater Blue Mountains World Heritage Area. Cumulative impacts (including noise) are covered in Chapter 22 (Cumulative impacts). The legislative framework for noise is discussed in Technical paper 1: Aircraft noise and Chapter 11 (Aircraft noise). The proposed management and mitigation measures for the project are described in each chapter and consolidated within Chapter 24 (Mitigation and management).	Chapter 24 (Mitigation and management)

1: Issue category	2: Issue raised	3: Raised by	4: Response	5: Where this is addressed in this Draft EIS
Measurement and management	• Noted the management of the flight paths is critical to maintaining the social license of the airport, and that clearly measurable outcomes and statements of operational performance will be required. • Noted that monitoring should be early warning to protect environmental values, rather than an after-the-fact documentation of natural catastrophes.	RAWSA GBMWHAAC	The Draft EIS provides information on proposed safeguards and mitigation measures to deal with the relevant impacts of the project.	Chapter 24 (Mitigation and management) provides an outline of how the project would be monitored and managed over time.
Impact on other airspace	• There was some interest on whether WSI would impact the operation of existing airports such as Bankstown, Camden and the RAAF Base Richmond. • Further information was requested on how the airport would impact other aerial operations such NPWS/RFS fire response, NPWS aerial baiting, and emergency services. • Interest in understanding where new flying training areas will be located, noting the higher cost if these are further away. • Question on whether there will be compensation for any financial loss experienced by Aeria Management Tenants.	Luddenham Progress Association GBMWHAAC Ethnic Communities Council of NSW State Members of Parliament Aeria Management Tenants Community members	The Draft EIS provides a description of the changes to the Sydney Basin airspace for other airports that are required prior to the opening of WSI in 2026 to enable the new flightpaths and airspace for WSI (facilitated changes). Any aircraft in an emergency will be given priority by Air Traffic Control as per standard aeronautical procedures. Refer to Technical paper 4 (Hazard and risk). Key to the design principles was the need to minimise impacts on the community while maximising safety, efficiency and capacity of WSI and the Sydney Basin.	Chapter 8 provides information on the facilitated changes for the project; Chapter 21 describes the facilitated impacts and Chapter 22 details the cumulative impacts. Technical paper 13: Facilitated changes describes the facilitated changes associated with operation of WSI, including flying training areas. Technical paper 11: Economic looks at the economic impacts to existing flying training operators. Impacts on other airspace users is covered in Technical paper 13: Facilitated changes and Chapter 21 (Facilitated impacts).

1: Issue category	2: Issue raised	3: Raised by	4: Response	5: Where this is addressed in this Draft EIS
	• Noted that relocation of operations to other airspaces was not possible in some cases (e.g. Camden cannot accommodate Bankstown operations). • Recommendation for a broader review of airspaces, including potentially reviewing access to military restricted areas. • Safety was a concern, noting that there has been a significant increase in plane numbers in the area. It was recommended that a review of LTOP or of airspace regulations be undertaken. • Concern over potential impacts on recreational activities such as hang gliding in the Blue Mountains.			

1: Issue category	2: Issue raised	3: Raised by	4: Response	5: Where this is addressed in this Draft EIS
Engagement				
Level of influence	• There was concern over how much capacity there was for people to influence the Draft EIS and preliminary flight paths. It was noted engagement needs to be very clear about exactly what the community can change. • There was some concern that engagement on issues is "tick-a-box" and will not consider community views. For example, there is a feeling that the flight paths have already been determined as the runway is under construction. • Noted that often the limitations of developing around heritage areas is not communicated properly and this results in community confusion when certain ideas aren't progressed.	Aerotropolis Independent Community Commissioner Campbelltown City Council Wollondilly Shire Council Mulgoa Valley Landcare Inc. Australian Noise Ombudsman RAWSA	Comments received during the development of the Draft EIS have been summarised. Interested parties and the community have been encouraged to make a formal submission on the Draft EIS, to be considered by the Minister for the Environment and Water. The final EIS will account of any comments received during the exhibition period and contain a summary of comments and how comments have been addressed under the *Environment Protection and Biodiversity Conservation Act 1999* (Cth).	This chapter provides a summary of the consultation that occurred during the project development and environmental assessment process, and the consultation proposed during public exhibition, detailed design, and delivery. The approval for the construction of the runway and airport were covered in the 2016 EIS. Flight path design is an iterative process based on flight path design principles. Chapters 6 and 7 of the EIS summarise the development of the projects and the factors influencing the design of the flight paths. Existing limitations on development around airports is covered in Technical paper 6: Land use and planning and Chapter 14 (Land use).

1: Issue category	2: Issue raised	3: Raised by	4: Response	5: Where this is addressed in this Draft EIS
Engagement locations and times	• Engagement needs to ensure people who do not visit town centres are included and aware of the Draft EIS. • Noted that there are a lot of shift workers and those who work long hours during the week, so it will be important to provide a range of engagement times and days. • Interest in understanding how community information stalls were advertised, and ensuring this is broadened moving into the next phase of engagement. • Concern research does not include some areas of the Blue Mountains and Hawkesbury.	Aerotropolis Independent Community Commissioner Campbelltown City Council Luddenham Progress Association Mt Wilson & Mt Irvine Progress Associations Blue Mountains Accommodation & Tourism Association Ethnic Communities Council of NSW FOWSA Multicultural NSW	Engagement for the Draft EIS has been diverse to ensure it is accessible to the communities in and around the region.	This chapter provides a summary of the consultation that occurred during the project development and environmental assessment process, and the consultation proposed during public exhibition, detailed design, and delivery.

1: Issue category	2: Issue raised	3: Raised by	4: Response	5: Where this is addressed in this Draft EIS
Communications preferences	• It was asked whether/how communication preferences are being collected. • Providing information in different language forums (e.g. radio programs in language, letterbox drops, in-person pop-ups) was recommended. • Noted remote properties needed to be considered and included in information distribution, as they are often forgotten. • Noted for very rural areas it is sometimes best to communicate via email, as many people do not live at their properties all week. Communication via local progress association emailing lists was recommended or to list the associations as contacts for local information. • Noted that translated Q&A documents and live in-person forums are good resources for CALD communities.	Aerotropolis Community Commissioner Campbelltown City Council Wollondilly Shire Council Luddenham Progress Association Mt Wilson & Mt Irvine Progress Associations Wallacia Progress Association Ethnic Communities Council of NSW Multicultural NSW	Engagement for the Draft EIS has been diverse to ensure it is accessible to the communities in and around the region.	This chapter provides a summary of the consultation that occurred during the project development and environmental assessment process, and the consultation proposed during public exhibition, detailed design, and delivery.

