

Stockland Development Pty Ltd

Waterloo South - Concept SSDA Precinct Master Plan (Stage 1)

Aviation impact assessment

Reference:

04 | 30 March 2026



© SJB, Waterloo South render

This report takes into account the particular instructions and requirements of our client. It is not intended for and should not be relied upon by any third party and no responsibility is undertaken to any third party.

Job number 314308-00

Arup Pty Limited | ABN 18 000 966 165

Arup Pty Limited
Sky Park, One Melbourne Quarter
699 Collins Street
Docklands
VIC, 3008
Australia
arup.com

Document Verification

Project title Waterloo South - Concept SSDA Precinct Master Plan (Stage 1)
Document title Aviation impact assessment
Job number 314308-00
Document ref
File reference 04

Revision	Date	Filename	02 – Stockland – Waterloo South – Aviation impact assessment [Issue]		
02	5 February 2026	Description	Aviation impact assessment for Concept SSDA (Stage 1) for issue incorporating adjusted building heights, elevations and comments		
			Prepared by	Checked by	Approved by
		Name	George Kazantzidis	George Kazantzidis	Jim Peacock
		Signature			
03	6 March 2026	Filename	03 – Stockland – Waterloo South – Aviation impact assessment [Issue]		
		Description	Aviation impact assessment for Concept SSDA (Stage 1) for issue incorporating updated Standard Introductory text and details		
			Prepared by	Checked by	Approved by
		Name	Ignacio Berganza	Lewis Caswell	Jim Peacock
		Signature			
04	30 March 2026	Filename	04 – Stockland – Waterloo South – Aviation impact assessment [Issue]		
		Description	Final Issue to reflect agreed introduction text and updated project render.		
			Prepared by	Checked by	Approved by
		Name	Ignacio Berganza	Lewis Caswell	Jim Peacock
		Signature			

Issue Document Verification with Document



Contents

1.	Introduction	1
2.	The site	2
3.	Surrounding context	3
4.	Project Vision and Intended Outcomes	4
5.	Proposed concept SSDA	5
6.	Assessment framework	7
6.1	Previous aviation impact assessments	7
6.2	Planning Documents	7
6.3	Approvals process for protection of airspace	8
6.4	National Airports Safeguarding Framework	9
7.	Airspace protection assessments	10
7.1	Obstacle limitation surface (OLS)	10
7.2	Procedures for Air Navigation Services – Aircraft Operations (PANS-OPS)	12
7.3	Radar Terrain Clearance Charts (RTCC)	14
7.4	Combined Radar Departure Assessment Surfaces (Omni Directional)	15
7.5	Strategic Helicopter Landing Sites (SHLS)	16
7.6	Summary	17
8.	Other safeguarding assessments	18
8.1	Noise	18
8.2	Wildlife strikes	19
8.3	Lighting	20
9.	Findings and next steps	21
9.1	Findings	21
9.2	Next steps	22

Tables

Table 1: Legal Description of Waterloo South	2
Table 2: Key development metrics	5
Table 3: Waterloo South: Building elevations, heights and ground levels	6
Table 4: Approvals process by controlled activity type and expected duration	9
Table 5: OLS assessment	11
Table 6: Critical PANS-OPS surfaces for Waterloo South	12
Table 7: PANS-OPS assessment	13
Table 8: Summary of the airspace protection assessment	17

Figures

Figure 1: Aerial view of the Waterloo Estate and the Waterloo Estate (South) Precinct (Source: Six Maps, modified by Beam Planning)	3
---	---

Figure 2: Waterloo South Project Area (Source: SJB)	4
Figure 3: Maximum building height (Clause 4.3)	8
Figure 4: Sydney Airport Prescribed PANS-OPS Airspace (Critical, lowest surface only)	12
Figure 5: Sydney Airport RTCC	14
Figure 6: Sydney Airport Combined radar departure assessment surfaces	15
Figure 7: Referral trigger for SHLS	16
Figure 8: Sydney Airport ANEF contours (Sydney Airport 2045 preliminary draft Master Plan)	18
Figure 9: Wildlife Management Areas Map (Source NASF Guideline C)	19
Figure 10: Restricted lighting plan (Sydney Airport 2045 preliminary draft Master Plan)	20

1. Introduction

This Aviation impact assessment is submitted to the Department of Planning, Housing and Infrastructure (the Department) on behalf of Stockland and NSW Land and Housing Corporation (the Applicant) in support of a concept State Significant Development Application (SSDA) for the redevelopment of the site within the Waterloo Estate (South) Precinct Area, hereby known as “Waterloo South”.

In this report reference to “Homes NSW” or “the Applicant” shall also be taken to mean “New South Wales Land and Housing Corporation (LAHC)” who is the registered owner of 93 per cent of land within the Waterloo South Precinct Area. Any reference to “Waterloo South” in this report should be read as the redevelopment of land owned by LAHC and associated public land (such as roads) throughout the Precinct Area.

The concept development is categorised as State Significant Development (SSD) as per Section 26, Schedule 1 of State Environmental Planning Policy Planning Systems 2021 (Planning Systems SEPP) as the project includes housing development carried out by or on behalf of the LAHC, with an estimated development cost (EDC) of more than \$30 million.

The concept, in summary, aims to deliver:

- High quality mixed tenure housing in the context of a rapidly transforming area.
- Approximately 3,300 new dwellings, of which a minimum 30% will be social housing, approximately 20% will be affordable housing, and a maximum 50% will be market housing (measured as a percentage of the total residential gross floor area).
- Publicly accessible open space and public realm activation.
- An authentic mixed-use precinct, with housing co-located with non-residential uses, community uses, essential services, and access to public transport.

The concept SSDA will guide the detailed design of future buildings, open spaces, and the public realm within the Waterloo South site. The concept SSDA seeks development consent for key planning metrics, including maximum building envelopes, building heights, setbacks, vehicular access points and road network, and the distribution of floor area across different land uses and residential tenure types.

A state-assessed rezoning application has also been prepared and submitted concurrently to give effect to this concept SSDA. The state-assessed rezoning application seeks amendments to the Sydney Local Environmental Plan 2012 (SLEP 2012) and the Waterloo Estate (South): Design Guide 2022 (2022 Design Guide) to align with the maximum building envelopes sought in this concept SSDA. Notably no additional gross floor area (GFA) or density is sought under the state-assessed rezoning application than is currently permissible on the site under the SLEP 2012.

The Secretary’s Environmental Assessment Requirements (SEARs) for this project ¹were issued on 8 October 2025. The SEARs do not specify the requirement to prepare an Aviation Impact Assessment. Noting the location of the project site in relation to Sydney Airport and the associated protection surfaces, Arup was engaged by Stockland Development Pty Ltd to prepare an Aviation Impact Assessment to inform subsequent design stages.

¹ <https://majorprojects.planningportal.nsw.gov.au/prweb/PRRestService/mp/01/getContent?AttachRef=SSD-93222706%2120251007T231353.430%20GMT>

2. The site

The Waterloo South Precinct Area comprises approximately 123,149m² across 10 street blocks in the City of Sydney Local Government Area (LGA), generally bounded by Cope, Raglan, George, Wellington, Gibson, Kellick, Pitt and McEvoy Streets. The Waterloo South site area, excluding any privately owned properties within the Waterloo South Precinct Area, comprises approximately 114,822m², or just over 93 per cent of the land within the Precinct Area. The legal description of Waterloo South Precinct Area is detailed in Table 1.

