

## 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.

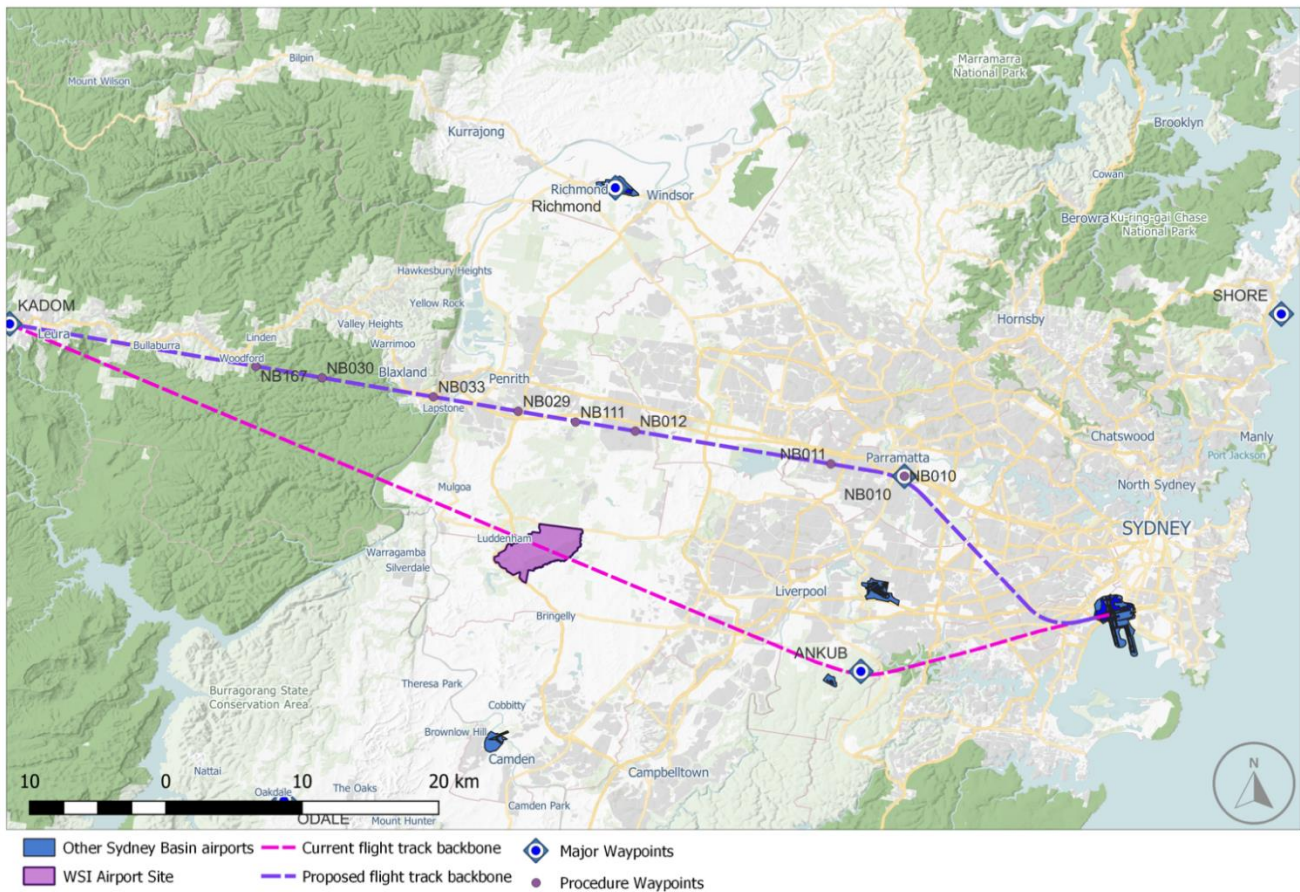
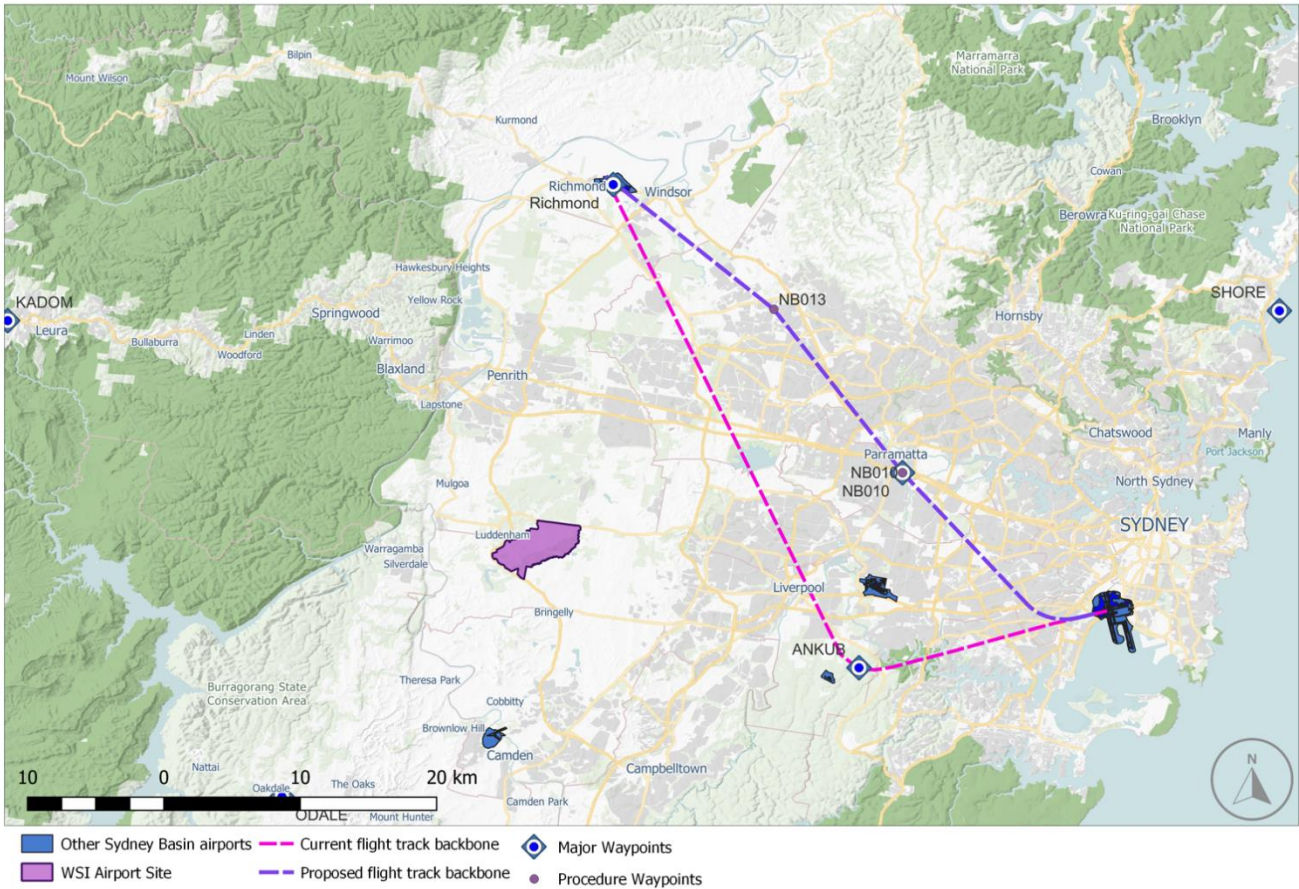


Figure 8.1 Sydney (Kingsford Smith) Airport Runway 25 KADOM SID – Current and proposed



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

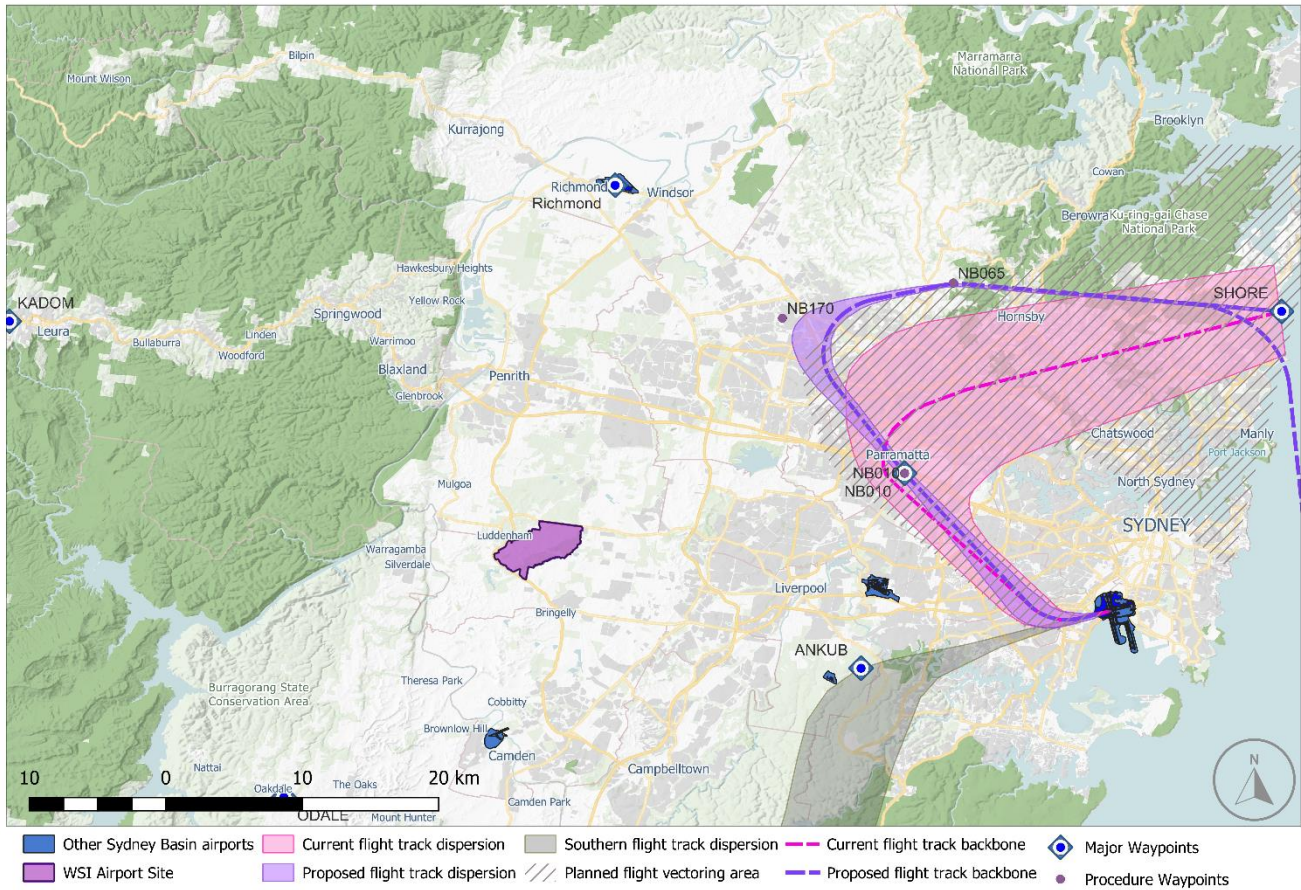
For northern and eastern destinations, a new SID with altitude restrictions is required to ensure separation assurance is provided for departing aircraft from WSI and Sydney (Kingsford Smith) Airport. The existing waypoint SHORE (located on the coast around 16 nm (30 km) north of Sydney (Kingsford Smith) 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 overflowed 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).

