

AVIATION IMPACT ASSESSMENT

**DHL BADGERYS CREEK**

**SSDA 2 - NORTH**

*Prepared for DHL Supply Chain (Australia) Pty Ltd*



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## ACRONYMS

AC	Advisory Circular
AFAC	Australasian Fire and Emergency Services Council
AGL	above ground level
AHD	Australian Height Datum
AIP	Aeronautical Information Package
AIS	aviation impact statement
ALARP	as low as reasonably practicable
AMSL	above mean sea level
ARP	Aerodrome Reference Point
AS	Australian Standards
AsA	Airservices Australia
ATSB	Australian Transport Safety Bureau
BoM	Bureau of Meteorology
CAAP	Civil Aviation Advisory Publications
CAO	Civil Aviation Orders
CAR	Civil Aviation Regulation (1988)
CASA	Civil Aviation Safety Authority
CASR	Civil Aviation Safety Regulation (1998)
CFIT	controlled flight into terrain
CNS	communications, navigation and surveillance
CTAF	common traffic advisory frequency
DAH	Designated Airspace Handbook
EIS	environmental impact statement
ERC-H	en-route chart high
ERC-L	en-route chart low
ERSA	En Route Supplement Australia
GA	general aviation
ICAO	International Civil Aviation Organization
IFR	instrument flight rules
IMC	instrument meteorological conditions

LGA	local government area
LSALT	lowest safe altitude
MOC	minimum obstacle clearance
MOS	Manual of Standards
MSA	minimum sector altitude
NASAG	National Airports Safeguarding Advisory Group
NASF	National Airports Safeguarding Framework
NDB	non-directional (radio) beacon
OLS	obstacle limitation surface
PANS-OPS	Procedures for Air Navigation Services - Aircraft Operations
PSR	primary surveillance radar
RAAF	Royal Australian Air Force
RFDS	Royal Flying Doctor Service
RPT	regular public transport
RSR	route surveillance radar
SSR	secondary surveillance radar
VFR	visual flight rules
VFRG	visual flight rules guide
VMC	visual meteorological conditions

## UNITS OF MEASUREMENT

ft	feet	(1 ft = 0.3048 m)
km	kilometres	(1 km = 0.5399 nm)
m	metres	(1 m = 3.281 ft)
nm	nautical miles	(1 nm = 1.852 km)

## EXECUTIVE SUMMARY

### Introduction

This report supports a State Significant Development Application (SSDA) (SSD-70817958) submitted to the NSW Department of Planning, Housing and Industry (DPHI) on behalf of DHL Supply Chain (Australia) Pty Ltd (DHL).

The SSDA constitutes a detailed development application (DA) insofar that it is linked to and is consistent with concept plan (SSD- 70316465) by seeking consent for the construction and operation of two singular storey industrial buildings for use as a warehouse and logistics facility with 24 hour/ seven day a week operation plus car parking and associated landscaping within part (25 hectares) of Lot 1 in Deposited Plan 1306448 at 1953-2109 Elizabeth Drive, Badgerys Creek known as the DHL Masterplan site.

This SSDA represents the first of two (2) SSDAs proposed by DHL and will apply to the southern half of the DHL Masterplan site

The project vision is to develop a world class warehouse and logistics facility which is fully integrated with its green infrastructure and Connection to Country.

The Project requires an aviation impact assessment to be undertaken in accordance with:

- Civil Aviation Safety Regulations 1998
- The Airports (Protection of Airspace) Act 1996 (APARS)
- NSW Government Planning Secretary's Environmental Assessment Requirements (SSD-70817958)
- Specific requirements as advised by Airservices Australia.

The following Aviation Impact Assessment (AIA) assesses the potential impacts, provides aviation safety advice in respect of relevant requirements of air safety regulations and procedures, and informs and documents consultation with relevant aviation agencies.

### Project description

Staged construction of warehouse buildings for use as a logistics centre with 24-hour a day, seven days a week operation, comprising the following:

- Construction of two warehouses;
- Building fit-out;
- Construction of hardstand, loading and car parking;
- Landscaping works; and
- Signage.