Table 1: Legal Description of Waterloo South

Address	Lot/DP
Lots owned by NSW Land and Housing Corporation (land is subject to both the rezoning and the concept SSDA)	
209-219 Cope Street, Waterloo	Lot 1 DP 217386
238-246 George Street, Waterloo	Lot 1 DP 225159
229-231 Cope Street Waterloo	Lot 3 DP 10721
6 John Street, Waterloo	Lot 1 DP 533762
97-109 Cooper Street, Waterloo	Lot A DP 105916, Lot B DP 105916, Lot C DP 105916, Lot 14 DP 10721,
248-254 George Street, Waterloo	Lot 2 DP 533678
232 Pitt Street, Waterloo	Lot 11 DP 635663, Lot 10 DP 635663
74-76 Wellington Street, Waterloo	Lot 1 DP 224728
331-337 George Street, Waterloo	Lot 3 DP 533680
247-251 Cope Street, Waterloo	Lot 1 DP 533679
339-341 George Street, Waterloo	Lot 1 DP 77168
250 Pitt Street, Waterloo	Lot 313 DP 606576
Cooper Street, Waterloo	Lot 3 DP 217386
Lots owned by others (land that does not form a part of the concept SSDA)	
221-223 Cope Street, Waterloo	Lot 6 DP 10721, Lot 7 DP 10721, Lot 9 DP 10721, Lot 8 DP 1147179
225-227 Cope Street, Waterloo	Lot 5 DP 10721, Lot 4 DP 10721
233 Cope Street, Waterloo	Lot 12 DP 1099410, Lots 1-41 SP 79210
116 Wellington Street, Waterloo	Lot 10 DP 10721, Lot 11 DP 10721
111 Cooper Street, Waterloo	Lot 15 DP 10721
291 George Street, Waterloo	Lot 10 DP 1238631, Lots 1-20 SP 96906
110 Wellington Street, Waterloo	Lot 101 DP 1044801, Lots 1-58 SP 69476
336 George Street, Waterloo	Lot 3 DP 10686
213-215 Cope Street, Waterloo	Lot 2 DP 217386

3. Surrounding context

The suburb of Waterloo is located within the City of Sydney Local Government Area (LGA) and is located 3km south of Sydney CBD. The site is part of the broader Waterloo Estate, which comprises the northern, central, and southern precincts and accommodates a significant community residing in social housing.

The Waterloo South Precinct Area is predominantly owned by LAHC, however, as outlined in Table 1, the site, the subject of this report, excludes several privately owned lots located within the boundary of the broader Waterloo South precinct outlined in Figure 2. The privately owned lots are currently used for residential, office, light industrial, and infrastructure uses. The LAHC owned sites are currently used almost exclusively for the provision of social housing, with ancillary offices and community uses. Overall, Waterloo South currently contains a total of 750 social housing dwellings and 120 private dwellings.

As shown in Figure 1, surrounding suburbs include Redfern to the north, Green Square to the south, Alexandria to the west and Zetland to the east. This broader area has been subject to significant change over the last 10 years with projects such as South Eveleigh, Redfern North Eveleigh Precinct Renewal, Waterloo Metro Quarter and Over Station Development (OSD) all contributing to the changing character of the area.

These broader renewal projects are supported by proximity to a range of public transport services, including Redfern Station, Green Square Station, and Waterloo Metro Station, all of which are within walking distance of Waterloo South.



 Waterloo South Precinct Area

NOT TO SCALE 

Figure 1: Aerial view of the Waterloo Estate and the Waterloo Estate (South) Precinct (Source: Six Maps, modified by Beam Planning)

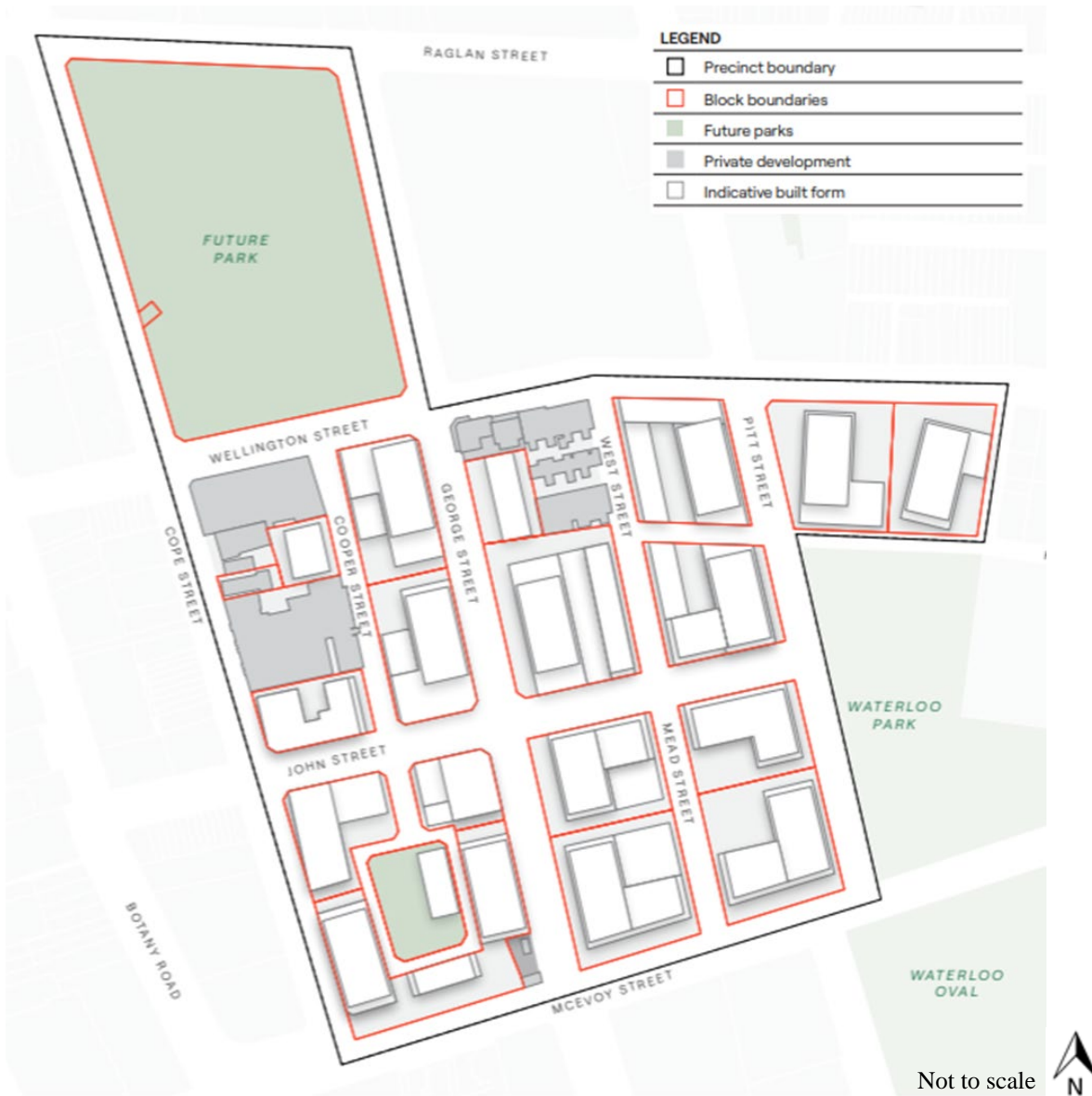


Figure 2: Waterloo South Project Area (Source: SJB)

4. Project Vision and Intended Outcomes

The vision for the site is to create a unique and vibrant mixed-tenure housing precinct that supports the needs of the community and delivers much needed housing in response to National and State Government priorities.

The Vision is:

To create a new and unique urban village on the Project Land (Gadigal Land) which: delivers new homes, community places and green spaces with diverse housing choice and amenity; prioritises the health and wellbeing of residents; and offers an authentic sense of place and mixed and more sustainable local and mixed communities.

The proposed redevelopment seeks to respond to this Vision by creating a unique and vibrant neighbourhood that can deliver significant social benefits to residents, visitors, and workers in the Waterloo area and broader City of Sydney LGA. The co-location of community uses with housing and employment will ensure the redevelopment is an integrated, accessible and connected precinct that supports the social needs of community.

5. Proposed concept SSDA

The concept SSDA seeks concept approval in accordance with section 4.22 of the Environmental Planning and Assessment Act 1979 (EP&A Act) for the comprehensive redevelopment of the Waterloo South site. The concept proposal, if approved, will guide the detailed design of future buildings, public open spaces, and the public realm within Waterloo South. It will seek concept development consent for key planning metrics for the precinct as generally described in Table 2.