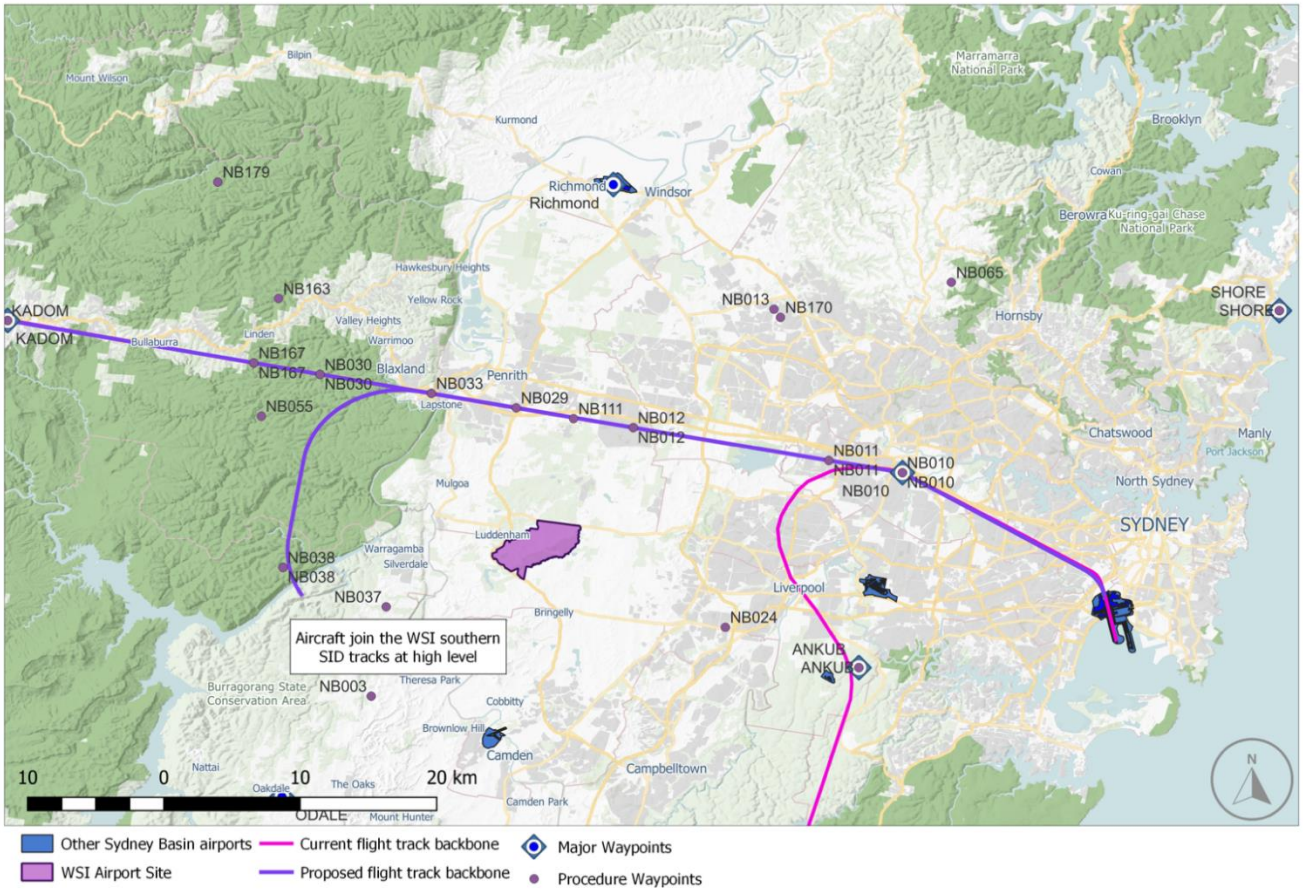
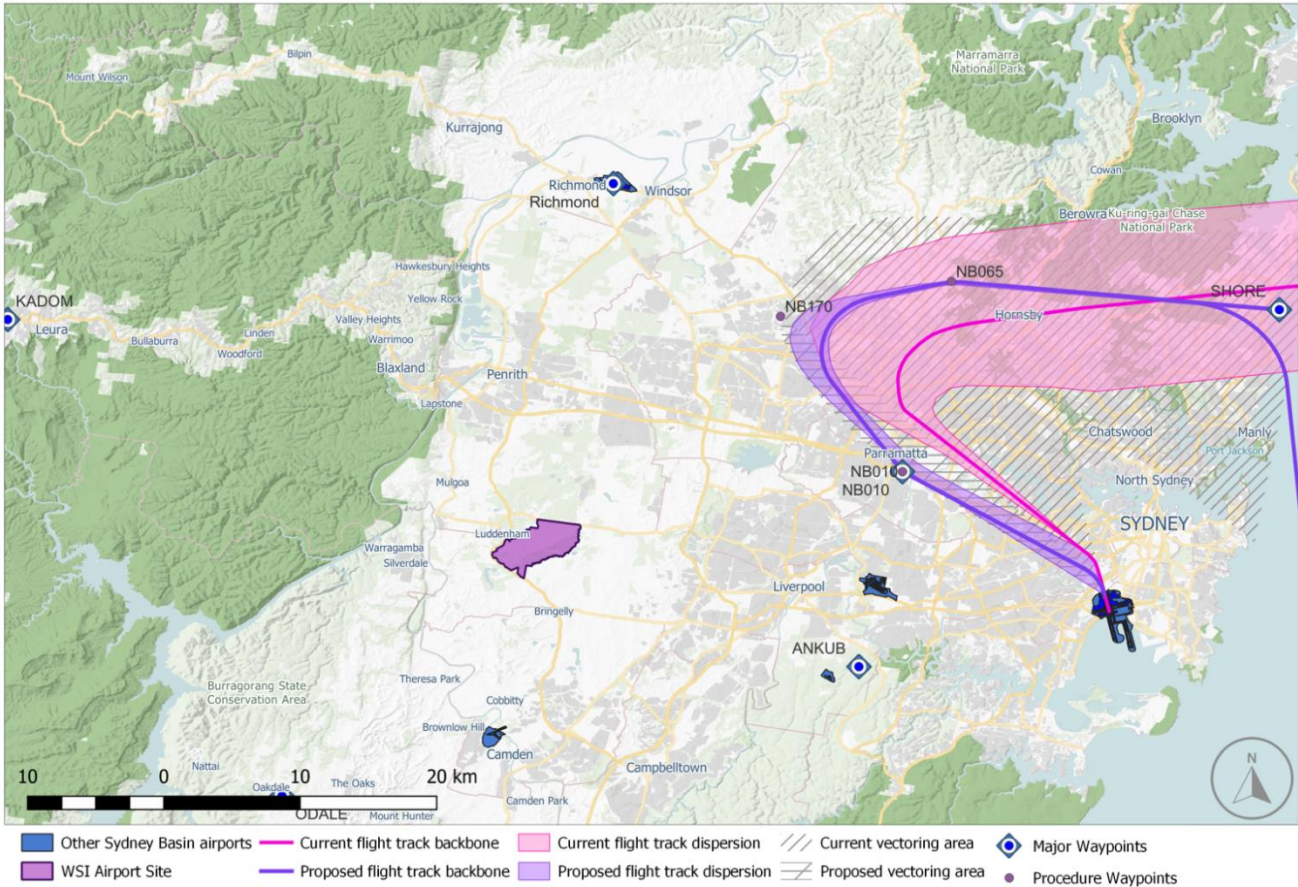


Figure 8.4 Sydney (Kingsford Smith) Airport Runway 34L KADOM SID – existing and proposed arrangements



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.

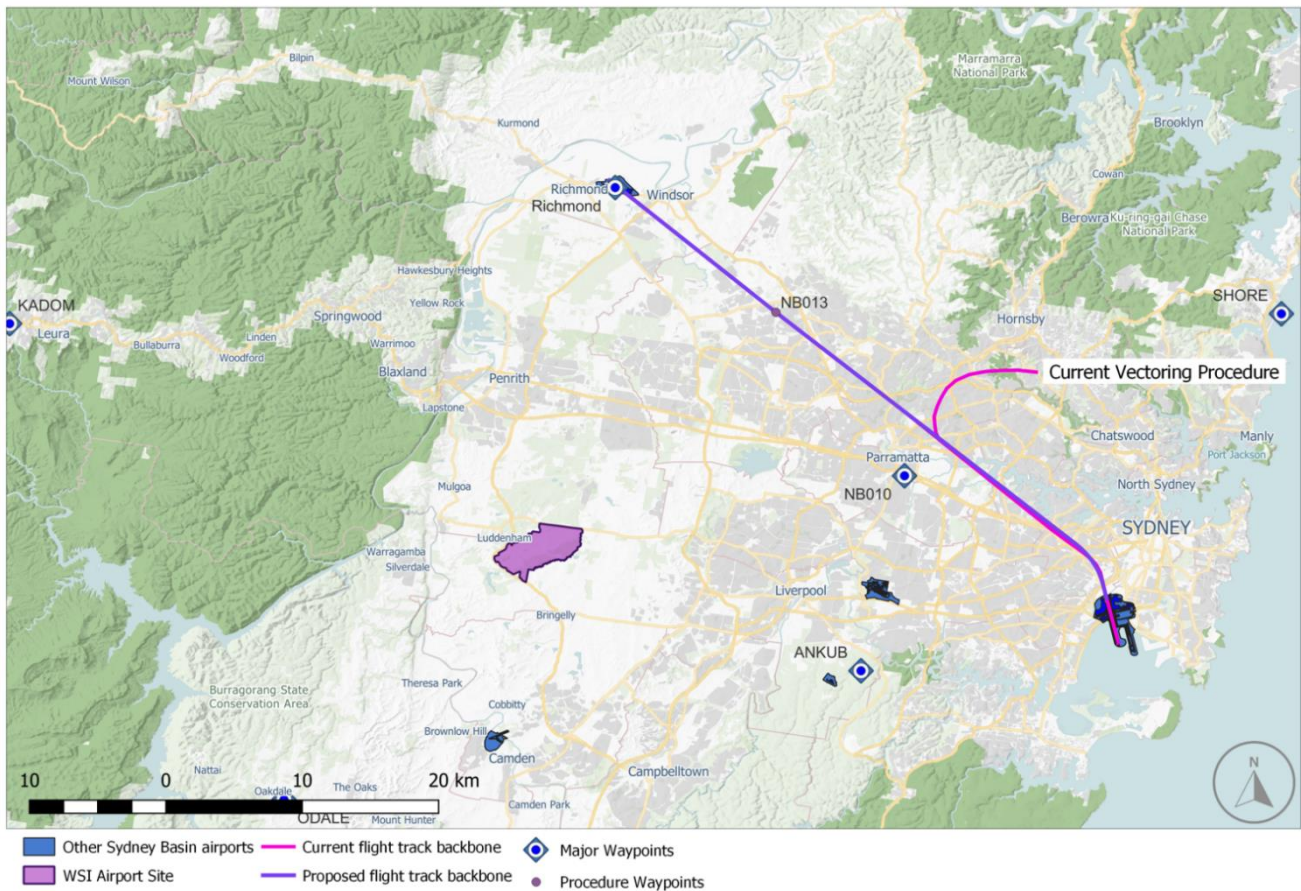


Figure 8.6 Sydney (Kingsford Smith) Airport Runway 34L RICHMOND SID – current and proposed