Hence, this report refers to the development site known as SSDA -2 North and includes the following information:

- Both warehouses' maximum height of 79.6 m AHD (261.2 ft AMSL)
- Assumed cranes up to 15 m above the building, the maximum height will be up to 94.6 m AHD (310.4 ft AMSL).

## Conclusions

Based on a comprehensive analysis and assessment detailed in this report, the following conclusions were made:

### Guideline A: Measure for Managing Impact of Aircraft Noise

The Project belongs to the 'other industrial' building type, which is acceptable for all ANEF zones.

### Guideline B: Managing the Risk of Building Generated Windshear and Turbulence at Airports

The height of the Project Site is lower than the height of windshear trigger area. And narrow structures like cranes do not cause significant wind turbulence effects

### Guideline C: Managing the Risk of Wildlife Strikes in Vicinity of Airports

The Project Site is within Area A. Specifically in Guideline C, Warehouse (non-food storage) is listed as a 'very low' risk and requirement to 'Monitor' within Area A

### Guideline D: Managing the Risk of Wind Turbine Farms as Physical Obstacles to Air Navigation

As the proposed development is not a wind farm nor includes a single wind turbine this Guideline does not apply

### Guideline E: Managing the Risk of Distractions to Pilots from Lighting in Vicinity of Airports

The proponent needs to ensure that the design and construction of the proposed development limits the upward light (measured 3° to the horizontal) is no more than 150 candelas for Zone C area and 450 candelas for Zone D area during both construction and ultimate operation

### Guideline F: Managing the Risk of Intrusions into the Protected Operational Airspace of Airports

#### Certified airports

- The Project is within 30 nm of 4 certified airports and 2 military airports:
  - Western Sydney Airport
  - Sydney Airport (YSSY)
  - Bankstown Airport (YSBK)
  - Holsworthy Airport (YSHW)
  - Camden Airport (YSCN)
  - RAAF Richmond Airport (YSRI)

#### Western Sydney Airport:

- Calculating PANS-OPS surfaces is complex because of the highly technical nature of the design and interaction of procedures. The design of a full set of PANS-OPS for Stage 1 and long-term operations will be required following the formal flight path design before the start of operations. Once designed, the PANS-OPS will be protected under the Airspace Protection Regulations.
- Once the construction details can be provided before starting the procedure design, the height of the warehouse will be considered into the design and won't affect the PANS-OPS surfaces.

Other Certified Airports (Sydney Airport, Bankstown Airport, Holsworthy Military Airport, Camden Airport and RAFF Richmond Military Airport):

- Would not affect MSA
- Would not infringe Circling areas
- Would not infringe the obstacle clearance heights applicable to any of the instrument procedures

*Obstacle Limitation Surfaces*

- The Project would not infringe on the obstacle limitation surface (OLS) of any airport.

*Air Routes and Lowest Safe Altitude (LSALT)*

- The Project would not impact the Grid LSALT and any Air Route LSALT

*Airspace*

- The project Site is located outside of controlled airspace (wholly within Class G airspace) and is not located in any Prohibited and Restriction areas
- Is located within Danger Area –D556A. Consultation with the Consultation with CASA will be required. Airservices Australia will provide this report to CASA when they receive the consultation advice

*Guideline G: Protecting Aviation Facilities – Communication, Navigation and Surveillance (CNS)*

*Aviation Navigation Facilities*

- The Project potentially locate within the Ground Based Augmentation System (GBAS) BRA area.
- Aviation Projects cannot confirm any specifics as to the potential impacts as public information on the planned equipment and final locations is not available.
- Consultation with Airservices Australia will be required.

*ATC Surveillance Radar installations*

- The Project site would not impact ATC surveillance radar coverage.

*Guideline H: Protecting Strategically Important Helicopter Landing Sites (HLS)*

The proposed Project Site is located more than 3.5 km from any relevant helicopter landing sites. Therefore, the Project Site will not impact on any HLS operations

*Guideline I: Managing the Risk in Public Safety Areas at The Ends of Runways*

The Project Site will be outside the PSA area of Western Sydney Airport

## **Summary of key recommendations**

As a result of this assessment, the following recommendations are made:

- If approved, details of the Project must be reported to Airservices Australia via this email address: [vod@airservicesaustralia.com](mailto:vod@airservicesaustralia.com), and published in En Route Supplement Australia (ERSA) and other relevant aeronautical chart products.