Table 2: Key development metrics

Descriptor	Project Details
Project Area	<ul style="list-style-type: none"> Waterloo South has a developable site area of 114,822sqm / 11.5ha The broader Waterloo South Precinct Area, which includes all LAHC owned and privately owned properties and roads within the precinct, has a site area of 123,149sqm / 12.3ha
Project Description	<ul style="list-style-type: none"> Maximum building envelopes, including maximum building heights, street-wall heights and setbacks. Distribution of gross floor area (GFA) across the Waterloo South development blocks. Indicative allocation of floor space between social, affordable and market housing, as well as non-residential and community uses across the Waterloo South Precinct Area. Loading, vehicular, pedestrian, and active transport access arrangements. Public domain upgrades and new public domain and publicly accessible areas. Indicative subdivision plan, indicative staging plan and delivery sequencing for development. Approval of the following management plans and strategies to inform future stages of the development: <ul style="list-style-type: none"> Updated Design Excellence Strategy Design with Country Strategy Preliminary Public Art Strategy Contamination Strategy Flood Management Strategy Stormwater Management and Drainage Strategy ESD Strategy Strategies for utilities and service provision including service infrastructure lead-in enabling works Tree Retention Strategy
Land Uses	<p><u>Residential</u></p> <ul style="list-style-type: none"> Social housing: no less than 30% of residential GFA Affordable housing: ~20% of residential GFA (balance between the delivery of minimum 30% social housing, and the maximum 50% market housing) Market housing: no greater than 50% of residential GFA <p><u>Non-residential</u></p> <ul style="list-style-type: none"> A total of 15,000m² of GFA, of which at least 5,000m² of GFA is to be delivered as 'Community Uses' (which can include childcare, health, education or community facilities).
Gross Floor Area	Up to 282,485m ²
Building Heights	Between 2 and 33 storeys
Car Parking	Approximately 1,500 spaces (across all land uses), excluding on-street car parking spaces
Indicative Staging/ Phasing	It is expected that the redevelopment will occur in seven (7) stages (inclusive of the delivery of the large park on Block 1), however this staging remains indicative.

Waterloo South consists of a range of low, mid and high rise structures. Table 3 shows the Waterloo South permanent elevations for the structures incorporated in the Waterloo South Precinct Area.

Table 3: Waterloo South: Building elevations, heights and ground levels



Block	Building	Elevation (m AHD)	Ground level (m AHD)	Building height (m)
2B	2B.B1	36	16.7 (assumed)	19
2D	2D.B1	47.4	16.7	31
3A	3A.B1	91.5	16.6	75
3B	3B.B1	69.7	16.6	53
4B	4B.B1	48.5	17.3	31
4C	4C.B1	90.5	17.6	73
4C	4C.B2	52.4	22.1	30
5A	5A.B1	87.6	21.6	66
5A	5A.B2	47.5	21.6	26
6A	6A.B1	87.2	22.8	64
6A	6A.B2	46.7	22.8	24
7A	7A.B1	126.4	30.7	96
7B	7B.B1	96.6	30.7	66
8A	8A.B1	125.8	16.9	109
8A	8A.B2	48.9	17.4	32
8A	8A.B3	69.9	16.9	53
8B	8B.B1	38.6	16.6	22
8C	8C.B1	52.7	16.9	36
8D	8D.B1	25.9	16.9	9
9A	9A.B1	126.4	16.9	110
9B	9B.B1	72.8	16.9	56
10A	10A.B1	126.4	21.1	105
10B	10B.B1	82.95	21.1	62

Construction methodologies including the height of any crane jibs above the Waterloo South elevations are not known at the time of writing. It is assumed that the construction heights will exceed those of the permanent development heights shown in Table 3.

6. Assessment framework

The aviation safeguarding impacts of Waterloo South must be considered against Clause 7.16 (Airspace operations) of the *Sydney Local Environmental Plan 2012* and the related the approvals process for the protection of airspace as per Australian Government policy². Policies as relevant to aviation safeguarding for Waterloo South are outlined below.

6.1 Previous aviation impact assessments

An aviation impact assessment for Waterloo South was prepared for the New South Wales Land and Housing Corporation by Strategic Airspace dated 24 March 2020³. This assessment was reviewed for context and background to the current assessment.

6.2 Planning Documents

Sydney Local Environmental Plan 2012

Clause 7.16 (Airspace operations) of the *Sydney Local Environmental Plan 2012* seeks to *provide for the effective and on-going operation of the Sydney (Kingsford-Smith) Airport by ensuring that such operation is not compromised by proposed development that penetrates the Limitation or Operations Surface for that airport.*

This clause describes two three-dimensional surfaces related to Sydney Airport's safeguarding:

- Limitation surface relates to Sydney Airport's Obstacle Limitation Surface (OLS) that protects for aircraft safety related to approach and departure movements into Sydney Airport.
- Operations surface relates to Procedures for Air Navigation Services – Aircraft Operations (PANS-OPS) protecting Sydney Airport's instrument flight procedures.

Where a development application is received and the consent authority is satisfied that the proposed development will penetrate the Limitation or Operations Surface, Clause 7.16 stipulates development consent may be granted if the relevant Commonwealth body⁴ advises it has no objection to its construction. Refer to section 3.2 of this letter outlining this consent process.

It is noted Clause 4.3 (Height of buildings) of the *Sydney Local Environmental Plan 2012* also guides the height of buildings. An inspection of *Height of buildings map- Sheet HOB_017* provided for a maximum building height for the high-rise structures at an elevation of 126.40m AHD.

Clause 7.17 (Development in areas subject to aircraft noise) provides that *land that is near the Sydney (Kingsford-Smith) Airport and is in an ANEF contour of 20 or greater* may be adversely impacted by aircraft noise and subject to a building site acceptability check against criteria for land within the various ANEF contours.

Sydney Airport Master Plan

Forming the key aviation planning document within the vicinity of the project site, Sydney Airport's recent preliminary draft Master Plan 2045⁵ was reviewed to inform the safeguarding requirements.

² Airspace Protection at Leased Federal Airports, Australian Government, accessed 3 November 2025, <https://www.infrastructure.gov.au/infrastructure-transport-vehicles/vehicles/aviation/safety/protection/leased>

³ NSW LaHC, Waterloo South Planning Proposal: Aeronautical Impact Assessment, version 1.2.1 (24 March 2020).

⁴ Under Clause 7.16, 'relevant Commonwealth body' refers to the body responsible for development decisions relating to the Sydney (Kingsford-Smith) Airport under Commonwealth legislation.

⁵ [Sydney Airport Master Plan 2045 | Preliminary Draft \(Sept 2025\)](#)



Source: Sydney LEP 2012, Height of buildings map – Sheet HOB_017 (adapted with Arup markup)
 Figure 3: Maximum building height (Clause 4.3)

6.3 Approvals process for protection of airspace

The Australian Government protects the airspace around leased Federal airports under Part 12 of the *Airports Act 1996* ('the Act') and the *Airports (Protection of Airspace) Regulations 1996* (the 'Regulations').

A controlled activity is defined where a development is planned to protrude into Protected Airspace (defined as an Airport's OLS and PANS-OPS surfaces). Controlled activities include the following events and are differentiated between short-term (activity expected to continue no longer than three months) and long-term (activity expected to continue more than three months):

- constructing permanent structures, such as buildings, intruding into the protected airspace.
- temporary structures such as cranes intruding into the protected airspace.
- activities causing non-structural intrusions into the protected airspace such as air turbulence from stacks or vents, smoke, dust, steam or other gases or particulate matter.

Approvals are required where a controlled activity is planned to be conducted. Applications for approval are made to the relevant airport operator and the approvals processes depend on the type of controlled activity to be conducted as outlined in Table 4.

Table 4: Approvals process by controlled activity type and expected duration

Activity	Process
Short-term (activity expected to continue no longer than three months)	
Short-term controlled activities (OLS intrusion)	Approved or refused by the airport operator after consultation with the Civil Aviation Safety Authority (CASA) and Airservices or referred by the Airport operator to the Department of Infrastructure, Transport, Regional Development, Communications and the Arts (the Department) for a decision.
Short-term controlled activities (PANS-OPS intrusion)	Airport operator is required to consult with CASA and Airservices and then refer applications to the Department for a decision. This referral is to include advice about whether the short-term penetration of the PANS-OPS has the support of the airport operator.
Long-term (activity expected to continue more than three months)	
Long-term controlled activities (OLS intrusion)	Referred by the airport operator to the Department for a decision after consultation with CASA, Airservices and the relevant building authority.
Long-term controlled activities (PANS-OPS intrusion)	Not permitted. The airport operator can notify the refusal of such controlled activities.

6.4 National Airports Safeguarding Framework

The National Airports Safeguarding Framework (NASF)⁶ seeks to improve safety outcomes by ensuring aviation safety requirements are recognised in land use planning decisions through guidelines being adopted by jurisdictions on various safety-related issues.

The NASF comprises nine guidelines, with those considered relevant to Waterloo South listed below:

- Guideline C: Managing the Risk of Wildlife Strikes in the Vicinity of Airports.
- Guideline E: Managing the Risk of Distractions to Pilots from Lighting in the Vicinity of Airport.
- Guideline F: Managing the Risk of Intrusions into the Protected Airspace of Airports.
- Guideline G: Protecting Aviation Facilities – Communication, Navigation and Surveillance.
- Guideline H: Protecting Strategically Important Helicopter Landing Sites.

NASF Guideline A: Measures for Managing Impacts of Aircraft Noise is not supported by NSW. An alternative review was undertaken for aircraft noise using the latest Sydney Airport preliminary draft Master Plan 2045.