#### 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.

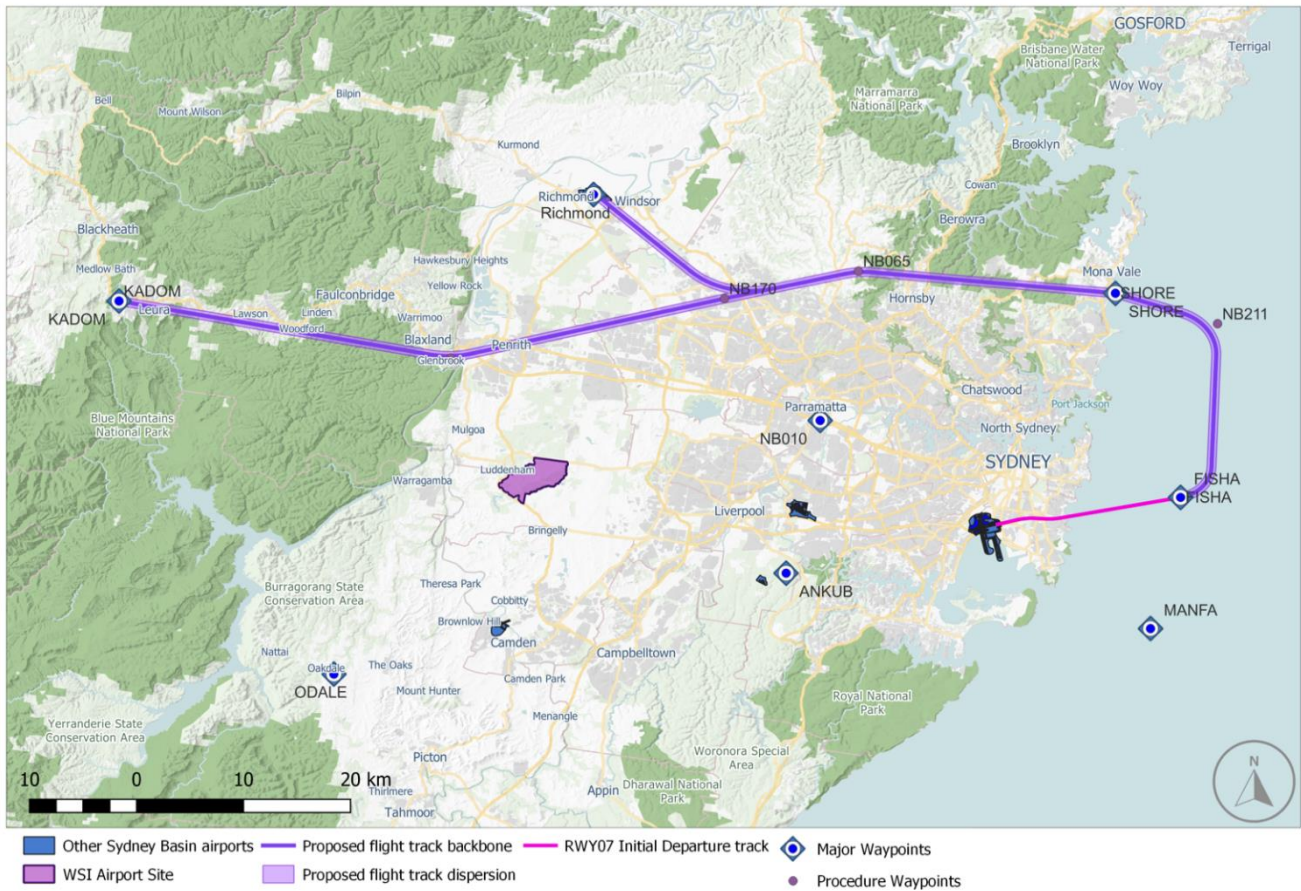
These departure operations are described in full in Appendix J of Technical paper 13.

##### **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

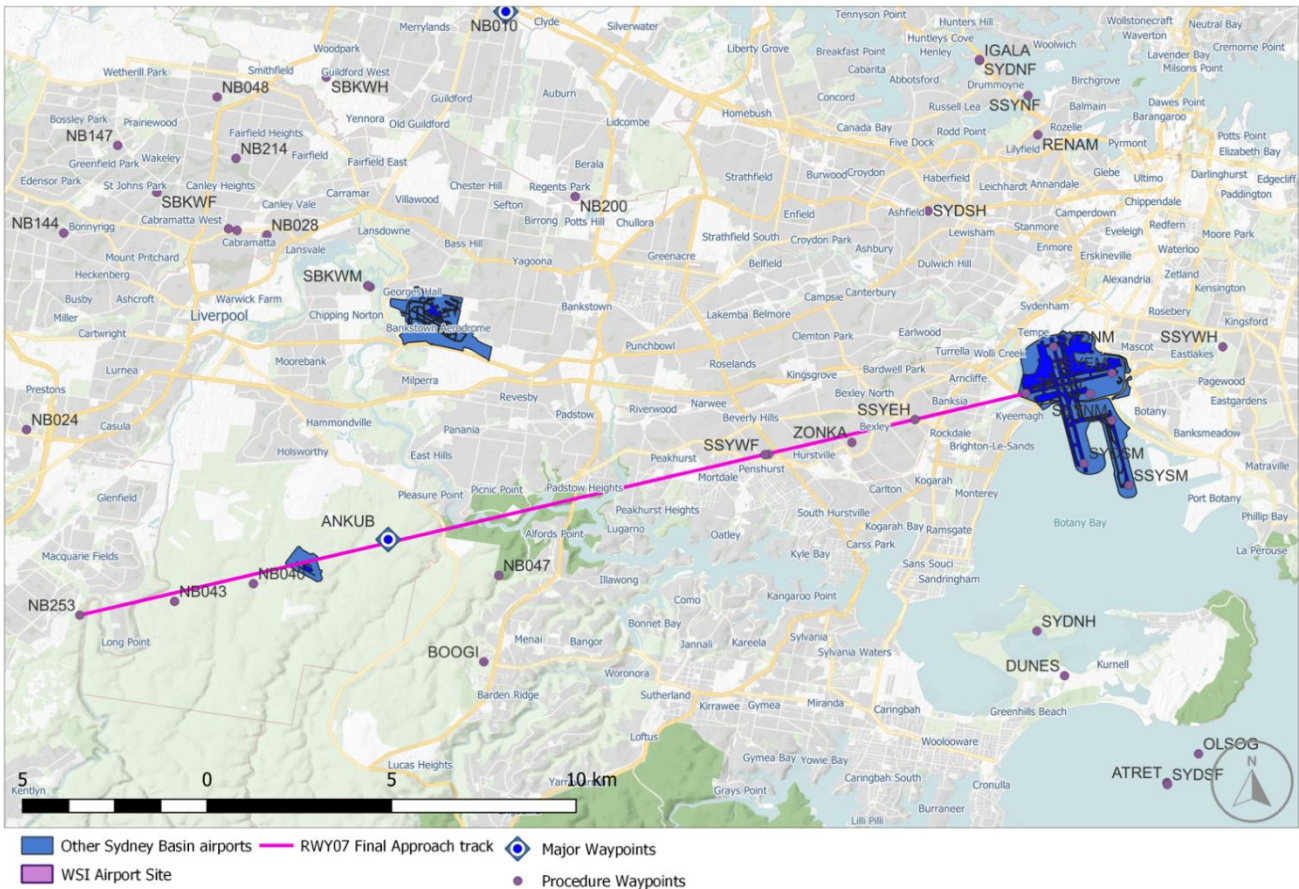
#### Current

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.

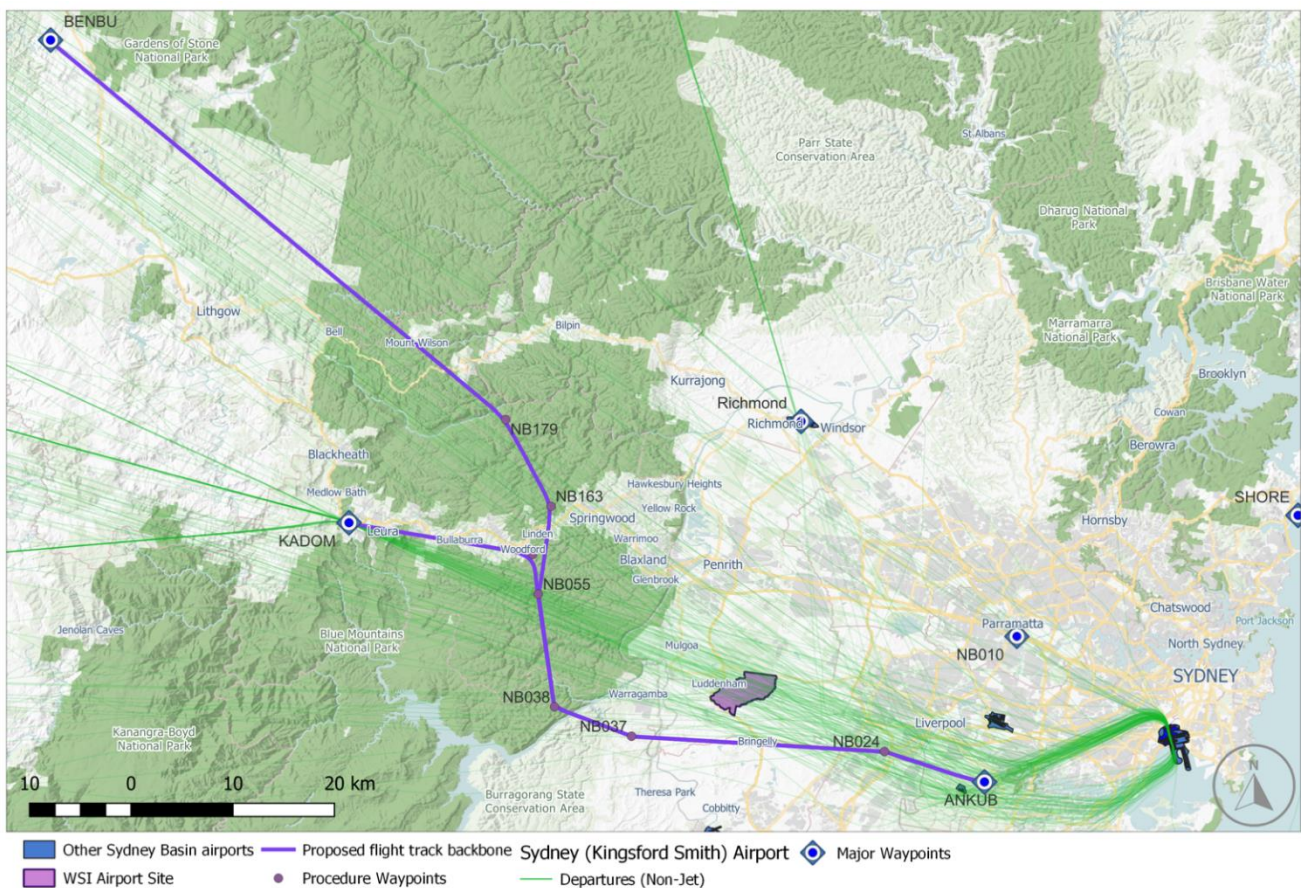
Key features of this change are:

- 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 MITSА, 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 its extremity south of the existing ODALE STAR flight path between waypoint AKMIR and existing waypoint MITSА 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 MITSА (which results in aircraft being 2,000 ft higher than what is currently required on ODALE STAR, potentially delivering noise reductions between AKMIR and MITSА). 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 MITSА
- from waypoint MITSА 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.