- Consultation with Airservices Australia regarding PANS-OPS and CNS is required, and once public information available, it is recommended that the assessment is revisited.

## 1. INTRODUCTION

### 1.1. Situation

This report supports a State Significant Development Application (SSDA) (SSD-70817958) submitted to the NSW Department of Planning, Housing and Industry (DPHI) on behalf of DHL Supply Chain (Australia) Pty Ltd (DHL).

The SSDA constitutes a detailed development application (DA) insofar that it is linked to and is consistent with concept plan (SSD- 70316465) by seeking consent for the construction and operation of two singular storey industrial buildings for use as a warehouse and logistics facility with 24 hour/ seven day a week operation plus car parking and associated landscaping within part (25 hectares) of Lot 1 in Deposited Plan 1306448 at 1953-2109 Elizabeth Drive, Badgerys Creek known as the DHL Masterplan site.

This SSDA represents the first of two (2) SSDAs proposed by DHL and will apply to the southern half of the DHL Masterplan site.

The project vision is to develop a world class warehouse and logistics facility which is fully integrated with its green infrastructure and Connection to Country. Having been informed by key landscape and Connecting to Country themes, the development of the site can deliver on the objectives that contribute to the Aerotropolis Vision which is to:

- Achieve a landscape led approach and starting with Country- the project has been guided by Cultural Design Principals and local leaders in the Aboriginal community.
- Create a new global gateway which will be a regionally and nationally significant employment area by providing for warehouse and logistics land uses in a highly sought-after location adjacent to the new Western Sydney Airport.
- Design a cool, green new city with a landscape approach that increases urban tree canopy, provides useable open space areas throughout and restores key riparian corridors on the site.
- Transitioning to an Aerotropolis through a sustainable, orderly and transformational development in the Western Sydney Aerotropolis,
- Retaining a green, biodiverse landscape informed by Country and an indigenous lens on maintenance and land management.

### 1.2. Purpose and Scope

The scope of work is to carry out an aviation impact assessment (AIA) to determine if the proposed building will affect aviation safety and will:

- Review the site plans against all associated regulatory and airspace authorities
- Review the Landrum and Brown reports
- Assess the potential impact of the proposed development, including proposed construction cranes
- Provide an aeronautical impact assessment report for both north and south sites.

Assistance will be provided in support of stakeholder consultation and engagement in preparing the assessment and negotiating acceptable mitigation to identified impacts.

### **1.3. Methodology**

The engagement will generally be delivered as outlined below:

1. Review client material
2. Review current relevant regulatory requirements and information sources
3. Review Landrum and Brown's reports
4. Identify aviation assets and activities within the vicinity of the Project and identify any aviation constraints to Obstacle Limitation Surfaces (OLS), PAN-OPS surfaces and designated airspace
5. Prepare two separate AIAs for north and south sites, detailing the advice on safeguarding airspace for consideration by Airservices Australia and send them to the Client for comment
6. Consult with stakeholders as required and report feedback in the final reports and
7. Finalise the reports for Client acceptance.

The aviation impact assessment and supporting technical data will provide evidence and analysis for the planning application to demonstrate that appropriate risk mitigation strategies have been identified.

### **1.4. Aviation Impact Statement (AIS)**

The AIS included in this report (see Section 5) includes the following specific requirements as advised by Airservices Australia:

#### **Aerodromes:**

- Specify all certified aerodromes that are located within 30 nm (55.6 km) of the project site.
- Nominate all instrument approach and landing procedures at these aerodromes.
- Review the potential effect of project operations on the operational airspace of the aerodrome(s).

#### **Airspace:**

- Nominate the airspace classification – A, C, D, E, G etc where the project site is located.

#### **Navigation/Radar:**

- Nominate radar navigation systems with coverage overlapping the site.