Guideline B (Building Generated Windshear and Turbulence at Airports), Guideline D (Managing the Risk of Wind Turbine Farms as Physical Obstacles to Air Navigation) and Guideline I (Public Safety Areas) are not applicable due to the location and nature of the Waterloo South Precinct Area.

⁶ National Airports Safeguarding Framework, Australian Government, accessed 3 November 2025, [National Airports Safeguarding Framework principles and guidelines](#) | Department of Infrastructure, Transport, Regional Development, Communications, Sport and the Arts

7. Airspace protection assessments

Assessments were undertaken for the following relevant airspace protection surfaces, as prescribed by Sydney Airport and described in NASF Guidelines F, G and H.

- Obstacle limitation surface (OLS).
- Combined Radar Departure Assessment Surfaces (Omni Directional).
- Strategic Helicopter Landing Sites (SHLS).

Other surfaces including Navigation Aids Protected Surfaces, High Intensity Light Protected Surfaces and Precision Approach Path Indicator (PAPI) system protection surfaces are not relevant to the assessment.

All elevations provided are relative to the Australian Height Datum (AHD) unless otherwise specified.

7.1 Obstacle limitation surface (OLS)

The OLS defines a volume of airspace above and around an airport that should be kept free of obstacles that could endanger aircraft on visual operations or during the visual stages of an instrument approach.

Waterloo South was found to be located in the conical surface of the prescribed OLS for Sydney (Kingsford Smith) Airport. The OLS elevation ranged from 54m to 71m AHD. The assessment found that 13 buildings were planned to permanently exceed the OLS as shown in Table 5.

Intrusions into the OLS will have the following implications on Waterloo South.

- As described in section 5.3, an application for a controlled activity would need to be made to the Department of Infrastructure, Transport, Regional Development, Communications and the Arts (the Department) through the Sydney Airport for instances where there are permanent (long-term) intrusions into the OLS.
- Applications for a controlled activity for short term intrusions would need to be made to Sydney Airport for instances where construction activities (lasting less than three months) may infringe on the OLS. As construction methodologies and crane heights are not known at the time of writing, separate assessments will need to be undertaken when these details are known.
- Buildings may be required to install obstacle lights subject to recommendations made as part of the approvals process.

7.1.1 Rooftop plumes

Plumes and emissions form a potential risk to aviation operations. The emission of steam, other gas, smoke, dust or other particulate matter could affect the ability of aircraft to operate in the prescribed airspace.

CASA may determine that a gaseous efflux with a velocity over 4.3 m/s could be a hazard to operations. It is recommended that the typical and maximum mechanical exhaust or plume data be extracted and assessed by CASA for potential impact on the surrounding airspace, particularly as the building is planned to exceed the OLS.

Table 5: OLS assessment



Block	Building	Elevation (m AHD)	OLS Elevation (m AHD)	OLS Exceeded?
2B	2B.B1	36	63	NO
2D	2D.B1	47.4	59	NO
3A	3A.B1	91.5	65	YES
3B	3B.B1	69.7	61	YES
4B	4B.B1	48.5	66	NO
4C	4C.B1	90.5	63	YES
4C	4C.B2	52.4	64	NO
5A	5A.B1	87.6	69	YES
5A	5A.B2	47.5	69	NO
6A	6A.B1	87.2	66	YES
6A	6A.B2	46.7	66	NO
7A	7A.B1	126.4	71	YES
7B	7B.B1	96.6	70	YES
8A	8A.B1	125.8	54	YES
8A	8A.B2	48.9	54	NO
8A	8A.B3	69.9	54	YES
8B	8B.B1	38.6	56	NO
8C	8C.B1	52.7	59	NO
8D	8D.B1	25.9	57	NO
9A	9A.B1	126.4	58	YES
9B	9B.B1	72.8	61	YES
10A	10A.B1	126.4	61	YES
10B	10B.B1	82.95	64	YES

7.2 Procedures for Air Navigation Services – Aircraft Operations (PANS-OPS)

The PANS-OPS refers to a range of protected surfaces prescribed to protect aircraft operations. This includes surfaces for instrument approach, instrument departure, missed approach and circling procedures. These procedures are published in the Aeronautical Information Publication Departure and Approach Procedures ⁷(DAP).

A review of the Sydney Airport Prescribed PANS-OPS Airspace chart identified an elevation of 126.4m AHD above Waterloo South (Figure 4). The PANS-OPS Airspace chart above shows only the lowest, critical surface at any given point.

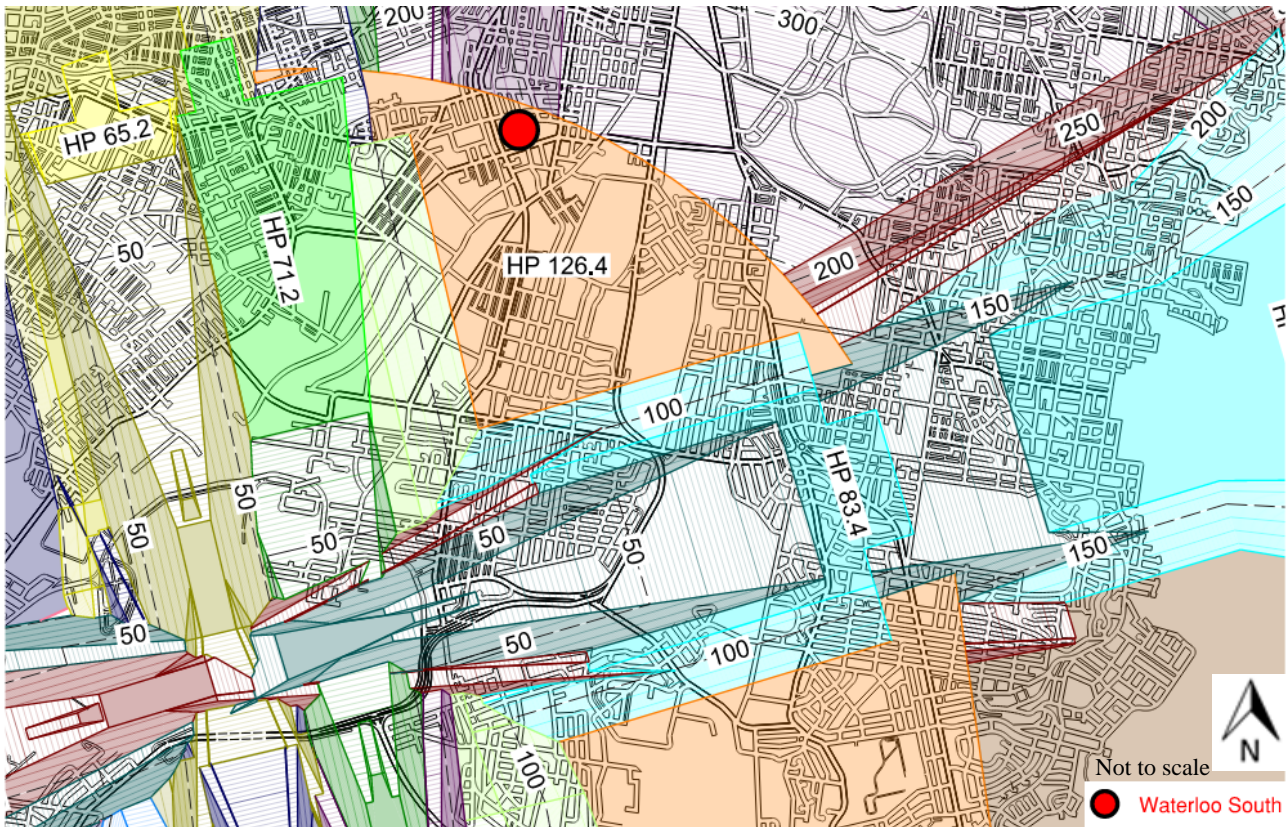


Figure 4: Sydney Airport Prescribed PANS-OPS Airspace (Critical, lowest surface only)

A review of the DAP for Sydney Airport was undertaken to understand the critical surfaces over Waterloo South. The two critical surfaces are summarised in Table 6.