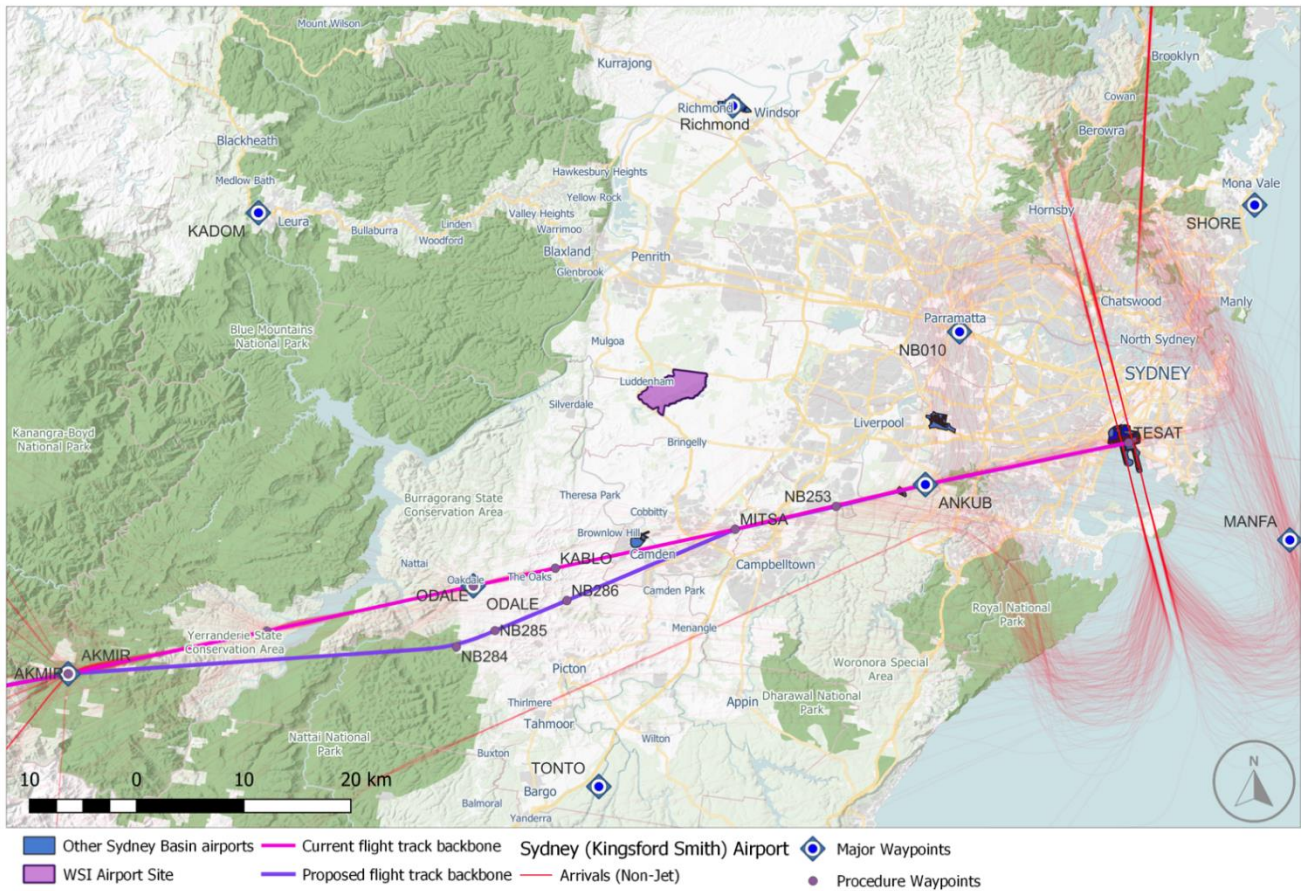


Figure 8.10 Sydney (Kingsford Smith) Airport – current ODALE STAR, current arrival tracks and the new AKMIR STAR