### **1.5. Material reviewed**

Material provided by the Proponent for preparation of this assessment include:

- DA 2- WH 1 & 2 - UPDATED 29.08.2024 package

## 2. BACKGROUND

### 2.1. Site overview

The subject site is located within part of Lot 1 in Deposited Plan 1306448, at 1953-2109 Elizabeth Drive, Badgerys Creek. The site is approximately 25 hectares in size and situated north of the new Western Sydney Airport. It is located within the Penrith local government area (LGA) and is approximately 12.5 km from Penrith Central Business District (CBD), 27 km from Parramatta CBD, and 47 km from Sydney CBD. The site is owned by Roberts Jones Development Pty Ltd.

An overview of the project site relative to Western Sydney Airport is provided in Figure 1 (source: DHL, Google Earth).



Figure 1 Project Site overview relative to Western Sydney Airport.

### 2.2. Project Description

Staged construction of warehouse buildings for use as a logistics centre with 24-hour a day, seven days a week operation, comprising the following:

- Construction of two warehouses;
- Building fit-out;
- Construction of hardstand, loading and car parking;
- Landscaping works; and
- Signage.

Hence, this report refers to the development site known as SSDA -2 North and includes the following information:

- Both warehouses' maximum height of 79.6 m AHD (261.2 ft AMSL)

Figure 2 and Figure 3 show the elevation information for the project development (source: DHL).

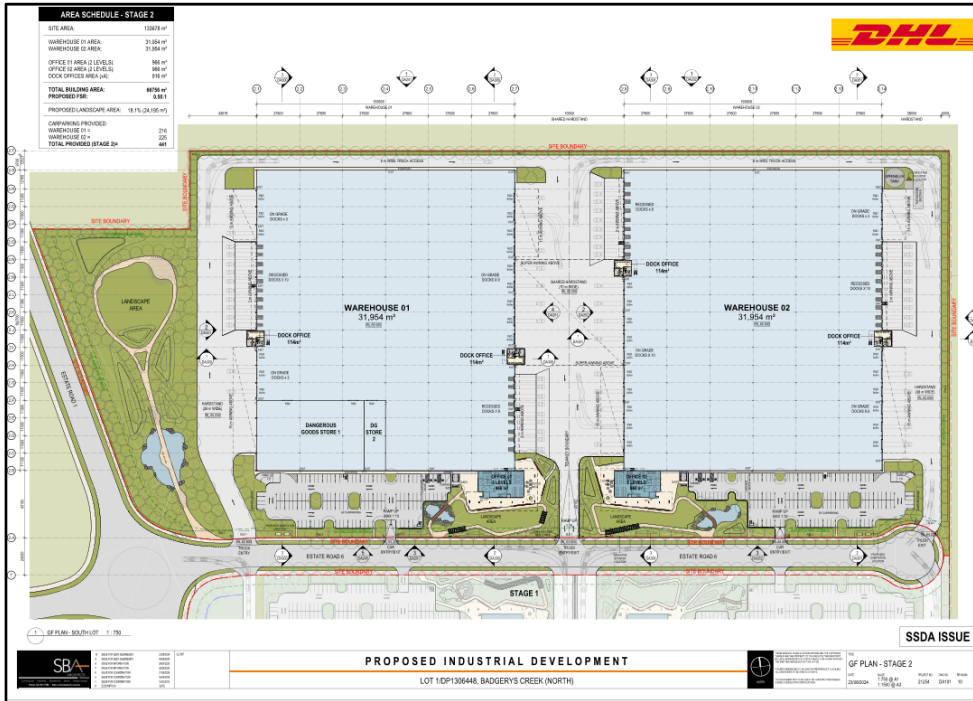


Figure 2 Proposed industrial development – GF Plan – North



Figure 3 Proposed industrial development – Elevation & Section – North.

**2.3. Temporary crane operations**

Assumed cranes up to 15 m above the building, the maximum height will be up to 94.6 m AHD (310.4 ft AMSL).

## 3. EXTERNAL CONTEXT

### 3.1. National Airports Safeguarding Framework

The National Airports Safeguarding Advisory Group (NASAG) was established by the Commonwealth Department of Infrastructure and Transport to develop a national land use planning framework called the National Airports Safeguarding Framework (NASF). The purpose of the NASF is to enhance the current and future safety, viability, and growth of aviation operations at Australian airports through:

- the implementation of best practice in relation to land use assessment and decision making in the vicinity of airports
- assurance of community safety and amenity near airports
- better understanding and recognition of aviation safety requirements and aircraft noise impacts in land use and related planning decisions
- the provision of greater certainty and clarity for developers and landowners
- improvements to regulatory certainty and efficiency
- the publication and dissemination of information on best practice in land use and related planning that supports the safe and efficient operation of airports.