Table 6: Critical PANS-OPS surfaces for Waterloo South

PANS-OPS	Elevation (m AHD)	Description
Category B Circling	126.4m	Critical surface across Waterloo South. The Category B circling surface is the protected airspace around an airport that ensures obstacle clearance for aircraft performing a circling approach at speeds typical for Category B aircraft. Circling manoeuvres are understood to be rarely undertaken at Sydney Airport given the nature of the operations.
Standard Instrument Departures (Runway 34L)	~185m*	A Standard Instrument Departure (SID) is a published route that guides an aircraft from take-off to the en-route phase using defined headings, altitudes, and navigation points to ensure safe and efficient departure from controlled airspace. A SID for Runway 34L was assessed to overlay Waterloo South at an elevation of ~770ft above mean sea level.

* Estimated at 770ft above mean sea level less 50m ground level elevation.

⁷ Airservices Australia, Aerodrome & Procedure Charts (effective 27 Nov 2025), accessed 16 December 2025
https://www.airservicesaustralia.com/aip/current/dap/dap_27NOV2025.htmv

A comparison of the building heights show that no buildings proposed for Waterloo South will infringe on the PANS-OPS (Table 7). However, four high-rise buildings are planned to be developed up to the critical PANS-OPS surface at 126.4m AHD.

Table 7: PANS-OPS assessment



Block	Building	Elevation (m AHD)	PANS-OPS Elevation (m AHD)	PANS-OPS Exceeded?
2B	2B.B1	36	126.4	NO
2D	2D.B1	47.4		NO
3A	3A.B1	91.5		NO
3B	3B.B1	69.7		NO
4B	4B.B1	48.5		NO
4C	4C.B1	90.5		NO
4C	4C.B2	52.4		NO
5A	5A.B1	87.6		NO
5A	5A.B2	47.5		NO
6A	6A.B1	87.2		NO
6A	6A.B2	46.7		NO
7A	7A.B1	126.4		NO
7B	7B.B1	96.6		NO
8A	8A.B1	125.8		NO
8A	8A.B2	48.9		NO
8A	8A.B3	69.9		NO
8B	8B.B1	38.6		NO
8C	8C.B1	52.7		NO
8D	8D.B1	25.9		NO
9A	9A.B1	126.4		NO
9B	9B.B1	72.8	NO	
10A	10A.B1	126.4	NO	
10B	10B.B1	82.95	NO	

The PANS-OPS assessment has the following implications for Waterloo South:

- The critical PANS-OPS surface elevation of 126.4m AHD represents the highest elevation in which the development can reach to reasonably anticipate approval to be granted.
- Whilst heights for cranes and construction methodologies are not known at this stage, it can be reasonably expected that the crane heights will exceed this surface to construct the four high-rise towers. As such, an application for a controlled activity would need to be made to the Department of Infrastructure, Transport, Regional Development, Communications and the Arts (the Department) through the Sydney Airport for instances where there are permanent (long-term) intrusions into the OLS.
- Mitigations including marking or lighting, the hours or weather conditions in which the crane can operate, or requirements to maintain contact with the airport during construction may be required subject to recommendations made through the approvals process.

7.3 Radar Terrain Clearance Charts (RTCC)

The RTCC provides the minimum safe altitudes used by pilots and controllers for radar vectoring and ensuring obstacle clearance. A review of the Sydney Airport RTCC chart showed an elevation of 335.28m AHD above Waterloo South (Figure 5).

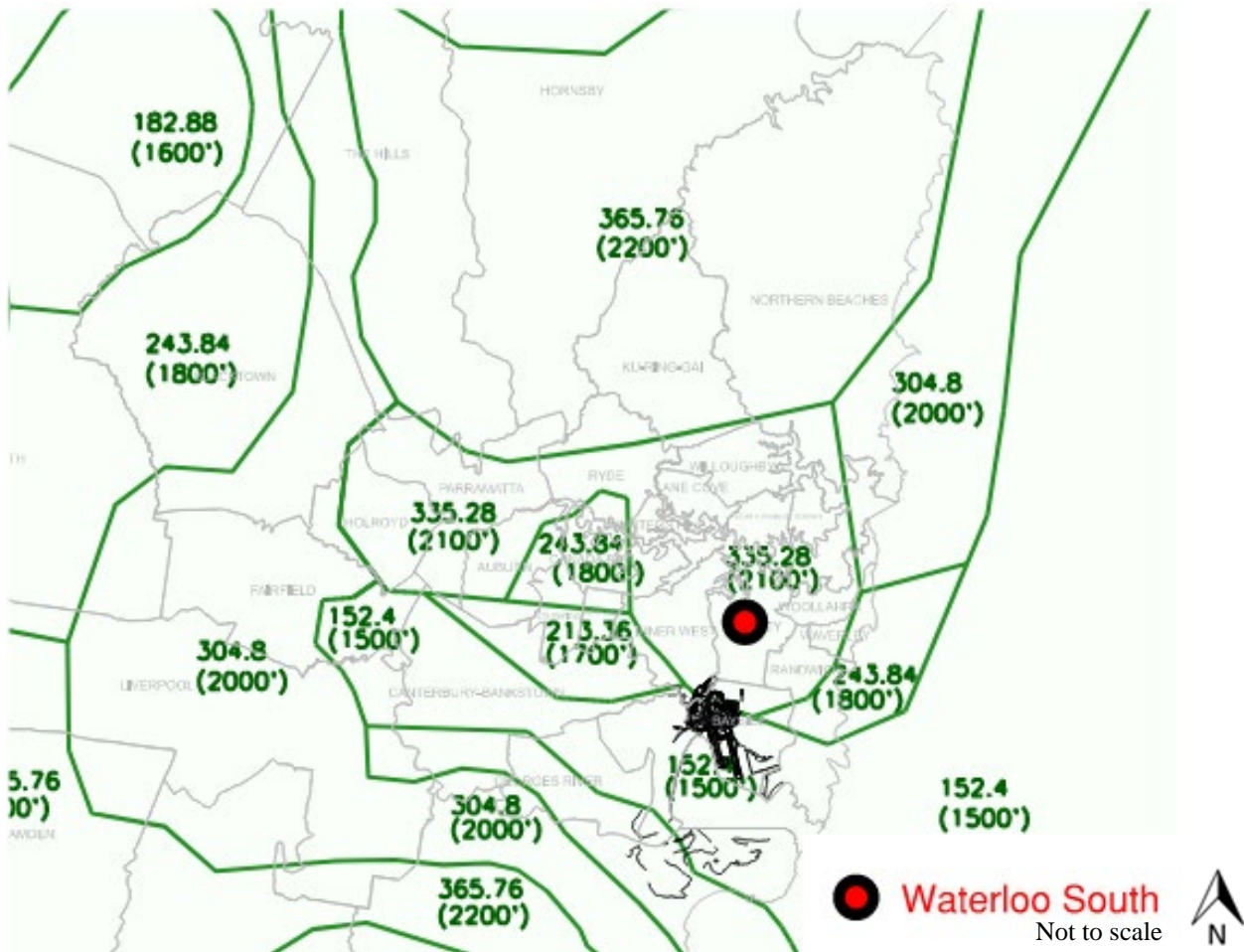


Figure 5: Sydney Airport RTCC

This is over 200m above the planned permanent development height Waterloo South and therefore is unlikely to have implications for the development.

7.4 Combined Radar Departure Assessment Surfaces (Omni Directional)

Combined radar departure assessment surfaces (omni-directional) provide a safety buffer for obstacle clearance during radar-vector departures in any direction from the runway. A review of the Combined radar departure assessment surfaces (omni-directional) chart for Sydney Airport shows an elevation of approximately 165-180m AHD (Figure 6) across the site.

This has the following implications for Waterloo South:

- The surface is above the permanent heights for Waterloo South and is not critical for setting building heights.
- This surface likely represents an upper limit of the elevation in which cranes can operate during the construction of the high-rise towers part of Waterloo South.