### 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.

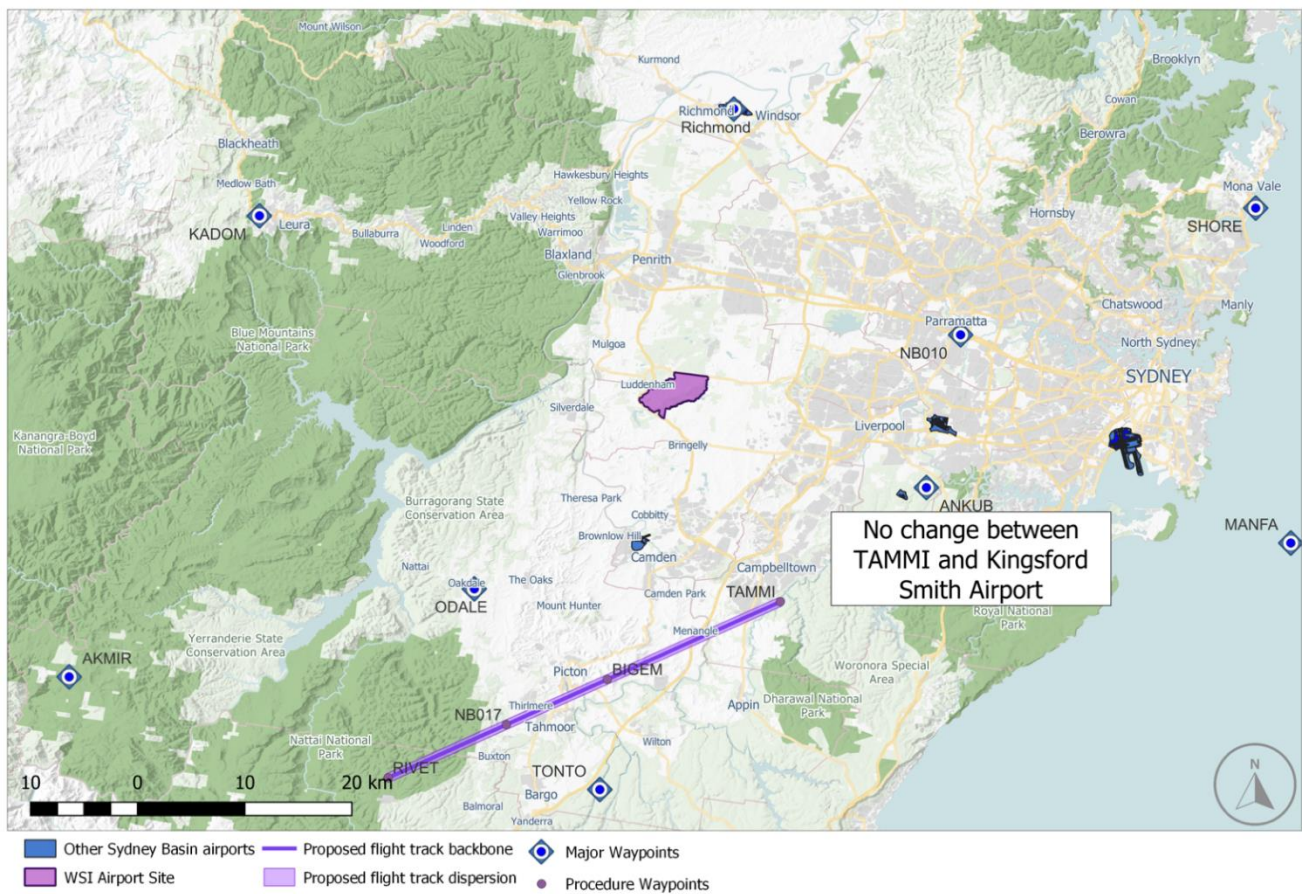


Figure 8.11 Sydney (Kingsford Smith) Airport – the adjusted RIVET STAR

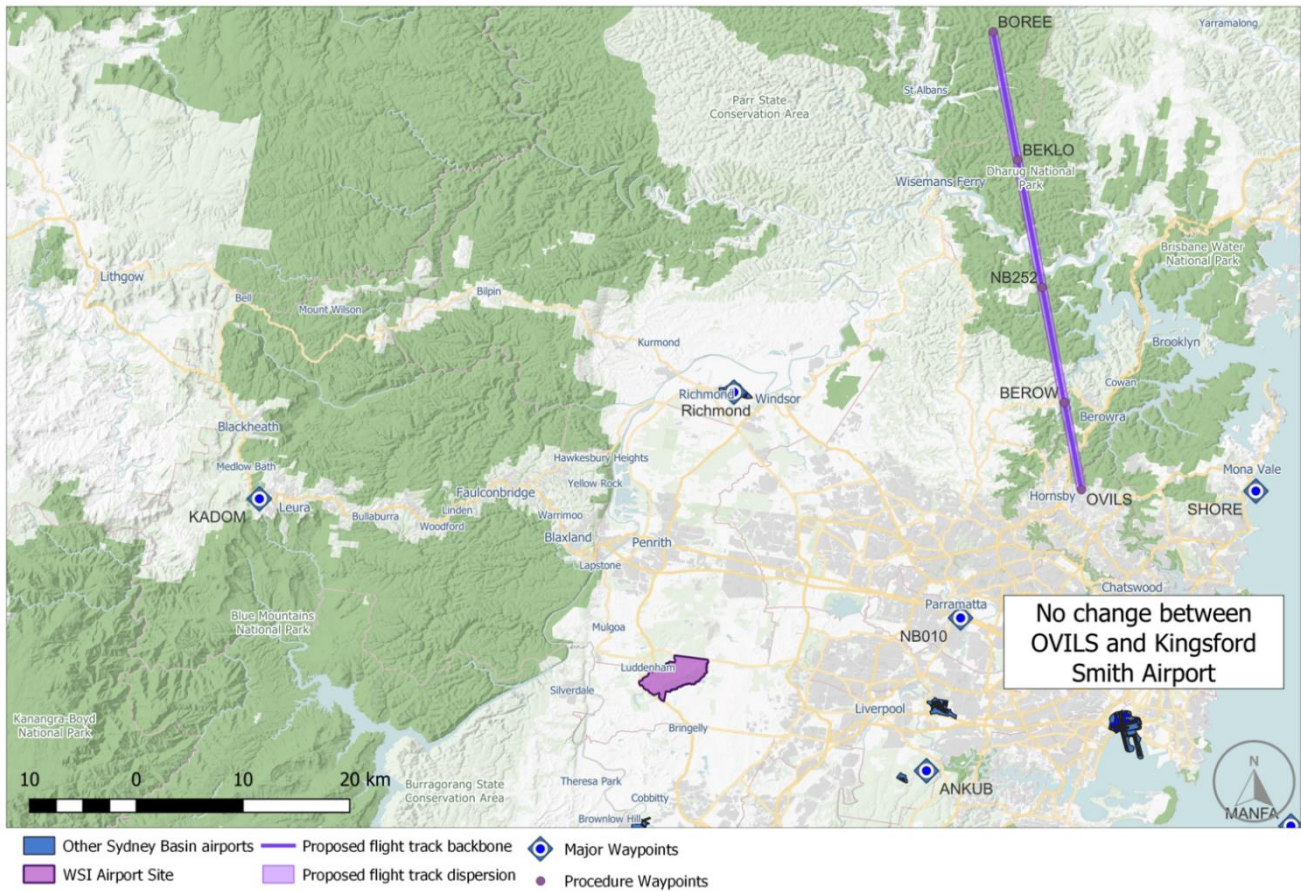


Figure 8.12 Sydney (Kingsford Smith) Airport – the adjusted BOREE STAR

### 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.

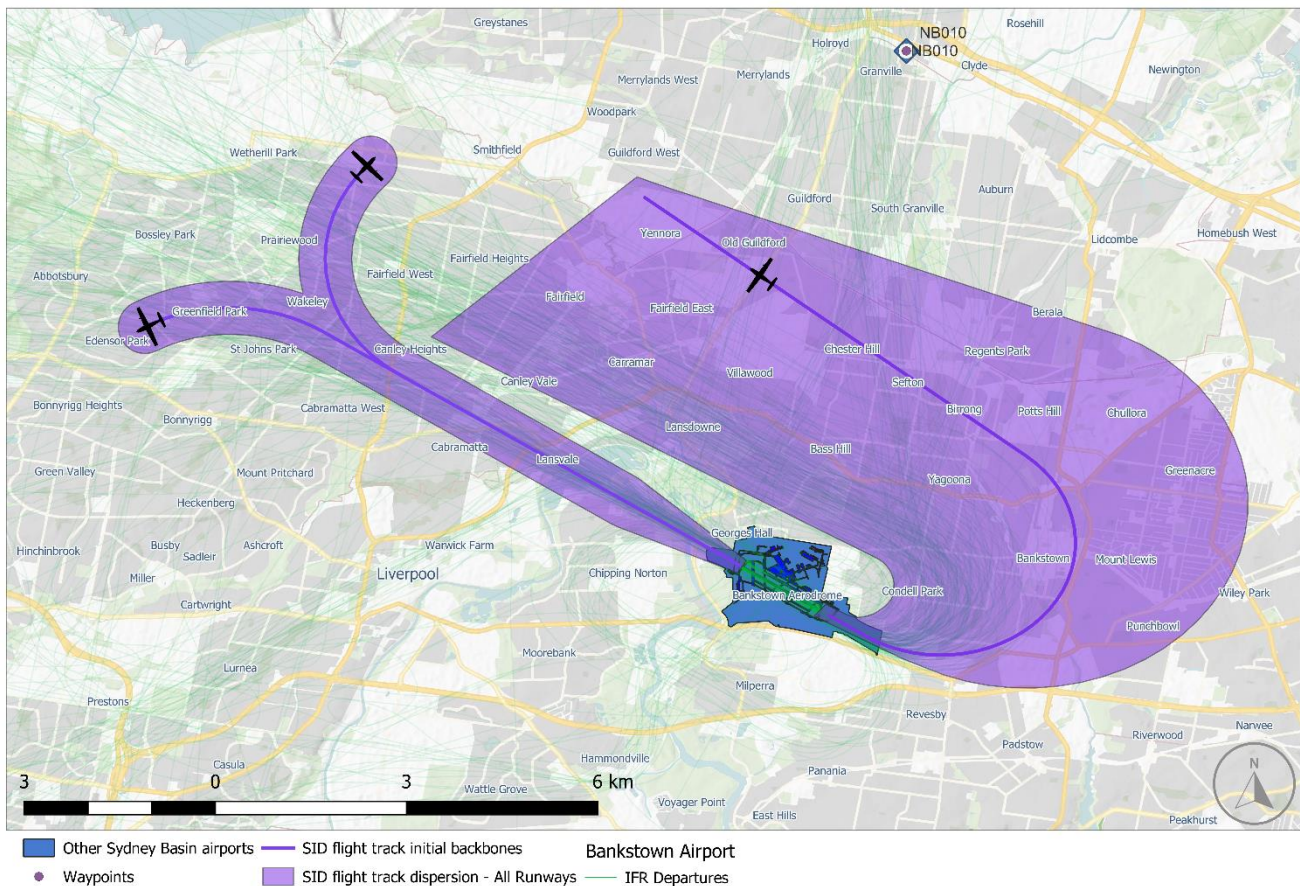
To provide for separation assurance, a set of adjusted SIDs and new STARs for aircraft operating under IFR at Bankstown Airport is required.

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**

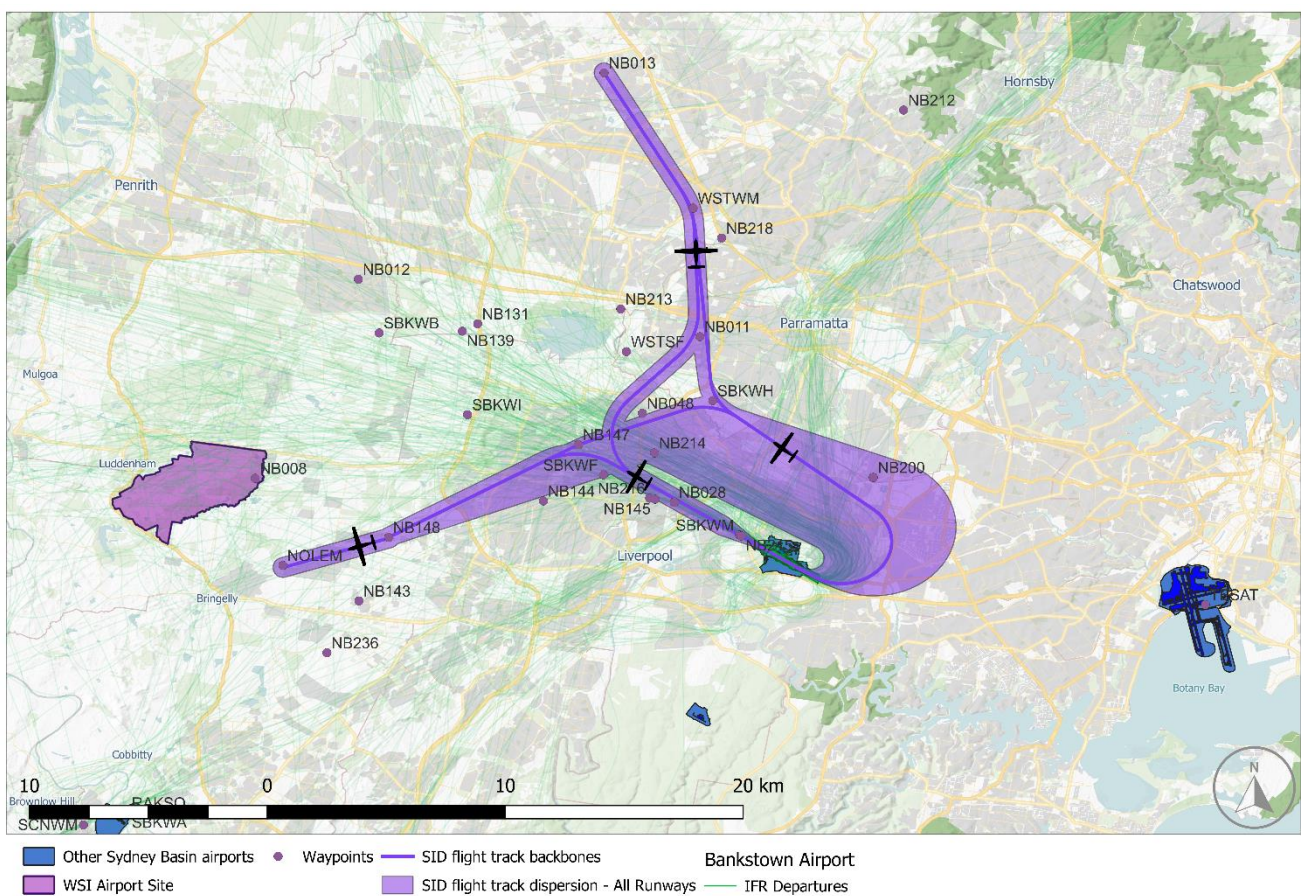
New SIDs are proposed for both Runway 11C and Runway 29C that would take aircraft in a northerly or southerly direction safely around the WSI aircraft manoeuvring area.

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.