1: Issue category	2: Issue raised	3: Raised by	4: Response	5: Where this is addressed in this Draft EIS
Engaging with specific stakeholder groups	• There was interest in understanding which First Nations stakeholder groups are being engaged with. • Recommendation to engage with the development industry or a peak body such as the UDIA. • Noted that sensitive receivers such as churches and schools need to be included in engagement. • Suggestion to engage with aviation stakeholders such as those at The Oaks aerodrome, Yerranderie and Wedderburn, and to advise local council on impacts to recreational flying. • Concern communities in southern Wollondilly haven't been engaged with. • Recommendation to hold a Blue Mountains tourism forum.	Blue Mountains City Council Fairfield City Council Wollondilly Shire Council Blue Mountains Accommodation & Tourism Association NSW Government Departments	Targeted engagement has been undertaken with residents, community organisations, local councils, environmental groups, government organisations, aviation groups, service providers, and business groups to inform many aspects of the Draft EIS and especially Technical paper 10: Social. Engagement with Aeria (manager of Bankstown and Camden airports), DITRDCA and tenants of Bankstown Airport has been undertaken to inform several aspects of the Draft EIS and especially Technical paper 11: Economic. Engagement with First Nations knowledge holders and stakeholders to understand cultural values, the places associated within them and concerns about the potential impacts of the project has been undertaken to inform Technical paper 9: Heritage. Engagement is ongoing and will consider recommendations for broader engagement.	This has been addressed in many locations throughout the Draft EIS, but especially in: Technical paper 10: Social Technical paper 11: Economic Technical paper 9: Heritage

1: Issue category	2: Issue raised	3: Raised by	4: Response	5: Where this is addressed in this Draft EIS
Understanding noise	• Recognition of the need for noise to be adequately explained so that community members can understand. Important to not rely solely on ANEC, with the suggestion to compare noise levels with common experiences and explore other ways to make understanding noise impacts clearer. • Noted the diversity of Western Sydney, and the difficulty of explaining noise impacts in this context. • Suggestion the Aircraft Overflight Noise Tool could include potential noise impacts for particular paths and walking trails in the Blue Mountains. • Noted in some quieter areas of Sydney, the change in noise levels will be much more pronounced and felt more keenly. • Recommendation the Aircraft Overflight Noise Tool should be calibrated to ensure real world experience and data match up.	Blue Mountains City Council Camden City Council Campbelltown City Council Liverpool City Council Wollondilly Shire Council Mt Wilson & Mt Irvine Progress Associations RAWSA Australian Noise Ombudsman Community members	Noise and potential impacts has been explained in a non-technical manner within the EIS, and has used figures and graphics to help explain noise levels in a way that people can understand. The Aircraft Overflight Noise Tool has enabled users to see the indicative altitude of the flight paths, proposed number of flights, and noise mapping at different locations. The WSI brochure “noise assessment” to accompany the Aircraft Overflight Noise Tool is available in several languages and is supported by the Translating and Interpreting Service (TIS National).	Technical paper 1: Aircraft noise Chapter 11 (Aircraft noise)

1: Issue category	2: Issue raised	3: Raised by	4: Response	5: Where this is addressed in this Draft EIS
CALD engagement	• Noted the diversity of the Western Sydney region, with concern linguistic barriers were being interpreted as tacit approval for the airport or ambivalence toward the project. • Noted that it is not enough to only have information in language on an information hub, as CALD audiences may not be aware that the hub is available. • Noted some people are not literate in their first language and some are lacking digital literacy and may not know how to use QR codes etc. However, QR codes that direct people to sites in language (rather than printed copies) have been used successfully in the past. • Noted that community influencers are not always the same as community leaders. E.g. religious leaders do not always understand the needs and values of the business community. • Recommendation that State Members of Parliament should be contacted ahead of engagement to ensure CALD audiences are included. • Noted the top language in Horsley Park is Maltese, followed by Italian.	Campbelltown City Council Fairfield City Council Liverpool City Council Business Western Sydney Ethnic Communities Council of NSW State Members of Parliament NSW Government Departments Multicultural NSW	Engagement for the Draft EIS has been diverse to ensure it is accessible to CALD communities in and around the region.	This chapter provides a summary of the consultation that occurred during the project development and environmental assessment process, and the consultation proposed during public exhibition, detailed design, and delivery.

1: Issue category	2: Issue raised	3: Raised by	4: Response	5: Where this is addressed in this Draft EIS
Draft EIS exhibition period	• 60 business day exhibition period may be too short, as the documents are very technical and local councils often need to engage specialist analysts.	Camden City Council Penrith City Council	The public exhibition of the preliminary flight paths, Draft EIS and Draft Noise Insultation and Property Acquisition Policy will be conducted by DITRDCA for the period determined by the Australian Minister for the Environment and Water.	N/A
Clarity and transparency	• Need for the Draft EIS to outline all methodologies and assumptions clearly and transparently, noting that EIS documents are dense and complex. • Clarity on terms used is important given the diversity of the audiences. For example, residents in smaller communities such as Silverdale may think that 'avoiding residential areas' applies to them. • Transparency around engagement activities, feedback and approach was supported.	Fairfield City Council Liverpool City Council Penrith City Council Wollondilly Shire Council Business Western Sydney Luddenham Progress Association RAWSA Blue Mountains Accommodation & Tourism Association FOWSA Community members	The Draft EIS outlines the consultation that occurred during the project development and environmental assessment process, and the consultation proposed during public exhibition, detailed design, and delivery. Methodologies and assumptions for each specialist area are outlined in Part C (Environmental impact assessment) of the Draft EIS for each specialist area, and the attached technical papers. The Draft EIS includes chapter summaries for each technical paper to explain the potential impacts in a non-technical manner.	This chapter Part C (Environmental impact assessment) of the Draft EIS and attached technical papers Two-page summary for each specialist area.