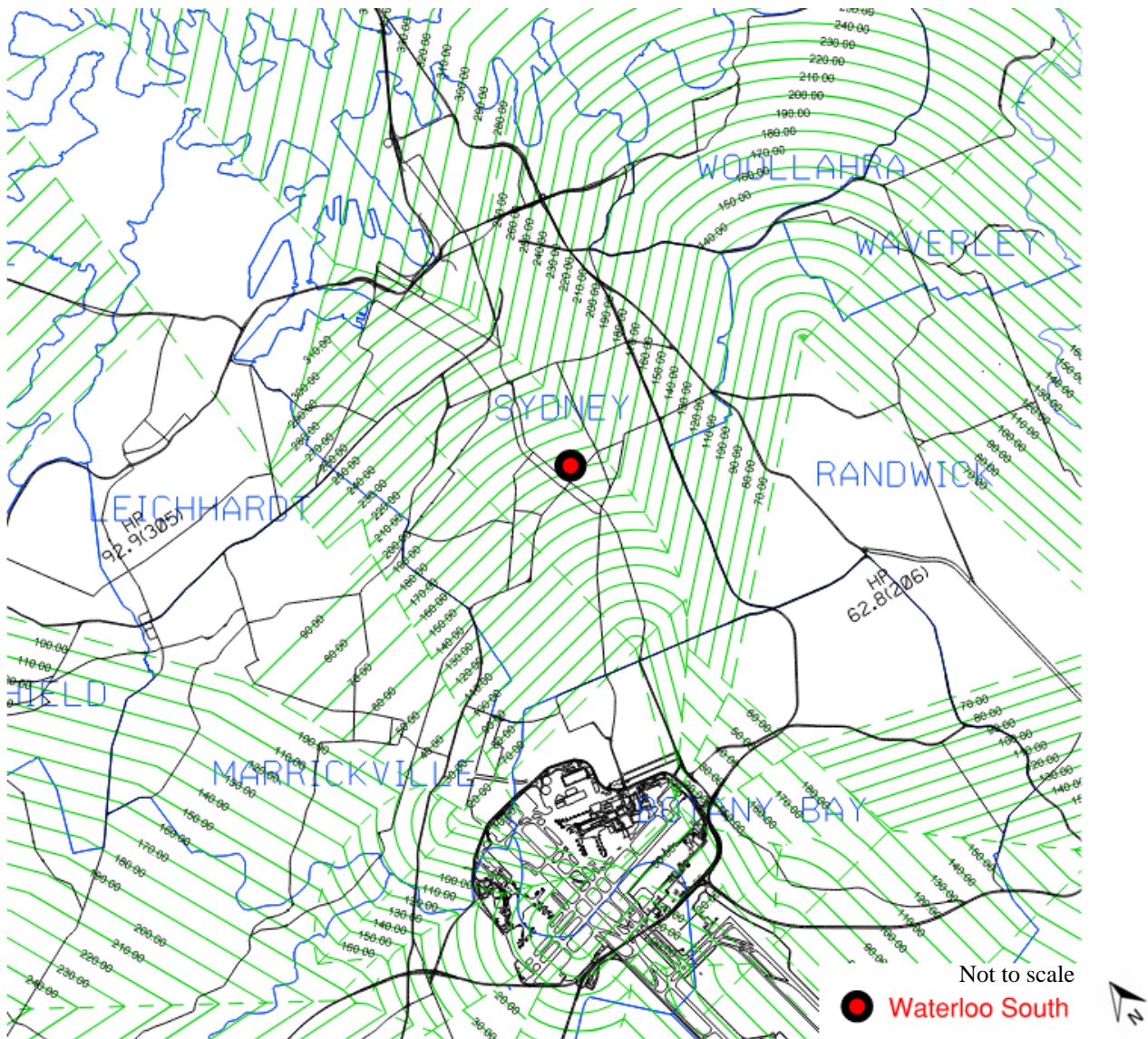


Figure 6: Sydney Airport Combined radar departure assessment surfaces

7.5 Strategic Helicopter Landing Sites (SHLS)

SHLS are typically designated for emergency services use and usually located proximate to critical infrastructure such as airports, hospitals and ports. A review of helicopter landing sites proximate to Waterloo South was undertaken. A proximate SHLS was identified at the Royal Prince Alfred Hospital (OZPRA) at approximately 2.1km south east of the site. The SHLS is a temporary helipad located on a multi-storey car park to the west of the hospital.

Section 38 of the NASF Guideline H provides a referral trigger for the surfaces above the SHLS where specific helicopter flight paths are not surveyed. Figure 7 shows the referral triggers extend up to 3.5km from the HLS which overlays Waterloo South. The Hospital Helicopter Landing Sites in NSW⁸ document also provides guidelines for the establishment of SHLS. It defines that a visual flight approach and departure path be surveyed with the approach and departure path extending to 500ft (~150m) above the elevation level of the SHLS.

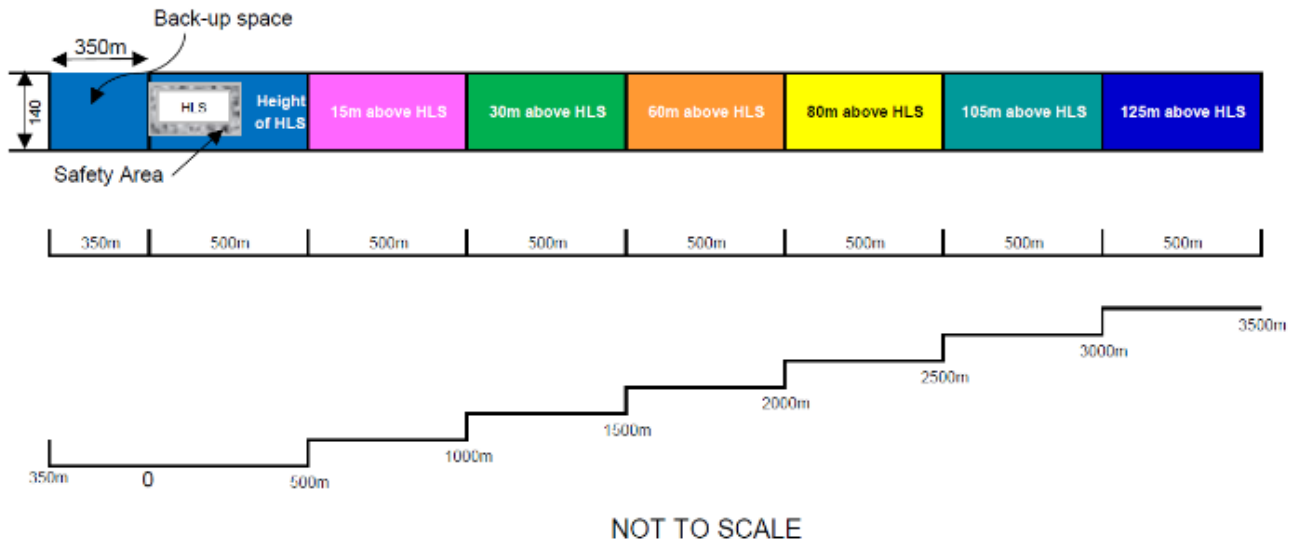


Figure 7: Referral trigger for SHLS

A review of information available from OZRunways⁹ suggests that Waterloo South is unlikely to impact on the SHLS operations:

- Information available from OZRunways the SHLS is located at 130m AHD meaning that the SHLS would be above the permanent development heights (126.4m AHD). At 2.1km from the SHLS, a clearance of over 80m is available which is well above other critical surfaces.
- Approach and departure paths to/from the SHLS are noted to a north-east (NE) and south-south-west (SSW) alignment. In fact, no arrivals or departures to/from the South or South east are specified. Waterloo South is located south-east of the SHLS.

⁸ NSW Government, Hospital Helicopter Landing Sites in NWS (July 2020), accessed 17 December 2025
https://www1.health.nsw.gov.au/pds/ActivePDSDocuments/GL2020_014.pdfv

⁹ OZRunways, Royal Prince Alfred Temporary (Western Campus), accessed on 16 December 2025,
<https://www.ozrunways.com/helipads/view/helipad.jsp?code=OZRPA>

7.6 Summary

A summary of the airspace protection assessment is outlined in Table 8. It is noted that development heights and elevations are to be confirmed and additional information provided in a final report.

Table 8: Summary of the airspace protection assessment

Airspace	Elevation (m AHD)	Finding
Obstacle limitation surface (OLS)	54m-71m	Multiple buildings to exceed OLS in both permanent and construction scenarios.
Procedures for Air Navigation Services – Aircraft Operations (PANS-OPS).	126.4m (Cat B Circling) ~185m* (Rwy34L SID)	The Category B Circling procedure is the critical surface and provides the highest elevation (126.4m) in which the development can reach to reasonably anticipate approval to be granted. Four high-rise buildings are likely to exceed the Category B Circling procedure during construction.
Radar Terrain Clearance Charts (RTCC)	~335.28m*	RTCC unlikely to have implications for the development.
Combined radar departure assessment surfaces	~165-180m	Surface level of 165m AHD likely represents an upper limit of the elevation in which cranes can operate during the construction of the high-rise towers part of Waterloo South.
Strategic Helicopter Landing Sites (SHLS)	N/A	SLHS unlikely to have implications for the development.

8. Other safeguarding assessments

8.1 Noise

The Australian Noise Exposure Forecast (ANEF) charts contained within Sydney Airport's preliminary draft Master Plan 2045 (Figure 8) indicate Waterloo South is located outside the 20 ANEF contour in both the previous 2039 Master Plan and the latest noise modelling for the preliminary draft, meaning acceptable conditions for residential developments.