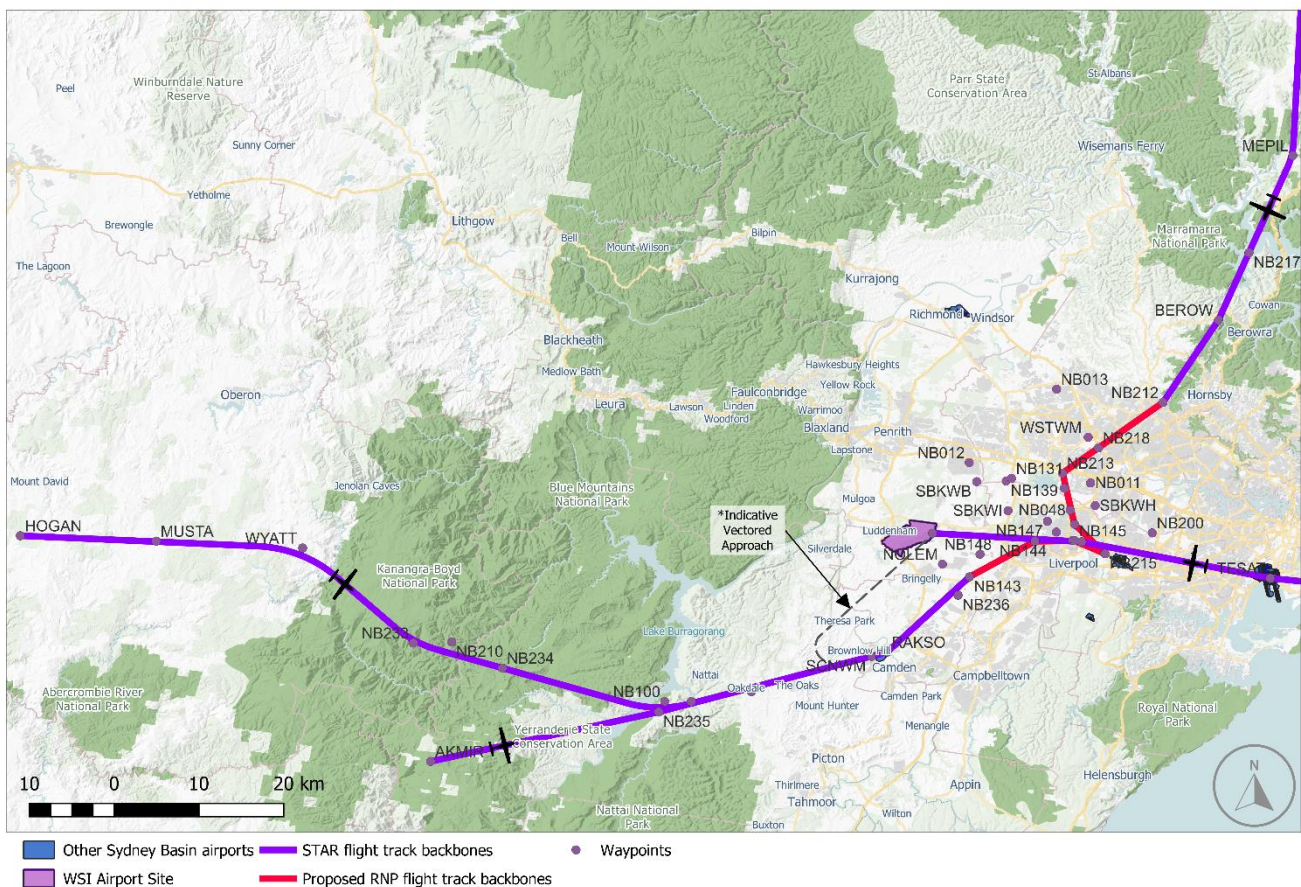


Figure 8.15 Bankstown Airport – proposed STARs and integrated RNP approaches

### 8.3.2.3 RNP approaches

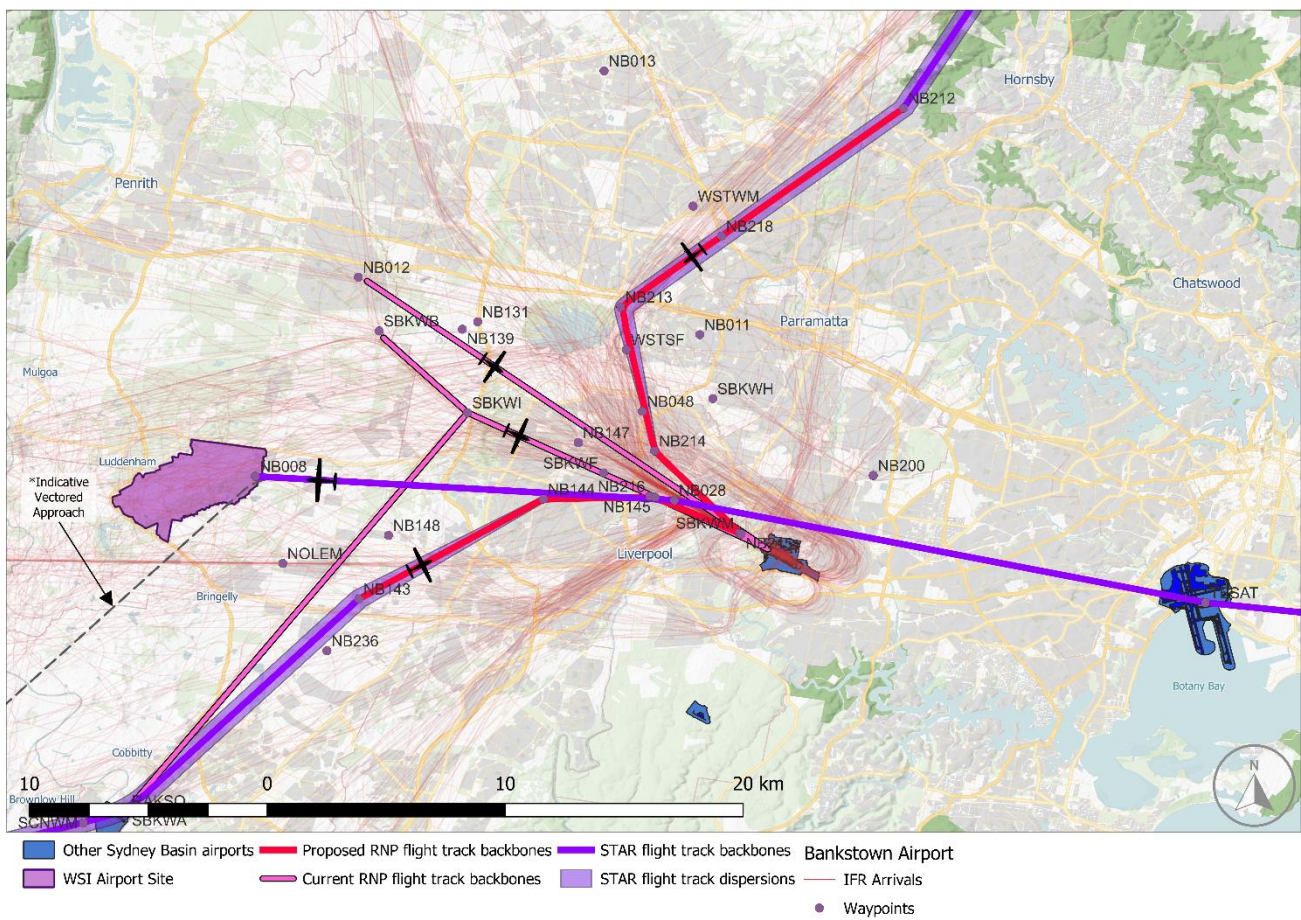
The current IFR approaches to Bankstown Airport from the west (RNP Runway 11C and NDB Runway 11C) do not provide separation assurance with WSI aircraft.

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.

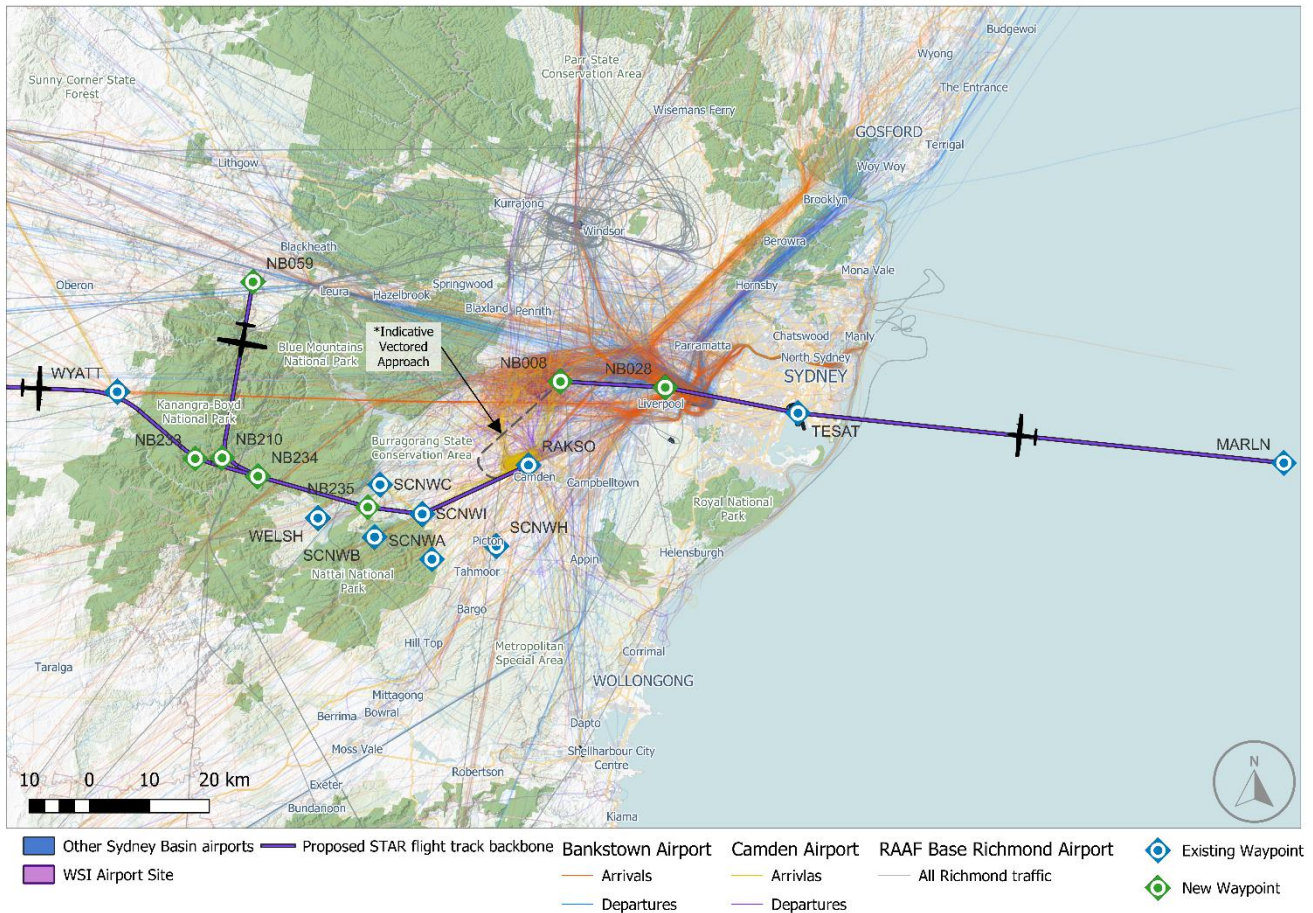
Two waypoints NB234 and NB235 have altitude restrictions in place and the RNP approach have an altitude requirement, as provided in Appendix H of Technical paper 13.

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.