1: Issue category	2: Issue raised	3: Raised by	4: Response	5: Where this is addressed in this Draft EIS
Engagement fatigue	• Noted that there is a large community who are experiencing engagement fatigue and are critical of the consultation process for Warragamba Dam. • Engagement during the airport construction was noted as being disappointing, particularly over proposed biodiversity offsets as the outcomes were not seen to be meaningful.	GBMWHAAC Mulgoa Valley Landcare Inc.	Engagement for the Draft EIS has been diverse to ensure it is accessible to the communities in and around the region. Airport construction is outside of the scope of this Draft EIS.	This chapter provides a summary of the consultation that occurred during the project development and environmental assessment process, and the consultation proposed during public exhibition, detailed design, and delivery.
Environment				
Water contamination	• Concerns there will be contamination of their rainwater catchment tanks or groundwater by things such as fuel dumping, as they are reliant on these sources. More information on where fuel dumping will be permitted was requested. • Concern about flight paths over water supplies. • There was confusion about whether flying is permitted over Warragamba Dam. • Concern over pollutants and contaminants being stored at the airport near the creek.	Aerotropolis Community Commissioner Camden City Council Luddenham Progress Association Mt Wilson & Mt Irvine Progress Associations Wallacia Progress Association GBMWHAAC Mulgoa Valley Landcare Inc. FOWSA RAWSA Community members	Potential impacts on rainwater tanks and drinking water catchment areas from dispersion of air pollution is being assessed and addressed in the Draft EIS. Fuel dumping will have no ground level impacts if carried out in accordance with appropriate procedures. Historical record indicates that they will be very remote events. Storage of materials at the airport is outside the scope of this study and was covered in the 2016 EIS.	Technical paper 2: Air quality and the corresponding EIS chapter considers impacts of the flight paths on water quality. Technical paper 4: Hazard and risk and the corresponding EIS chapter considers fuel dumping. Technical paper 12: Human health and the corresponding EIS chapter assesses the human health impacts of the flight paths including impacts from hazard and risks, noise and air quality.

1: Issue category	2: Issue raised	3: Raised by	4: Response	5: Where this is addressed in this Draft EIS
Air quality	• Air quality is a health risk in Western Sydney, noting that there is a high percentage of the population with asthma and respiratory issues. This was intensified because of the Sydney Basin and the Blue Mountains ridgeline acting as a buffer preventing air circulation. • Enquiry about whether car exhaust fumes are being considered in the air quality study. • Request to have pre-airport and post-airport air quality monitoring undertaken in Blue Mountains communities.	Blue Mountains City Council Wallacia Progress Association GBMWHAAC Community members	The air quality assessment looked at the impacts of the flight paths on existing air quality in the local, regional and national context. The levels of existing air quality (monitored by NSW EPA) include all sources of air pollutants captured by the monitors (including car exhaust fumes). These levels were considered in the overall air quality assessment.	Technical paper 2: Air quality, Technical paper 12: Human health, and the corresponding EIS chapters.

1: Issue category	2: Issue raised	3: Raised by	4: Response	5: Where this is addressed in this Draft EIS
World Heritage values	• Recognition and appreciation of the many studies that are being undertaken to assess the varied impacts on the World Heritage area (e.g. sound across the Blue Mountains). • Noted the calm serenity of the Blue Mountains, and the fact that an airport doesn't fit well with the wilderness character of the region. • Concern that loss of the Blue Mountains World Heritage listing would have impacts on ecotourism in the area. • Noted the Draft EIS needed to directly refer to the statement of Outstanding Universal Value and needed to reflect the fact that a number of adjacent reserves could be added to the World Heritage Area in the future. • Noted Heritage values cannot be offset and cannot be weighed against economic benefits as these are not like-for-like.	Blue Mountains City Council RAWSA Wallacia Progress Association Blue Mountains Accommodation & Tourism Association GBMWHAAC Community members	Each of the World Heritage values associated with the Greater Blue Mountains Area (GBMA), including the elements identified in the statement of Outstanding Universal Value, have been assessed as part of the draft EIS.	Technical paper 14: Greater Blue Mountains World Heritage Area, and the corresponding EIS chapter. The assessment is also supported by other technical reports (such as biodiversity and heritage).

1: Issue category	2: Issue raised	3: Raised by	4: Response	5: Where this is addressed in this Draft EIS
Environment and ecosystem	• Noted the importance and fragility of the Blue Mountains/Mt Irvine/Mt Wilson ecosystems, being some of the only temperate rainforest areas in Australia. • Noted the significant impact of the recent bushfires and that the area was still recovering. • Suggestion that government invest a significant amount of money into preserving the environment and ecosystem. • Concern the precautionary principle is not being exercised, and that cumulative impacts could result in significant negative outcomes for the environment and ecosystems. • Concern that flow-on impacts are not being taken into consideration. For example, the loss of flying foxes will have ramifications for the entire ecosystem (e.g. pollination). • Noted the proposed biodiversity offset site at Orchard Hills Defence Base was already named as an offset before the airport was decided so should not be able to be included, and the department's commitment to protecting biodiversity was questioned.	Mt Wilson & Mt Irvine Progress Associations RAWSA Wallacia Progress Association Blue Mountains Accommodation & Tourism Association GBMWHAAC Mulgoa Valley Landcare Inc. Community members	Potential impacts on values contained within the GBMA are identified and assessed in Technical paper 14: Greater Blue Mountains World Heritage Area and Technical paper 8: Biodiversity. The importance of values protected within the GBMA are expressed in these papers. Impacts associated with the 2019/2020 bushfires are considered in Technical paper 8: Biodiversity and Technical paper 14: Greater Blue Mountains World Heritage Area. The project will have no direct impacts on any areas subject to or recovering from these bushfires. Grey-headed Flying-foxes were considered particularly susceptible to wildlife strike and impacts associated with the project on this species is considered within the Biodiversity and Wildlife Strike Assessment technical papers. Impacts on the environment as a whole are considered in Technical paper 8: Biodiversity, Technical paper 5: Wildlife strike risk and Technical paper 14: Greater Blue Mountains World Heritage Area. These assessments are taking a precautionary approach and consider cumulative impacts in assessing impacts on the environment (which includes ecological processes and systems).	Technical paper 5: Wildlife strike risk, Technical paper 8: Biodiversity, Technical paper 14: Greater Blue Mountains World Heritage Area and the corresponding EIS chapters.