#### 3.1.1. NASF Guideline A: Measures for Managing Impacts of Aircraft Noise

This guideline principally provides recommendations to local planning authorities on the implementation of noise policies within their legislative frameworks using principles set out in the Australian Noise Exposure Forecast (ANEF) System and the Australian Standard AS 2021-2015 Acoustics – Aircraft Noise Intrusion – Building Siting and Construction (AS2021).

##### *Greenfield Areas*

- *No noise-sensitive developments within a 20 ANEF where that land was previously rural or for non-urban purposes.*
- *Avoid noise-sensitive development where ultimate capacity or long range noise modelling for the airport indicates either:*
  - *20 or more daily events greater than 70 dB(A);*
  - *50 or more daily events of greater than 65 dB(A); or*
  - *100 events or more daily events of greater than 60 dB(A).*
- *Consider likely night-time aircraft movements (11pm to 6am) with 60 dB(A) or greater noise impact.*

##### *Brownfield Areas (Urban Land)*

- *Consider balance of aircraft noise impacts against strategic planning outcomes.*
- *Manage implications of aircraft noise through construction and / or disclosure processes to residents / occupants.*
- *Consider if new development improves existing noise issues through improved management of implications.*

- Consider dB(A) level guidelines shown elsewhere.

#### *New Noise Sensitive Developments within Residential Areas*

- Physically reduce aircraft noise through construction and / or AS2021 processes)
- Ensure disclosure processes to residents / occupants if one or more of the criteria in shown in section 3.2.1.1 (Points 2 and 3) apply.

#### *Airports without an ANEF*

- Consider application of 3.2.1.1 requirements for the airport based on the following zones of influence;
  - Within 15 km of an international airport, major domestic airport, or major military aerodrome.
  - Within 10 km of a domestic airport with regular scheduled public transport services
  - Within 5 km of any other type of aerodrome for which an ANEF chart is unavailable.

### **3.1.2. NASF Guideline B: Managing the Risk of Building Generated Windshear and Turbulence at Airports**

This guideline principally provides recommendations for a risk-based approach to the consideration of influences on the wind conditions on runways. The “requirements” set out below are extracted from those recommendations.

Guideline B sets out a clear process map for the assessment of the risk presented by development.:

Step 1: Assessment Trigger Area

Step 2: Building Height Assessment

Step 3: Risk Assessment / Safety Case (incl BWD Check)

Step 4: Wind Engineering Assessment

Step 5: Modifications and Mitigations.

### **3.1.3. NASF Guideline C: Managing the Risk of Wildlife Strikes in Vicinity of Airports**

This guideline principally provides recommendations to local planning authorities on implementing policies to limit the impact of (generally flying) wildlife on aircraft operations within their legislative frameworks using principles set out in International Civil Aviation Organisation (ICAO) documentation.

The proposed development should not increase the risk of wildlife strikes at airports. Land uses that present a risk of attracting wildlife should be controlled (and mitigated) within 3 km, 8 km and 13 km of an airport.

### **3.1.4. NASF Guideline D: Managing the Risk of Wind Turbine Farms as Physical Obstacles to Air Navigation**

This guideline principally provides recommendations to local planning authorities and proponents of wind farm developments on the implementation of policies to limit the impact of such development on aircraft operations. The “requirements” set out below are extracted from those recommendations.

As the proposed development is not a wind farm nor includes a single wind turbine this Guideline does not apply. Requirements and assessment approach are therefore not included in this report.

### **3.1.5. NASF Guideline E: Managing the Risk of Distractions to Pilots from Lighting in Vicinity of Airports**

This guideline principally provides recommendations to local planning authorities and airport operators on the implementation of policies to address the risk of distractions to pilots of aircraft from lighting and light fixtures near airports.