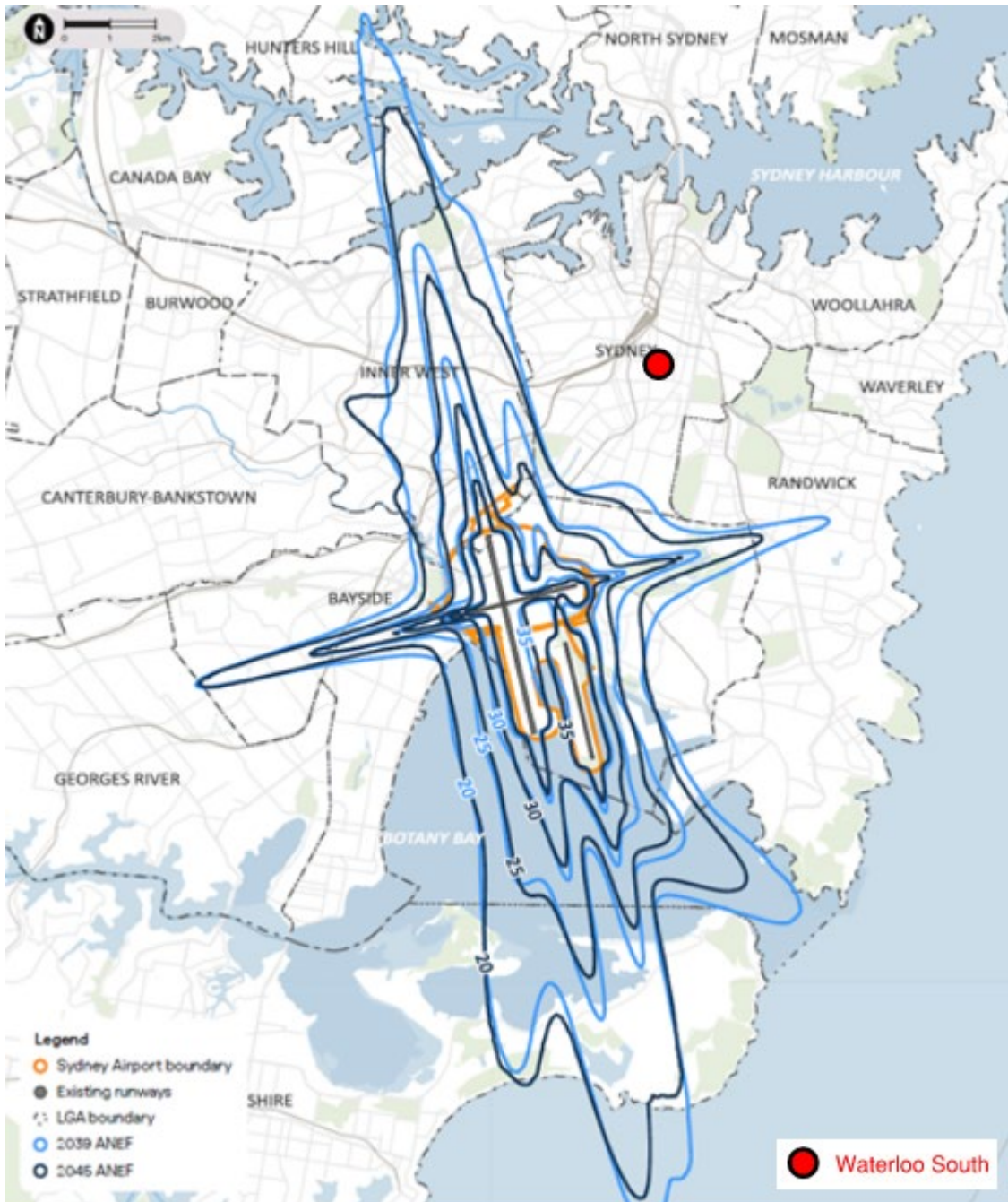


Figure 8: Sydney Airport ANEF contours (Sydney Airport 2045 preliminary draft Master Plan)

8.2 Wildlife strikes

Sydney Airport monitors and controls the presence of birds and other wildlife on or in the vicinity of the airport. In support of these controls, the NASF Guideline C establishes a proportionate approach for new developments surrounding an airport, considering both the intended uses and the proximity to the airport.

Figure 9 below indicates the approximate location of Waterloo South, which falls within the Area B (3-8 km radius).

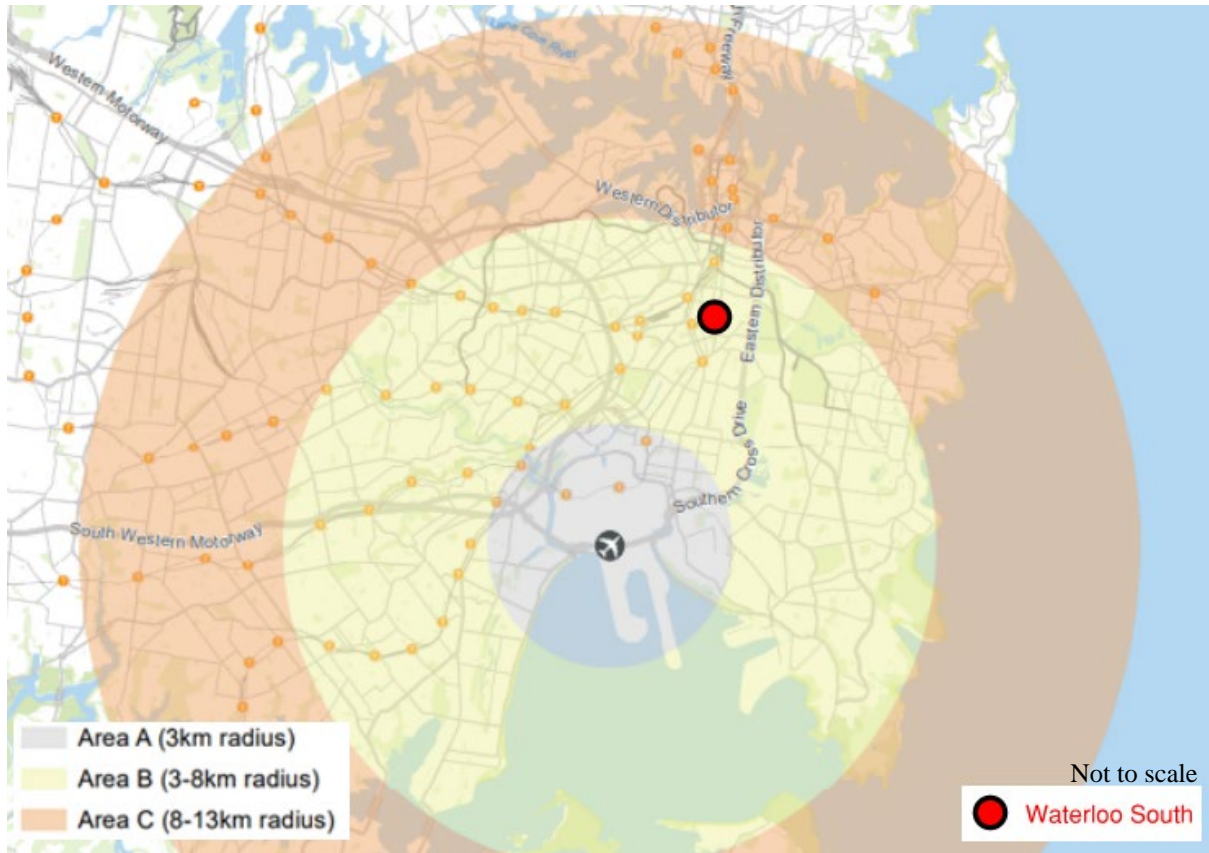


Figure 9: Wildlife Management Areas Map (Source NASF Guideline C¹⁰)

A list of land use types are provided within the Wildlife Hazard Management Action Table¹¹ of the Guideline C with proposed actions for new developments to undertake including mitigation, monitoring. The following findings were made:

- The proposed park located on the north-west corner of the Waterloo South Precinct Area would meet the definition of a park/playground which for new developments meets a mitigation requirement. The Guideline suggests that *the site should be included in wildlife monitoring activity and elements that could potentially attract hazardous wildlife should be identified, assessed and mitigated*. It is recommended that further advice is sought, such as wildlife hazard expert advice, in design stages of the Waterloo South Precinct Area.
- For Waterloo South, the proposed residential use does not feature, given the low probability of attracting wildlife and therefore no further action is required for residential use.
- Should the proposal consider additional uses such as playgrounds, fast food, outdoor restaurants, monitoring practices may be required to minimise the risk of wildlife hazards.