1: Issue category	2: Issue raised	3: Raised by	4: Response	5: Where this is addressed in this Draft EIS
	• Comment that the Cumberland Plain Conservation Plan is inadequate but is a starting point that should be built upon. • WSI seems to be contrary to the general movement toward sustainability and net zero.		Broader planning needs relating to offsets, conservation plans and sustainability have been addressed in previous strategic planning frameworks and the 2016 EIS, and are outside the scope of this Draft EIS.	
Wildlife	• Bird strikes are of concern. Further information is requested on how DITRDCA intends to protect critical migratory corridors for birds and how bird strikes will be made safe. Noted that isolated pockets of vegetation do not help. • There is tension as councils seek to increase tree canopy cover across Western Sydney, however do not want to attract fauna to the airport area. • Concern there will be dramatic changes to the environment, e.g. increase in noise, and will impact returning sensitive wildlife in the Blue Mountains. • Vulnerable species discussed included the bellbird, flying foxes, the Swift Parrot, and the Regent Honey Eater. • Noted that during the WSI construction, fences were built along the sides of the road and resulted in a significant increase in roadkill.	Camden City Council Mt Wilson & Mt Irvine Progress Associations RAWSA Wallacia Progress Association Blue Mountains Accommodation & Tourism Association GBMWHAAC Mulgoa Valley Landcare Inc. Community members	Technical paper 5: Wildlife strike risk, Technical paper 8: Biodiversity and Technical paper 14: Greater Blue Mountains World Heritage Area identify and assess potential impacts associated with WSI flight paths on the environment, including vulnerable species and sensitive wildlife within the GBMA. Of the vulnerable species, flying-foxes are the primary concern from a wildlife strike perspective, however strike numbers are likely to be low with very minimal population impacts. Bellbird, swift parrot and regent honeyeater are unlikely to occur in aircraft conflict zones. Although the project would result in occasional wildlife strike and potentially elevate or exacerbate existing noise, vibration, light and air quality values, these impacts are considered unlikely to be of a magnitude that would lead to a significant impact on the environment, or on the population of any specific species.	Technical paper 5: Wildlife strike risk, Technical paper 8: Biodiversity, Technical paper 14: Greater Blue Mountains World Heritage Area and the corresponding EIS chapters.

1: Issue category	2: Issue raised	3: Raised by	4: Response	5: Where this is addressed in this Draft EIS
			Tree canopy objectives and wildlife attraction has been addressed in the Western Sydney Aerotropolis Development Control Plan. Airport construction is outside the scope of this Draft EIS.	
Urban heat	• Recognition that increasing vegetation to cool the city is a key priority. • Concern WSI will contribute to the already significant urban heat issues in the area and impact the health of people and animals.	Penrith City Council Wallacia Progress Association Mulgoa Valley Landcare Inc. Community members	Urban heat effects are outside the scope of this Draft EIS.	N/A (out of scope)
Bushfire	• Concern an increase in planes over the Blue Mountains area could result in fires (e.g. plane crashes). Noted that the region did not have the resilience to cope with a number of these events.	Mt Wilson & Mt Irvine Progress Associations GBMWHAAC	Operation of flight paths over the Blue Mountains presents a very low risk of introducing fire through aircraft accidents. This is based on an estimate for the crash rate from aircraft during flight over the Blue Mountains ranging between approximately one in 1,700 to one in 2,400 years in 2055. The range in the crash rate risk reflects the likely distribution of traffic movements using the flight paths over the Blue Mountains.	Technical paper 4: Hazard and risk (see Section C3, Appendix C), and the corresponding EIS chapter.

1: Issue category	2: Issue raised	3: Raised by	4: Response	5: Where this is addressed in this Draft EIS
Visual amenity	• Question on whether visual amenity assessments will include impact on residents. • Noted that visual amenity in the Blue Mountains is a key priority.	Luddenham Progress Association GBMWHAAC	The impacts of the flightpaths on visual amenity of residents is addressed in the Draft EIS. This includes the assessment of views representing residential areas. The impact of flightpaths on the visual amenity of the Blue Mountains (including the World Heritage Values) is considered in the Draft EIS.	Technical paper 7: Landscape and visual amenity, and the corresponding EIS chapters.
Blue Mountains recreation	• The importance of the Blue Mountains environment for recreation and tourism in Greater Sydney was recognised, and that protecting this was of key importance. • Concern that any overflights (particularly at night) would impact activities such as camping and reduce the likelihood that people would visit. Concern that camping will be a secondary consideration for flight paths. • Community expectation higher levels of protection should apply to national parks. There is an expectation of pristine wilderness. People (international and domestic visitors) would choose to go elsewhere if these values are being degraded. • Noted the Dark Skies initiatives in the Blue Mountains to protect the area from light pollution and planes. • Health and wellbeing benefits of biodiversity were recognised.	Luddenham Progress Association RAWSA Wallacia Progress Association Blue Mountains Accommodation & Tourism Association GBMWHAAC Mulgoa Valley Landcare Inc. Community members	The potential impacts of overflights (particularly at night) on the wilderness areas and associated activities are being considered as part of the assessment focusing on the GBMA through consideration of the values associated with this area. Consideration of specific impacts, such as light impacts a night and impacts to recreational activities (such as camping) will be considered as part of Technical paper 14: Greater Blue Mountains World Heritage Area as well as Technical paper 7: Landscape and visual amenity. The safety of the proposed flight paths has been a primary factor in the determination of the proposed flight paths.	Technical paper 14: Greater Blue Mountains World Heritage Area, Technical paper 7: Landscape and visual amenity and Technical paper 10: Social, and the corresponding EIS chapters.

1: Issue category	2: Issue raised	3: Raised by	4: Response	5: Where this is addressed in this Draft EIS
Flooding	• Concern that the airport is built in a flood-prone area, with questions on whether this has been considered.	Ethnic Communities Council of NSW	Airport construction and surface water impacts (including flood potential) are outside the scope of this Draft EIS.	N/A (out of scope)
Cultural and social				
Aboriginal cultural connections	• Noted Traditional Owners are not in favour of flight paths over Blue Mountains wilderness areas. • Cultural groups of importance included the Dharug, Gundungurra and Dharawal. It was noted that the Gundungurra people in the Burragorang Valley are particularly sensitive to development as they have been engaging on the Warragamba Dam Wall raising project and have already lost several cultural sites. • Preservation of existing cultural sites noted as being of key importance in the Blue Mountains.	Blue Mountains City Council Wollondilly Shire Council Mt Wilson & Mt Irvine Progress Associations Community members	The Draft EIS has included engagement and assessment of Aboriginal cultural connections with the land and surrounding wilderness. Engagement with First Nations knowledge holders and stakeholders to understand cultural values, the places associated within them and concerns about the potential impacts of the project has been undertaken. Further engagement will be undertaken.	Technical paper 9: Heritage.