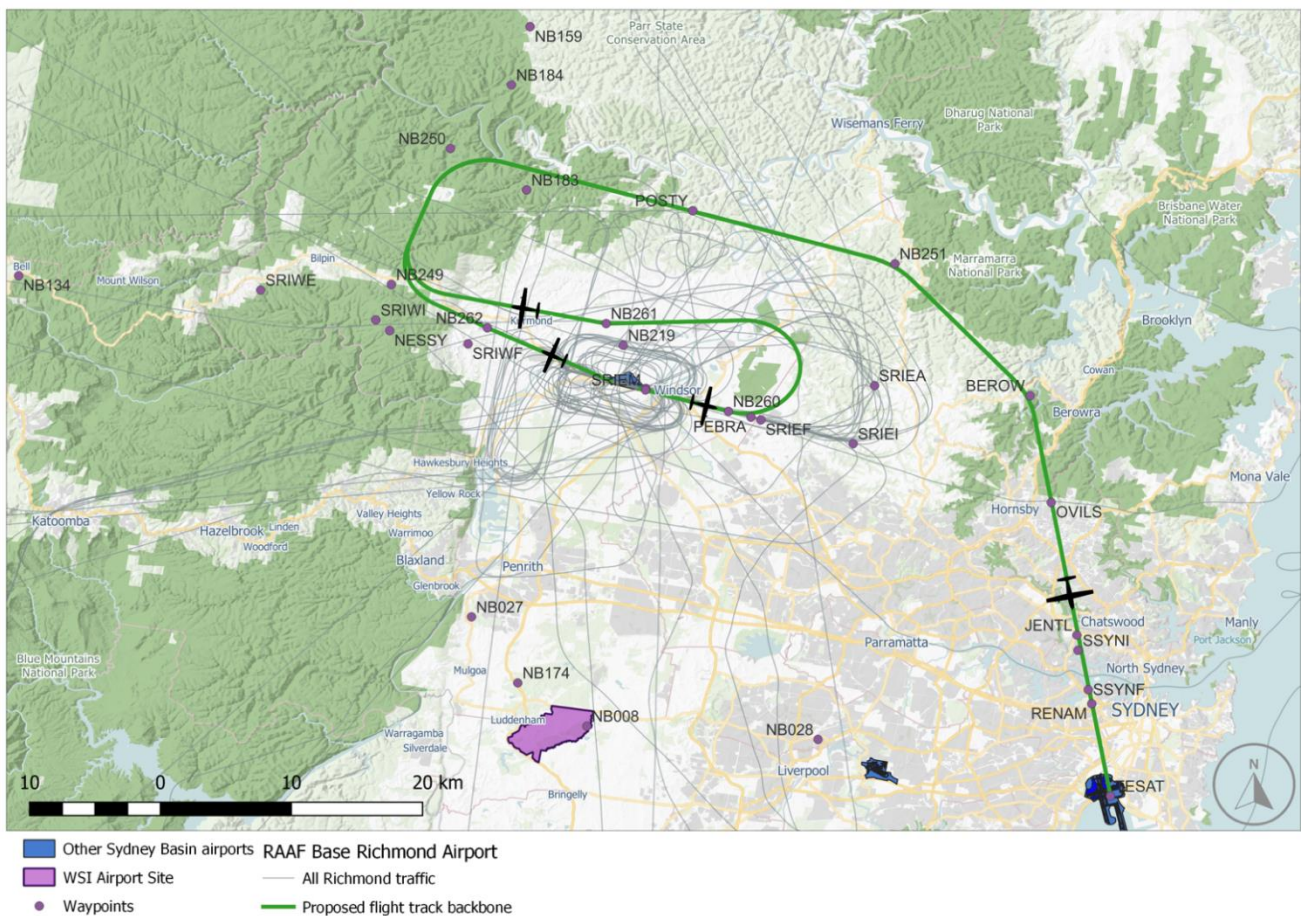


Figure 8.18 RAAF Base Richmond – existing flight tracks and proposed eastern SID

### 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.

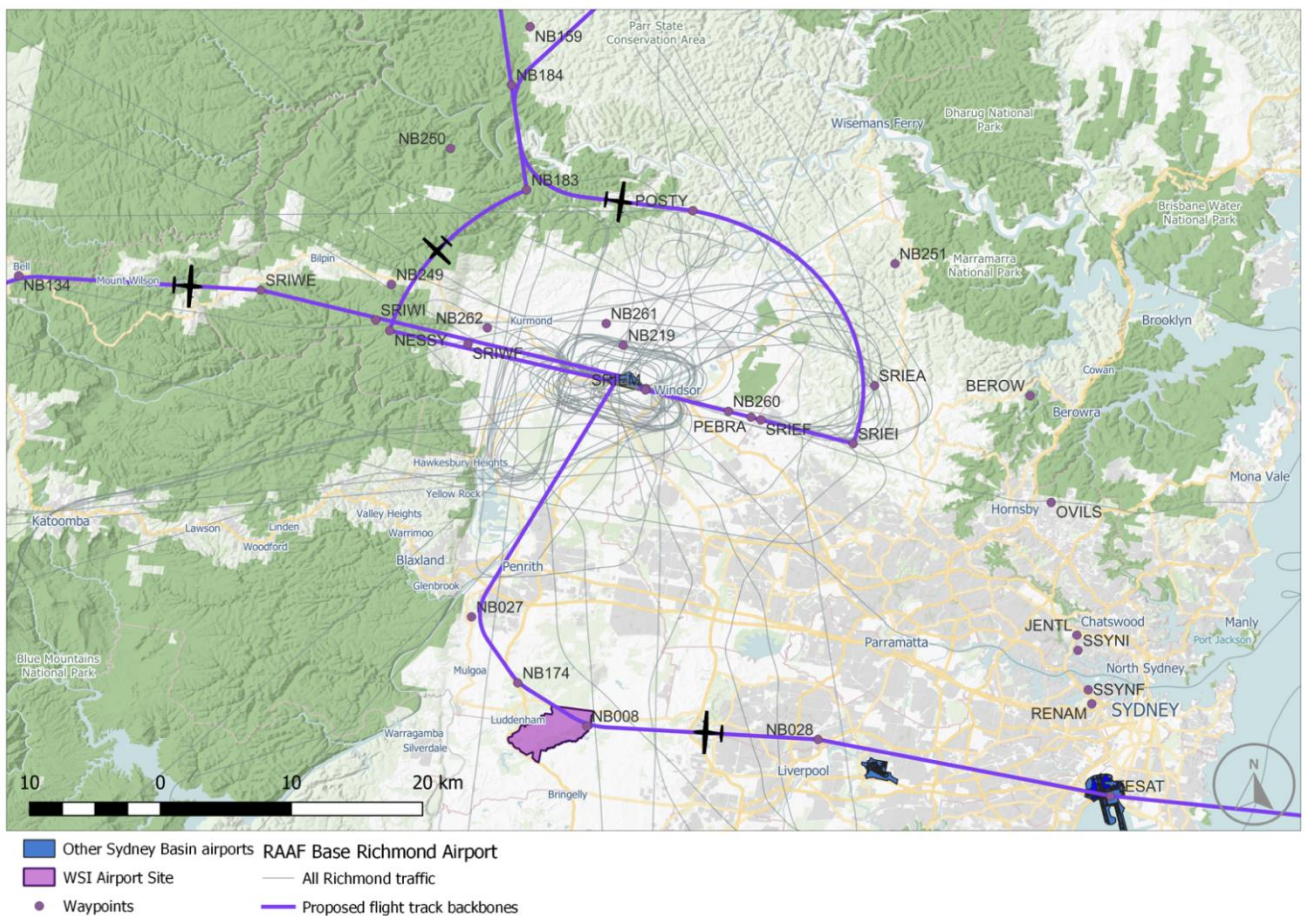


Figure 8.19 RAAF Base Richmond – existing radar flight tracks and proposed IFR arrivals

## 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.

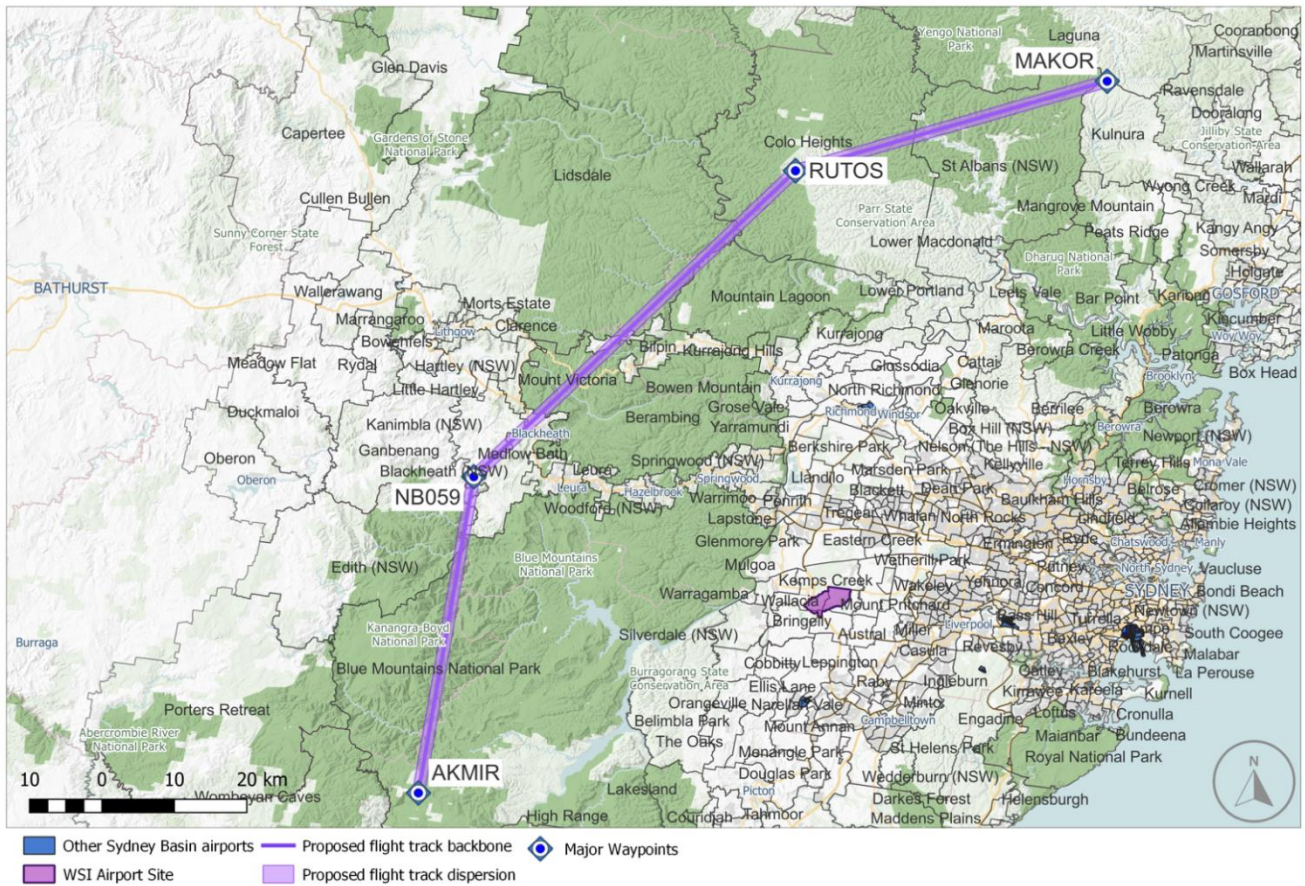
### 8.6.2 Proposed

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.