¹⁰ Guideline C—Attachment 2—Example Wildlife Management Areas Map (Sydney Kingsford-Smith Airport)—December 2023—PDF

¹¹ Guideline C—Attachment 1—Wildlife hazard management action table—December 2023—PDF

8.3 Lighting

Pilots rely on specific patterns of aeronautical ground lights during poor weather and outside daylight hours to align their aircraft with the runway and enable them to land the aircraft on an appropriate part of the runway. Lighting around an airport can cause distractions to pilots and are required to be managed to minimise this risk.

Guideline E establishes four lighting control zones with maximum lighting intensity limits and a lighting intensity radius 6km from each runway end (Figure 6).

Waterloo South is situated outside the four lighting control zones but within the 6 km radius of the runway ends. While specific guidance is not provided on light intensity within this area, CASA has the right to serve notices for lighting that is considered to endanger the safety of aircraft.

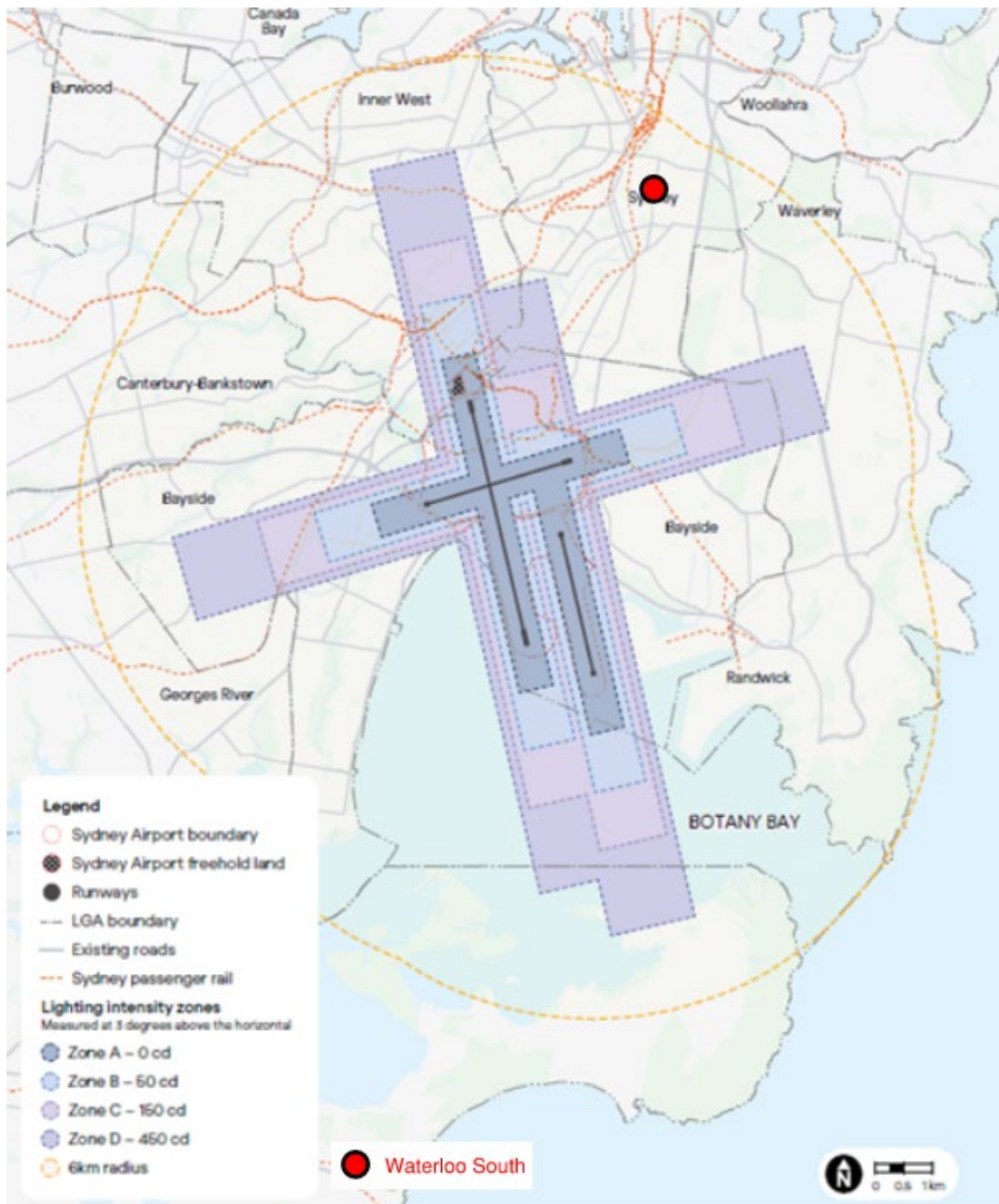


Figure 10: Restricted lighting plan (Sydney Airport 2045 preliminary draft Master Plan)

9. Findings and next steps

This Aviation Impact Assessment has been prepared to support the Concept State Significant Development Application (SSDA) for the redevelopment of Waterloo Estate (South), known as 'Waterloo South'. Waterloo South consists of buildings ranging from elevations between 25.9m and 126.4m AHD.

This assessment was undertaken with consideration of the Sydney Local Environmental Plan 2012, the Airports Act 1996 and the National Airports Safeguarding Framework (NASF). The assessment considered the implications of Waterloo South against key aviation safeguarding surfaces, including the Obstacle Limitation Surface (OLS) and Procedures for Air Navigation Services – Aircraft Operations (PANS-OPS). Other safeguarding assessments were also undertaken on relevant NASF guidelines including noise, lighting and wildlife considerations.

9.1 Findings

Key findings from the aviation impact assessment are as follows:

- **OLS:** Thirteen buildings within Waterloo South are planned to permanently exceed the OLS (at **56m-71m AHD**), with further temporary intrusions likely during construction (e.g., cranes).
- **PANS-OPS:** The critical PANS-OPS surface over the site is at **126.4m AHD** and represents the highest elevation in which the development can reach to reasonably anticipate approval to be granted. No permanent building heights exceed this limit; however, four high-rise buildings are planned to reach this maximum elevation. Construction activities are reasonably anticipated to temporarily exceed this surface.
- **Combined Radar Departure Assessment Surfaces:** These surfaces are well above the planned permanent development heights and are not expected to constrain the development. However, the combined radar departure assessment surface (**~165–180m AHD**) is likely to represent an upper limit for crane operations during construction.
- **Other Safeguarding Considerations:** The site is located outside the 20 ANEF aircraft noise contour, indicating acceptable conditions for residential development. The proposed park located on the north-west corner of the Waterloo South Precinct Area would meet the definition of a park/playground which for new developments meets a mitigation requirement. It is recommended that further advice is sought, such as wildlife hazard expert advice, in design stages of the Waterloo South Precinct Area.

The assessment has the following implications on Waterloo South through the approvals and delivery process.

- Applications for controlled activities would need to be made to the Department of Infrastructure, Transport, Regional Development, Communications and the Arts (the Department) through the Sydney Airport for instances where there are permanent (long-term) intrusions into the OLS and temporary (short term) intrusions to the PANS-OPS surfaces.

These applications should be made at a point in time where final building designs and construction methodologies are known. It is recommended that an updated full aviation impact assessment including a safety cases are appended to these applications.

Approval is required prior to construction activities commencing. Carrying out a controlled activity without approval is an offence under Section 183 of the Airports Act 1996 and is punishable by a fine of up to 250 penalty units.

- Buildings and cranes are likely to be required to install obstacle lights and markings subject to recommendations made through the approval process to mitigate the intrusions into the OLS and PANS-OPS surfaces. Operational restrictions to crane operations may be required due to the short-term intrusion into the PANS-OPS surfaces.

9.2 Next steps

The following next steps are proposed to complete the full aviation impact assessment:

- A detailed assessment of other PANS-OPS surfaces for completeness.
- Final building heights inclusive of any rooftop infrastructure (stacks, masts, BMU etc.). Details on gaseous efflux from rooftop infrastructure will also be required to assess the impact on airspace operations.
- Confirmation of construction indicative staging for Waterloo South including additional temporary crane heights.
- Completion of a full aviation impact assessment with accompanying safety cases to support applications for controlled activities for short-term intrusions into the PANS-OPS and long-term intrusions into the OLS surfaces.