1: Issue category	2: Issue raised	3: Raised by	4: Response	5: Where this is addressed in this Draft EIS
Cultural agreements	• Question around how the Gundungurra Agreement will be considered in the draft EIS.	GBMWHAAC	The Draft EIS has included engagement and assessment of Aboriginal cultural connections with the land and surrounding wilderness. Engagement with First Nations knowledge holders (including Gundungurra Traditional Owners) and stakeholders to understand cultural values, the places associated within them and concerns about the potential impacts of the project has been undertaken. Further engagement will be undertaken.	Technical paper 9: Heritage assesses potential impacts on Aboriginal heritage in general terms, however it does not directly refer to the Gundungurra Agreement.
Colonial heritage	• Noted that there is a lot of colonial heritage in Mulgoa Valley. These large colonial estates play a key role in preserving biodiversity as they are often larger estates and are not cleared. Reference was made to a historical state regional planning policy that protected the area, with concern this work was being undone. • Concern about how Fern Hill heritage area is going to be managed.	Mulgoa Valley Landcare Inc.	The Technical paper 9: Heritage has considered impacts on the heritage values of Mulgoa Valley and Fern Hill.	Technical paper 9: Heritage and the corresponding EIS chapter.

1: Issue category	2: Issue raised	3: Raised by	4: Response	5: Where this is addressed in this Draft EIS
Health	• Recognised that health has been a major issue of concern for the Western Sydney community in the past. • Noted that many regional communities have ageing populations that require additional support. • Long-term impacts of sleep deprivation were discussed, particularly noting the impact on students and young children.	Blue Mountains City Council Penrith City Council Luddenham Progress Association Mt Wilson & Mt Irvine Progress Associations RAWSA Community members	Existing health and health concerns of the population within the human health study area has been considered. The assessment has included specific information and assesses the health-related impact of noise on sleep and cognitive development for children.	Technical paper 12: Human health and the associated EIS chapter.
Infrastructure				
Major infrastructure projects nearby	• Warragamba Dam wall raising, highway upgrades, the M7 Motorway construction, and major rail corridors were noted as being significant challenges for locals. There is particular concern over the land acquisition processes, and this causes uncertainty for residents. • Concern over the cumulative impact of multiple major infrastructure projects on the environment and noise for residents, which is causing the loss of regional character. • Warragamba Dam was particularly noted as destroying indigenous cultural sites and critical breeding areas for the Regent Honey Eater.	Blue Mountains City Council Camden City Council Fairfield City Council RAWSA Wallacia Progress Association GBMWHAAC Mulgoa Valley Landcare Inc.	Broader planning needs have been addressed in previous strategic planning frameworks and are not related to this draft EIS.	Broader planning needs are outside the scope of the Draft EIS. Chapter 22 of the Draft EIS details the cumulative impacts. Technical papers for each specialist area include consideration of cumulative impacts.

1: Issue category	2: Issue raised	3: Raised by	4: Response	5: Where this is addressed in this Draft EIS
	• Population increases because of major infrastructure works was noted as being of concern, with the sense that biodiversity values were being consistently put last. • Concern major development areas such as Macarthur, the aerotropolis, and Castlereagh are considering their projects in isolation and not evaluating the impact of all of these together.			
Transport & freight	• Transport through the western rail corridor needs to be better utilised. Western Sydney lacks key transport connections. • Concern that NSW Government has not adequately developed rail freight through the Blue Mountains and that an increased number of trucks will put significant pressure on the Great Western Highway. • Rail and bus connections to the airport need to be in place before the airport is completed by 2026, noting that the existing public transport infrastructure in Western Sydney is not adequate (connections between the Sydney Metro and Leppington, transport through to the Blue Mountains, and creating a connection between Penrith and Richmond).	Blue Mountains City Council Camden City Council Campbelltown City Council Fairfield City Council Penrith City Council Luddenham Progress Association FOWSA Blue Mountains Accommodation & Tourism Association Ethnic Communities Council of NSW Community members	Ground transport is outside the scope of this draft EIS.	N/A (out of scope) Assessment of the potential traffic, transport and access needs were considered in the 2016 Environmental Impact Statement.

1: Issue category	2: Issue raised	3: Raised by	4: Response	5: Where this is addressed in this Draft EIS
Local roads and traffic	• Concern that infrastructure levels in Blue Mountains and other rural and semi-rural areas do not have the capacity to deal with significant, rapid increases in tourism numbers. • Concern people won't realise the full extent of how they will be impacted by WSI until it happens (e.g. cumulative traffic impacts). • Concern that some communities won't receive any benefits but will be significantly impacted by increases in traffic and deteriorated local roads. • There was a need for more investment in local infrastructure in the regions closest to the airport. • Concern over increased number of trucks on the roads, including fuel trucks. It was suggested that a fuel pipeline should be built to alleviate this.	Blue Mountains City Council Campbelltown City Council Liverpool City Council Wollondilly Shire Council Luddenham Progress Association Wallacia Progress Association Ethnic Communities Council of NSW Community members	Broader planning needs have been addressed in previous strategic planning frameworks and are not related to this draft EIS. Ground transport is outside the scope of this draft EIS.	N/A (out of scope) Assessment of the potential traffic, transport and access needs were considered in the 2016 Environmental Impact Statement.
Services	• Desire to ensure WSI does not become an 'island', where power and water infrastructure is built for WSI but not for surrounding suburbs. • Concern there is currently limited education infrastructure in some smaller communities, and that without investment these will close and children will have to travel significant distances for education.	Penrith City Council Luddenham Progress Association NSW Government Departments	Broader planning needs have been addressed in previous strategic planning frameworks and are not related to this draft EIS.	N/A (out of scope)

1: Issue category	2: Issue raised	3: Raised by	4: Response	5: Where this is addressed in this Draft EIS
Planning and policy				
Draft Noise Insulation and Property Acquisition Policy	• Desire to know what the details of this will be. • Noted it would be important to ensure that schools, childcare centres, aged care facilities, hospitals, and other vulnerable populations needed to be included in the policy. • Recommendation that new school projects near the airport need to be considered in the Draft EIS. • Concern several properties in areas such as Silverdale and Warragamba are not built with adequate noise insulation and will need to be considered. • Concern there are a lot of renters and vulnerable communities who live in caravan parks, with the question of how these people will be protected from noise impacts and who will pay. • Concern acquisition could fragment the community or reduce social cohesiveness. • Suggestion there could be different compensation for people who have lived in the area since before the airport was announced.	Camden City Council Campbelltown City Council Fairfield City Council Liverpool City Council Wollondilly Shire Council Business Western Sydney Aerotropolis CCC Luddenham Progress Association Mt Wilson & Mt Irvine Progress Associations Wallacia Progress Association Blue Mountains Accommodation & Tourism Association Ethnic Communities Council of NSW Australian Noise Ombudsman NSW Government Departments Community members	DITRDCA has prepared a draft noise insulation and property acquisition policy which details the eligibility requirements for inclusion in the program. This draft policy will be used for the most severely impacted individuals who are eligible according to the policy for either land acquisition or participation in a property upgrade scheme.	Further information on the draft noise insulation and property acquisition policy is provided in Chapter 11 (Aircraft noise).