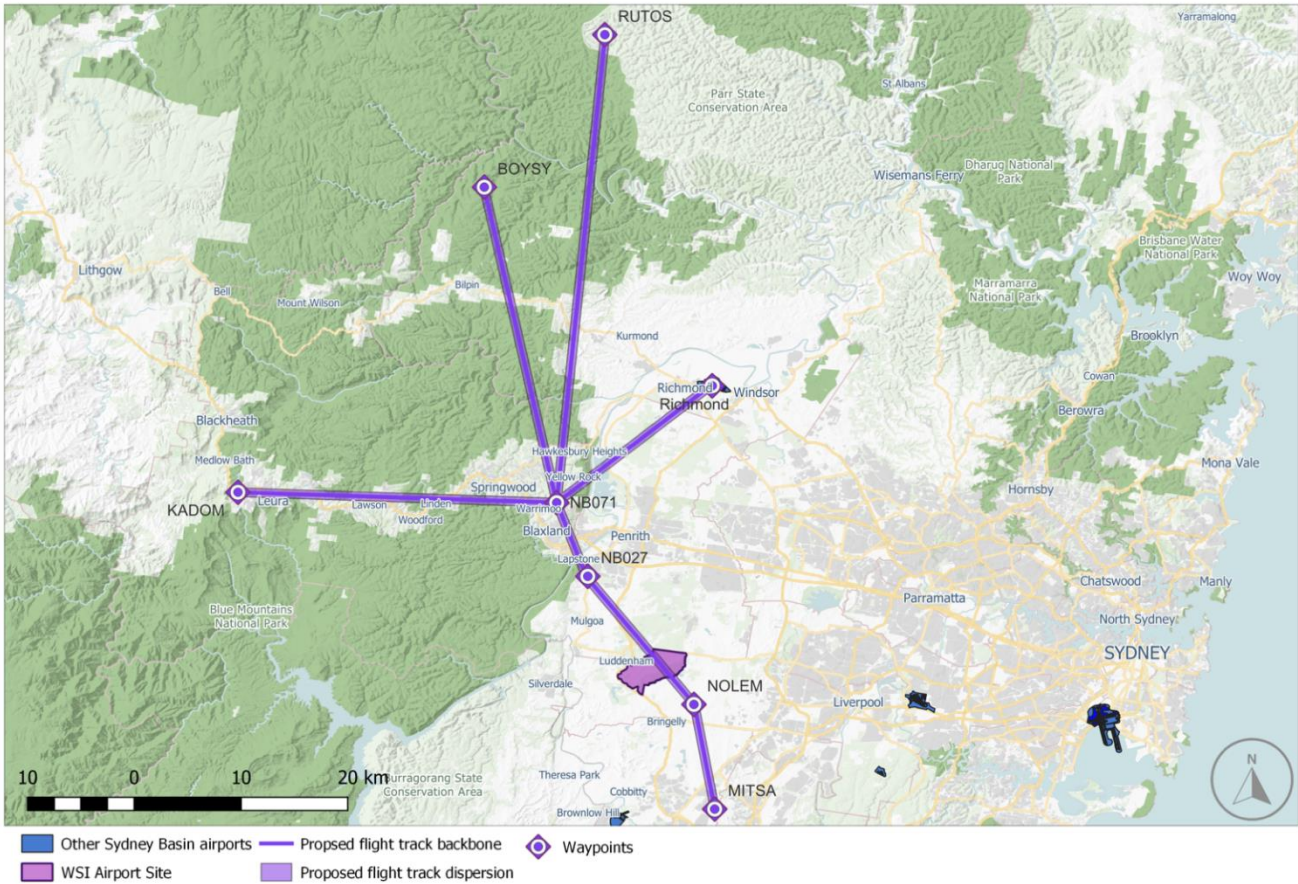


Figure 8.21 Proposed IFR transit route overhead WSI

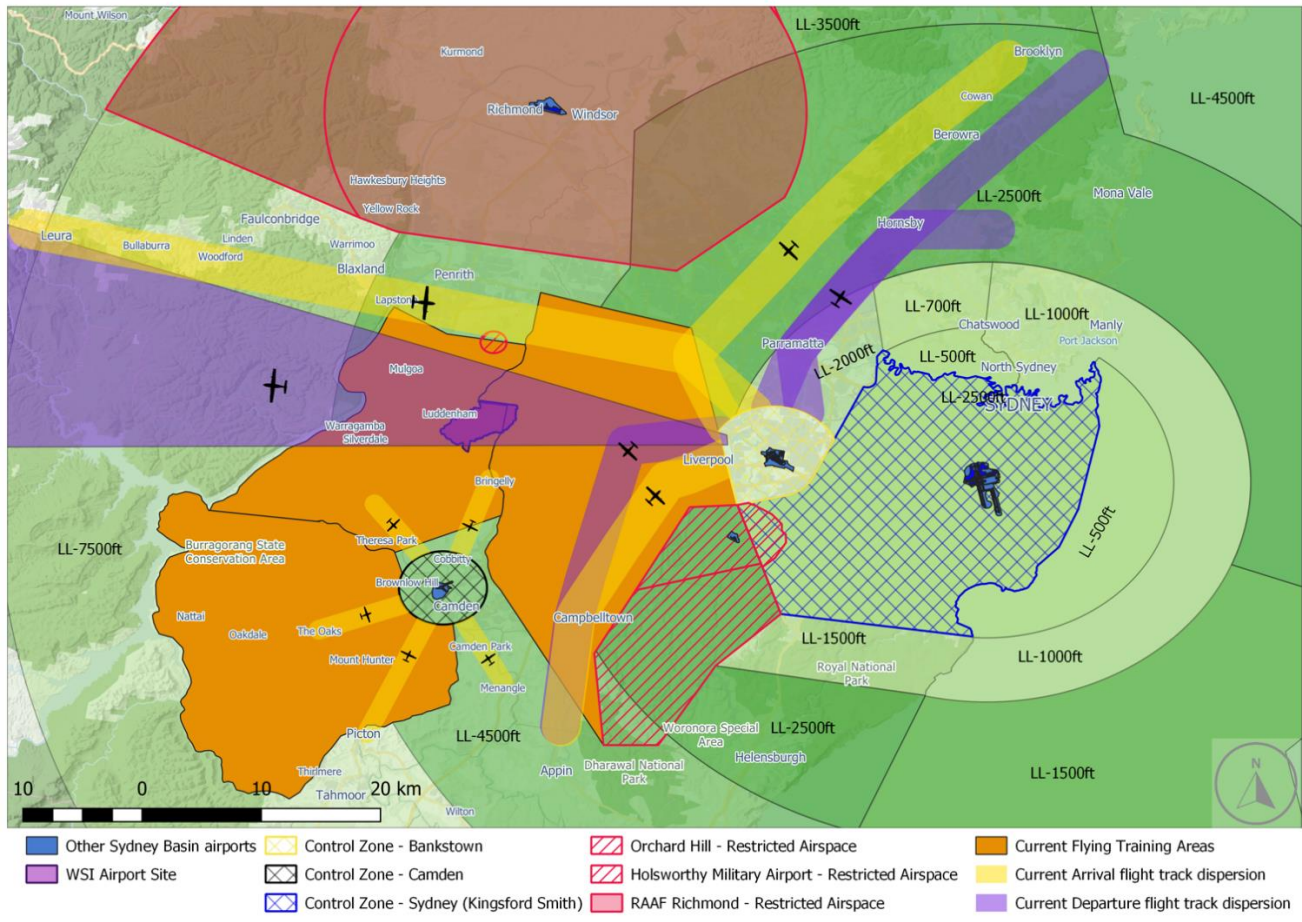
## 8.7 Visual Flight Rule aircraft changes

### 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.

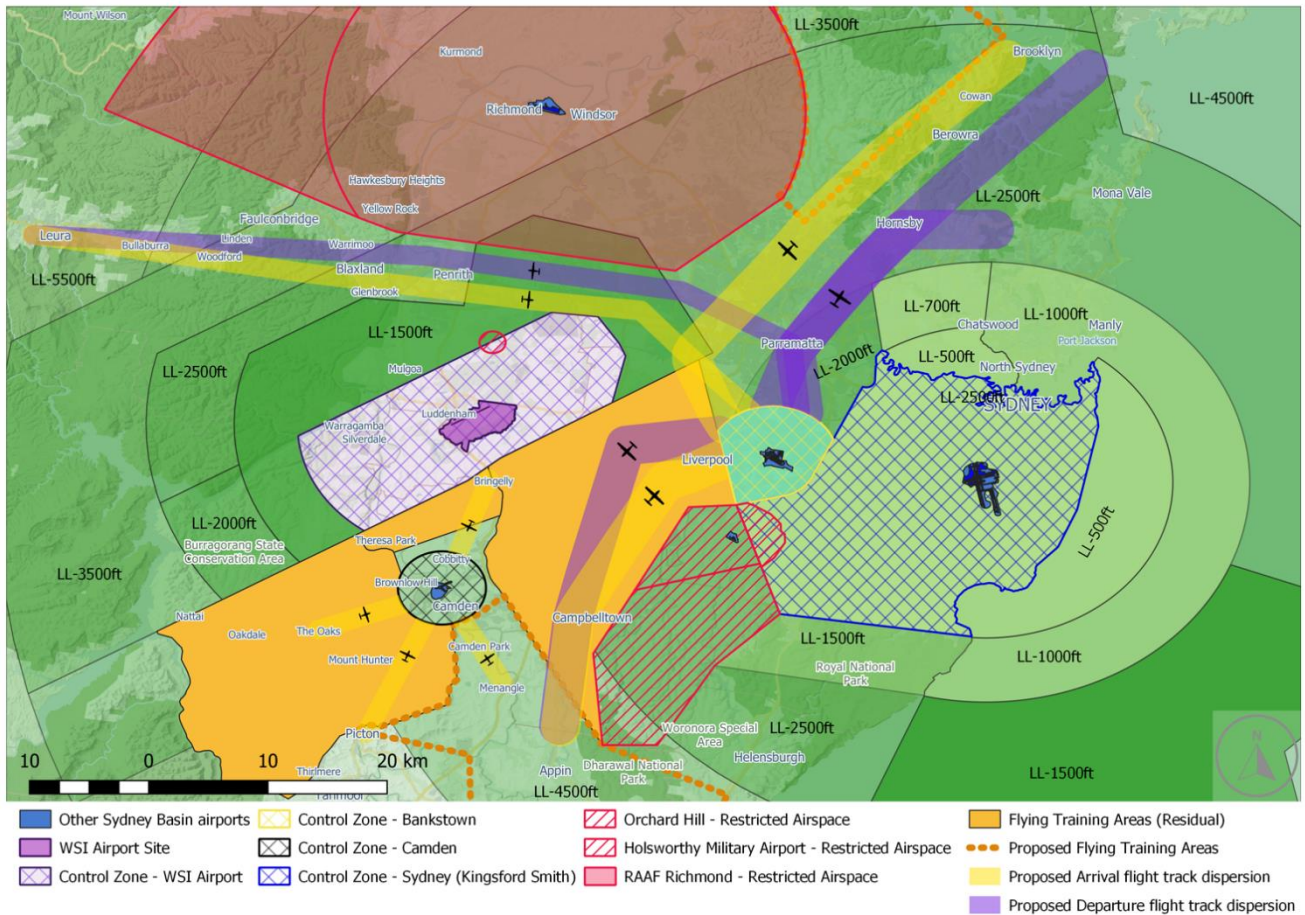
Some alternate areas which could be utilised for flying training have been identified which airspace users may elect to adopt after the implementation of WSI airspace. However, where flying training organisations elect to conduct their training in future is a matter for individual organisations. Two 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.

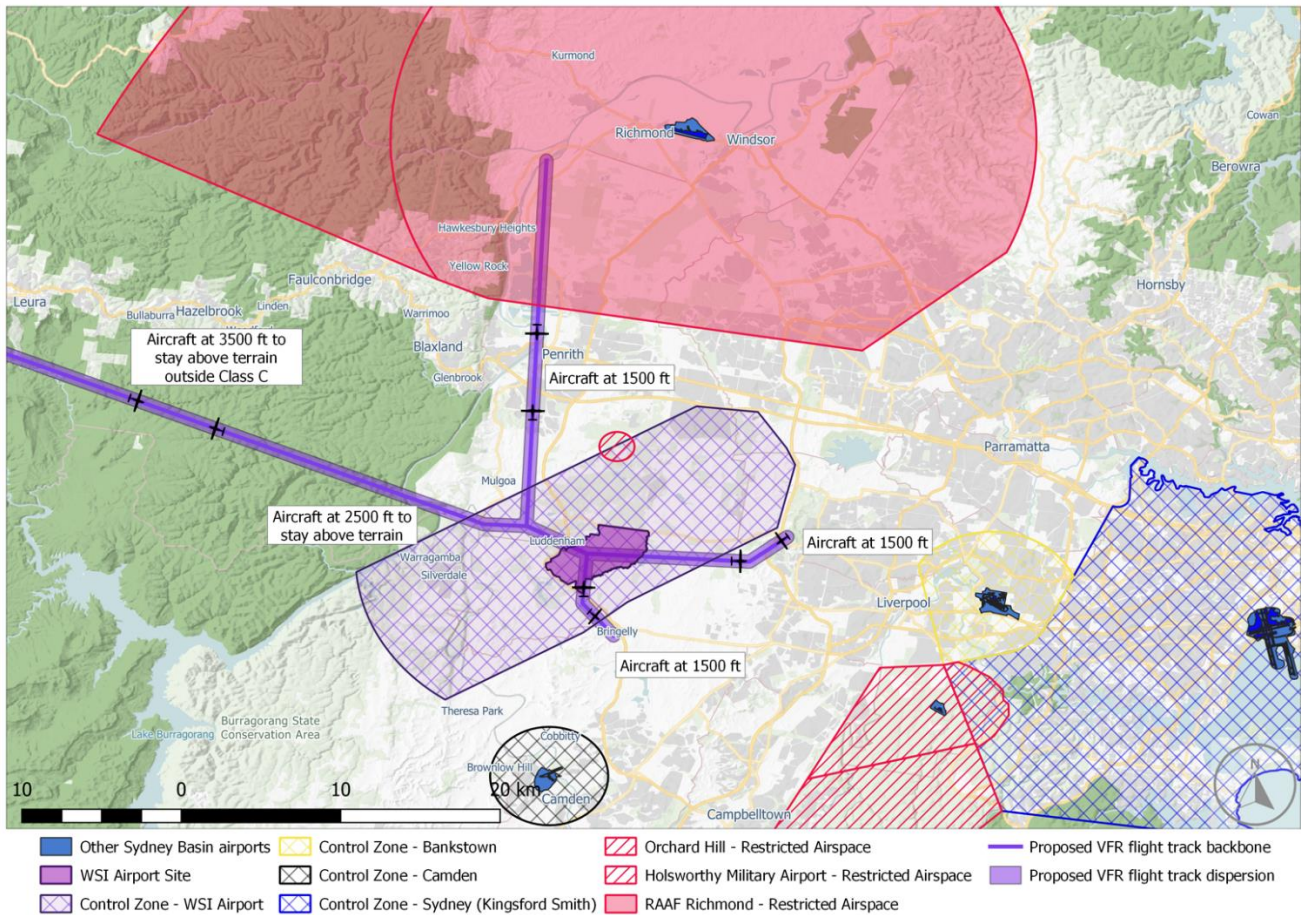
### 8.7.2.4 Gliding

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	
<b>Sydney (Kingsford Smith) Airport</b>						
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
<b>Other operations</b>						
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