1: Issue category	2: Issue raised	3: Raised by	4: Response	5: Where this is addressed in this Draft EIS
	• Comment that home insulation is good, but that many of the community moved to these areas to be outdoors. • Noted that insulation will not be applicable to the wilderness retreats that are run by National Parks or tents in campsites, so these areas need to be considered. • Concern that house prices could be devalued if adequate insulation is not provided.			
ANEC	• Councils would like certainty around ANEC contours and how this impacts their master planning and zoning. • Particular issue around Luddenham (dual occupancy) and Horsley Park (planning restrictions).	Camden City Council Fairfield City Council Penrith City Council Luddenham Progress Association Aerotropolis Independent Community Commissioner Property Council of Australia members Community members	The ANEC contours in the Draft EIS are a forecast of future aircraft noise exposure and show the concentration of noise around WSI for single runway operation. They provide information about predicted noise exposure from the project. This is different to the ANEC represented in various State and Local planning instruments which identify an ANEC representing the long-term, dual-runway for WSI. Any change to current land use planning instruments would be based on longer-term forecasts of noise exposure and the ANEF for the long-term WSI development strategy.	Chapter 14 (Land use) Technical paper 6: Land use and planning

1: Issue category	2: Issue raised	3: Raised by	4: Response	5: Where this is addressed in this Draft EIS
Zoning changes	• Restrictions on developing residential land is causing frustration among the community (e.g., Horsley Park and Luddenham). Request for this to be looked at as part of the Draft Noise Insulation and Property Acquisition Policy. • Noted community members will correlate the flight paths with SEPP changes, and that there will be confusion around who is responsible for development decisions. • Concern existing residential areas in communities close to the airport will change to commercial, which will simultaneously reduce the number of customers for local businesses while creating more competition. • Concern updating the Obstacle Limitation Surface (OLS) around the airport could impact development around the aerotropolis and Bradfield.	Fairfield City Council Penrith City Council Luddenham Progress Association FOWSA Aerotropolis Independent Community Commissioner Property Council of Australia members Community members	Land use planning has sought to ensure that land use near WSI is compatible with noisy aviation activities, with a primary goal of minimising the population affected by aircraft noise, through implementation of land-use planning measures, such as land use zoning around WSI. Appropriate noise management controls have also been included in applicable planning instruments in advance of WSI's airport operations. DITRDCA has prepared a draft noise insulation and property acquisition policy which details the eligibility requirements for inclusion in the program. This draft policy will be used for the most severely impacted individuals who are eligible according to the policy for either land acquisition or participation in a property upgrade scheme. The draft noise insulation and property acquisition policy does not contemplate land use zoning changes. The OLS for WSI was prescribed on 19 October 2017 in accordance with the Airports (Protection of Airspace) Regulations 1996 (APAR) and is reflected in land use planning instruments.	Chapter 14 (Land use), Technical paper 6: Land use and planning, Chapter 19 (Economic), Chapter 18 (Social), Technical paper 10: Social and Technical paper 11: Economic.

1: Issue category	2: Issue raised	3: Raised by	4: Response	5: Where this is addressed in this Draft EIS
			The *Western Sydney Aerotropolis Precinct Plan* (NSW DPE, 2023a) is in force under the provisions of the Western Parkland City SEPP. The Precinct Plan outlines specific objectives for ensuring that development is responsive to the Western Sydney Airport's operational constraints including aircraft noise and OLS. DITRDCA is engaging with state and local planning authorities as part of the process of declaring a new OLS under the APAR. Once declared, the new prescribed OLS will be enforceable under the APAR and any amendments made to NSW planning instruments. Economic impacts of development around the airport were covered in the 2016 EIS. Technical paper 11 and Chapter 19 Economic include discussions on the economic impacts of the change to flight paths associated with WSI.	
Development near the airport	• Concern Penrith City Council allowed the development of residential suburbs in Twin Creeks and Glenmore Park, which are close to WSI. • Feeling that the approval of the Bradfield City Centre development is a double standard, as similar projects are not permitted in Luddenham.	Aerotropolis CCC Luddenham Progress Association Wallacia Progress Association	Broader planning needs have been addressed in previous strategic planning frameworks and are not related to this draft EIS.	N/A (out of scope)

1: Issue category	2: Issue raised	3: Raised by	4: Response	5: Where this is addressed in this Draft EIS
Western Sydney and Blue Mountains integration	• Concern there has not been sufficient work or funding to integrate Blue Mountains into the Western Sydney region. As a result, there is a lack of planning around enabling connections through to the Blue Mountains and creating a world-class experience. • Concern that the Blue Mountains region is not prepared for WSI, and council is unwilling to plan and put funds towards capitalising on opportunities. • Concern that Blue Mountains will lose its brand if it is merged with Western Sydney without proper consideration. • Suggestion that involvement from Destination NSW is needed.	Business Western Sydney Blue Mountains Accommodation & Tourism Association Australian Attractions	Broader planning needs have been addressed in previous strategic planning frameworks and are not related to this Draft EIS.	N/A (out of scope)

9.4 Release of the preliminary flight paths

Ahead of the formal draft EIS exhibition period, and to compliment the engagement that had been undertaken to date, the preliminary flight paths that will be presented and further discussed in the draft EIS were released.

The aim of the standalone preliminary flight paths consultation program was to:

- present the preliminary flight paths to landholders, residents and stakeholder groups
- clearly outline the detail in the Aircraft Overflight Noise Tool and offer opportunities for future consultation
- educate and inform the community about future opportunities to make a submission to the Regulator when the draft EIS is on exhibition (noting the technical complexity of the information involved).

9.4.1 Aircraft Overflight Noise Tool

On Tuesday 27 June 2023, the preliminary flight paths were released via an Aircraft Overflight Noise Tool.

This Aircraft Overflight Noise Tool is an interactive online map where the community or interested parties can enter their address or point of interest and view:

- the proposed runway mode in operation
- the preliminary flight paths at a time of day (day to evening and overnight)
- different noise metric types and contour maps.

9.4.1.1 Supporting the community to understand the Aircraft Overflight Noise Tool

Due to the technical nature of the information presented in the Aircraft Overflight Noise Tool, a suite of supporting information and engagement activities have been held. The table below outlines the consultation and communication activities that have been held between the 27 November 2023 – the 7 August 2023.

It should be noted that further engagement will continue in the lead up to the draft EIS being placed on exhibition.

Table 9.5 Aircraft Overflight Noise Tool engagement and communication activities

Activity	Purpose	Stakeholder groups
1. Stakeholder briefings	Briefings with supporting presentation materials have been held with key stakeholders outlining what the Noise Tool is, noise impacts and how they are shown, sensitive areas and residential impacts.	Local Councils, local MPs, Aviation Bodies and Aboriginal and heritage representatives
2. Website and Online Community Portal	Updated communication materials are shared online with a focus on the preliminary flight paths and noise assessments.	All interested parties
3. Online Aircraft Overflight Noise Tool	The Aircraft Overflight Noise Tool has been published online for members of the community to view. As of the 7 August 2023, more than 230,000 visits have been made to the Online Aircraft Overflight Noise Tool.	All interested parties

Activity	Purpose	Stakeholder groups
4. Information brochures	Paper copies of the preliminary flight paths and noise assessments brochures have been sent to local councils and WSA Co for display. The following councils received brochures for display: • Fairfield City Council • Blacktown City Council • Blue Mountains City Council • Camden Council • Campbelltown City Council • Cumberland City Council • Liverpool City Council • City of Parramatta Council • Penrith City Council • Wollondilly Shire Council • Wingecarribee Shire Council.	Community members
5. Community postcard	A letter box drop was undertaken with surrounding residents within the identified Local Government Areas (LGAs) notifying them that the preliminary flight paths had been released and how to find out more information. Residents in the following LGAs received a community postcard: • Blacktown City Council • Blue Mountains City Council • Camden Council • Campbelltown City Council • Cumberland City Council • Fairfield City Council • Hawkesbury Shire Council • Hill Shire Council • Liverpool City Council • City of Parramatta Council • Penrith City Council • Wollondilly Shire Council.	Local residents and businesses
6. Local newspaper notices	Notices have been published in news outlets notifying the reader that the preliminary flight paths had been released and how to find out more information.	Sydney based community members

Activity	Purpose	Stakeholder groups
7. Community Information and Feedback Sessions	Community members have been invited to a number of Community Information and Feedback Sessions, held at accessible times and attended by technical experts. As of the 7 August 2023 these have been held in the following areas: • Thursday 6 July – Bringelly • Saturday 8 July – Silverdale • Saturday 15 July – Horsley Park • Monday 17 July – Springwood • Saturday 22 July – Blacktown • Wednesday 26 July – Penrith • Saturday 29 July – Blaxland • Thursday 3 August – Liverpool • Saturday 5 August – Windsor.	Local community members and stakeholders
8. Community Information Stalls	Community Information Stalls have been held to help build awareness on the preliminary flight paths and to inform visitors about the formal exhibition period later in 2023. As of the 7 August 2023 Information Stalls have been held in the following areas: • Sunday 16 July – Luddenham Country Market • Sunday 23 July – Blacktown Markets • Sunday 30 July – Narellan Shopping Plaza.	Local community members
9. Community 1800 number	The community have been able to ask questions via the 1800 line. As of the 7 August 2023, more than 125 phone calls have been received.	All interested parties
10. Project email	The community have been able to ask questions via the project email. As of the 7 August 2023, more than 340 emails have been received.	All interested parties
11. Email updates	Notifications were sent out via emails to key stakeholders and community members who had signed up to receive email updates. All interested parties have been encouraged to sign up to the data base to be informed on when the draft EIS will be placed on exhibition.	All interested parties who have subscribed
12. Online feedback form	An online feedback form has been published on the Online Community Portal and all attendees of community events have been encouraged to complete one.	Community members and stakeholders

9.4.2 Key areas of interest and concern

While formal feedback is going to be channelled through the statutory exhibition process, the following areas of interest and concern have been raised during the standalone preliminary flight paths consultation program:

- **Flight Path and Noise Impacts:** Some residents expressed that they think the flight paths are too close to residential areas. They have expressed concerns over the impact on home values and quality of life.
- **Environmental Impacts:** Concerns have been raised about the negative effects on world heritage areas, such as the Blue Mountains. There are also broader concerns about the environmental impacts, including on air quality, bird strikes, and effects on wildlife.
- **24/7 Operations and Requests for a Curfew:** There is frustration with the proposed 24/7 operations, and some residents feel that a curfew should be in place. There is a feeling that Western Sydney residents are being treated unfairly compared to those in the Eastern suburbs.
- **Health Impacts:** Some residents expressed concerns about the impact of noise pollution on mental and physical well-being. There are concerns about interrupted sleep, the impact on vulnerable populations, and the overall quality of life in their communities.
- **Approach to Consultation:** Some community members expressed that they do not use the internet very much and would like to see more effort in relation to publicising local engagement events via paper post and printed notifications in local places of interest. However, other community members have stated that that they can see that a great deal of effort has been put in place to provide information on the preliminary flight paths and commentary has been made that the current Community Information and Feedback Sessions have been more engaging than ones held in the past.
- **Economic Benefits:** Comments have been expressed towards excitement about the prospect of new economic opportunities afforded by the new airport.
- **Proximity to an Airport:** Broader comments have been made that residents are looking forward to having an airport closer to their homes in Western Sydney.
- **Impacts to drinking water:** Local residents who are not connected to mains water supply have expressed an interest to see more about measures to minimise water impacts once the draft EIS is released.
- **Insulation and acquisitions:** Further information on how the government will look to provide insulation or acquisitions has been raised at some events, with a keen interest to hear more once the draft EIS is released.
- **Planning constraints:** It has been raised by some property owners that they have an ongoing interest in the ANEC boundaries and the impact on planning and residential developments.

9.4.3 Reporting on feedback

A detailed engagement and feedback report will be complied at the end of the engagement period for the standalone preliminary flight paths consultation program, prior to the draft EIS exhibition and consultation period.

Any commentary or feedback received during this time will be reflected in the final EIS.

9.5 Continued engagement during the Draft EIS exhibition

Public exhibition of the Draft EIS is required under Commonwealth legislation. Section 103 of the EPBC Act requires DITRDCA (as the nominated proponent) to invite comment on the Draft EIS, including the preliminary flight paths.

The Draft Noise Insultation and Property Acquisition Policy will also be exhibited for public comment at the same time.

The public exhibition of the preliminary flight paths, Draft EIS and Draft Noise Insultation and Property Acquisition Policy will be conducted by DITRDCA for a period determined by the Australian Minister for the Environment and Water.

A wide range of engagement activities will be undertaken to help facilitate submissions from the community and stakeholders. A copy of all comments received on the Draft EIS will be forwarded to the Australian Minister for the Environment and Water.

Table 9.6 below outlines the proposed engagement activities during the Draft EIS exhibition, which will continue to be reviewed and amended as needed.

Table 9.6 Proposed engagement activities during the exhibition of the Draft EIS

Activity	Detail
Community Information and Feedback Sessions	
Community Information and Feedback Sessions will be held across the greater Sydney area, including the Blue Mountains, during the Draft EIS exhibition period.	To help answer detailed questions and provide the community with information, project information and technical experts will be available to provide more context and background on matters relating to the Draft EIS and the Draft Noise Insulation and Property Acquisition Policy, with the intention to support the community in making informed submissions on the Draft EIS. Information will also be made available in language for members of the CALD community.
Community Information and Feedback Stalls	
A number of targeted Community Information and Feedback Stalls will be scheduled across the Western Sydney and Blue Mountains area during the Draft EIS exhibition period.	Community Information and Feedback Stalls will be held at places of interest to provide an opportunity to raise awareness with the local community that the Draft EIS and the Draft Noise Insultation and Property Acquisition Policy are now on exhibition. Opportunities will be made to answer questions, provide members of the community with information and explain the planning and exhibition process in more detail. Information will also be made in language for members of the CALD community.
Stakeholder meetings	
Meetings will be held with stakeholders who are interested in the Draft EIS and Draft Noise Insulation and Property Acquisition Policy.	To help answer detailed questions and provide the interested parties with information, project information and technical experts will provide more context and background on matters relating to the Draft EIS and the Draft Noise Insultation and Property Acquisition Policy, with the intention to support stakeholders in making informed submissions on the Draft EIS.

Activity	Detail
One to one meetings	
Individual meetings with local landholder and residents within identified areas will be organised during the Draft EIS exhibition period.	For members of the community who reside in areas that are anticipated to receive more impacts, smaller meetings will be held to answer questions and provide information to facilitate informed submissions on the Draft EIS.
Project 1800 line (1800 038 160)	
A dedicated project telephone line will be managed.	To manage any enquiries and questions members of the Community Engagement Team will continue to manage and respond to enquiries via the 1800 line. Interpreters will be made available where needed.
Project email (WSIflightpaths@infrastructure.gov.au)	
A dedicated project email will be managed and subscribers to the community newsletter will receive timely information.	To notify subscribers of the Draft EIS and the Draft Noise Insulation and Property Acquisition Policy exhibition process, information will be emailed to the project database. To manage any ongoing enquiries and questions members of the Community Engagement Team will continue to manage and respond to enquiries via project email. Interpreters and translations will be made available where needed.
Project collateral	
Specific information will be made available in simplified formats to explain elements of the Draft EIS and the Draft Noise Insulation and Property Acquisition Policy in more detail, and a clear overview on ways to engage on the project and how to make a submission.	Project information will include simplified brochures, fact sheets and FAQs. Information will be made available at events, at local council offices and at the WSA Co Experience Centre. Information will also be made in language for members of the CALD community.
Online material	
Specific information will be made available online, in simplified formats to explain elements of the Draft EIS and the Draft Noise Insulation and Property Acquisition Policy in more detail, and a clear overview on ways to engage on the project and how to make a submission.	The DITRDCA website (www.westernsydneyairport.gov.au) and the Online Community Portal (www.WSIflightpaths.gov.au) will be updated to display information online. Interpreters and translations will be made available where needed.
Media releases (including social media)	
Information will be made available to media outlets highlighting the Draft EIS, including the Draft Noise Insulation and Property Acquisition Policy exhibition process.	Where relevant, information will be shared with media and social media outlets to help draw attention to the exhibition process and how to make a submission.

Activity	Detail
Public Notices	
Public Notices will be made across media outlets, highlighting the Draft EIS process.	Public Notices will outline the exhibition process and how to make a submission. Information will also be made available in language for members of the CALD community.

9.6 Assessment and determination engagement

Ongoing engagement will continue as the Draft and Final EIS is reviewed and approved. The project team will collate and sort all submissions received during public exhibition. The issues raised will be addressed in the final EIS and published.

The Department will keep the community and key stakeholder informed about the project through a range of engagement activities, including face-to-face engagement, online information, the management of the 1800 line and project email.

9.7 Ongoing engagement

Consultation and engagement has occurred throughout the airspace design process in accordance with *Condition 16 – Airspace design process:*

(2) The airspace and flight path design are to be developed by a steering group led by the Infrastructure Department and involving Airservices Australia and the Civil Aviation Safety Authority. After an Airport Lease is granted the ALC will also be invited to participate in the steering group. The Infrastructure Department must establish a community and stakeholder reference group (Forum on Western Sydney Airport) which will operate until the end of the detailed design stage identified in Table 10 in Part 2 of the Airport Plan.

(3) In developing the airspace and flight path design, the steering group must conduct public consultation with stakeholders who include the aviation industry, the community and state and local government authorities.

Ongoing consultation would occur through the establishment of the WSI Community Aviation Consultation Group (WSI CACG), which would evolve from the current Forum on Western Sydney Airport (FOWSA) to ensure appropriate community engagement on airport planning and operations. The WSI CACG would be established prior to the commencement of airport operations.

The aim of the WSI CACG would be to support effective engagement between WSI and Commonwealth, State and Local government agencies on strategic planning issues. The WSI CACG would include representatives from a range of stakeholders, including local environmental interest groups and members of the community. The WSI CACG's role would be to enable stakeholders to be consulted and become involved in issues relating to ongoing WSI management, future master planning processes, environmental and sustainability matters and consultation on proposed noise abatement procedures.

Other mechanisms supporting the WSI operational engagement framework would include:

- the Airservices Australia Noise Complaints and Information Service, to handle complaints and enquiries about aircraft noise and operations associated with WSI, to help identify issues of community concern and provide opportunities for improvement
- the Aircraft Noise Ombudsman (ANO) (an independent administrative office), to conduct reviews of Airservices Australia's and Defence's management of aircraft noise-related activities. The ANO would also monitor and report on the effectiveness of the community consultation processes related to aircraft noise for WSI and the presentation and distribution of aircraft noise-related information.

Australian Government

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