#### **Key considerations for managing the risk of distractions to pilots from lighting in the vicinity of airports**

*It is important that these guidelines are consulted or CASA advice sought when new sources of significant lighting are being planned in the vicinity of airports. Examples of such developments include:*

- motorway/freeway lighting
- sea container yards
- wharves
- refinery flare plumes
- stadium flood lighting
- construction lighting.

### **3.1.6. NASF Guideline F: Managing the Risk of Intrusions into the Protected Operational Airspace of Airports**

This guideline provides guidance to State/Territory and local government decision makers as well as airport operators to jointly address the issue of intrusions into the operational airspace of airports by tall structures, such as buildings, cranes and transmission lines, as well as trees in the vicinity of airports.

#### **Key considerations for managing risk of intrusions into the protected operational airspace of airports**

##### **Protection of visual operations - Obstacle limitation surfaces**

*The first group of criteria are used to determine the obstacle limitation surfaces (OLS) for a runway. Criteria for determining these surfaces are established by the International Civil Aviation Organisation (ICAO). In Australia, CASA publishes these criteria in the Manual of Standards for Part 139 of the Civil Aviation Safety Regulations.*

*Structures, trees or other activities that intrude into the OLS could constitute obstacles to aircraft taking off or approaching to land. The OLS for an airport charts the volume and dimensions of operational airspace that should be kept free of obstacles to aircraft operations being conducted under VFR or during the visual stages of IFR operations.*

*It is important to note that the OLS does not prohibit all intrusions. The aim is to ensure that all objects that intrude into the OLS can be identified and assessed for their potential impact on aircraft operations. The assessment will enable a determination on whether the intrusion is permissible, and if so, a determination on whether any risk mitigation requirements should be imposed.*

*The requirements to protect operational airspace will be enforced most rigorously along the extended centrelines of runways in the approach and takeoff areas. This could extend up to 15 kilometres from the ends of runways at major airports. Other OLS surfaces that protect aircraft circling to land may also extend up to 15 kilometres from major airports.*

*The effects of individual obstacles may be relatively minor, but together a number of obstacles may seriously limit runway utilisation, cause airspace congestion and reduce the effective handling capacity of the airport. It is therefore important to understand that the pre-existence of a structure or*

*other intrusion into operational airspace does not necessarily mean that a new proposal to penetrate operational airspace will be approved under Commonwealth legislation.*

*Land use planning authorities and state/territory governments should be aware that all intrusions into the OLS have the potential to create aviation safety risks and to limit the scope of aviation operations into and out of the airport.*

## **Protection of instrument operations - Procedures for Air Navigation Services – Operations (PANS-OPS) surfaces**

*A second group of criteria is used to determine the volumes and dimensions of airspace required to protect the safety of IFR operations. Under IFR operations, pilots fly aircraft relying on instruments for navigation. Airspace protection for IFR operations cannot allow for any long-term penetrations.*

*ICAO established these criteria which are published in a document titled ‘Procedures for Air Navigation Services – Operations (PANS-OPS)’. The surfaces determined by using the criteria in the PANS-OPS publication are called PANS-OPS surfaces.*

*The PANS-OPS surfaces are used in the construction of take-off, landing and approach procedures based entirely on navigation with sole reference to aircraft instruments. They are designed to protect aircraft from colliding with obstacles when flying on instruments. Minimum safe altitudes are established for each segment of an instrument procedure.*

*If it is agreed by all stakeholders that a long-term penetration of the PANS-OPS surfaces is essential, the PANS-OPS surfaces must be raised so they are clear of the development causing the penetration. However, this may also have operational penalties for airport operations and could have community impacts, such as re-design of flight paths that increase the population exposed to high levels of aircraft noise.*

### **3.1.7. NASF Guideline G: Protecting Aviation Facilities – Communication, Navigation and Surveillance (CNS)**

The guideline provides land use planning information to enable the protection of CNS facilities which support the systems and processes in place by Airservices Australia (Airservices), the Department of Defence (Defence) or other agencies under contract with the Australian Government, to safely manage the flow of aircraft into, out of and across Australian airspace.

### **3.1.8. NASF Guideline H: Protecting Strategically Important Helicopter Landing Sites (HLS)**

The purpose of this guideline is to protect important Helicopter Landing Sites (HLS) from infringements. An HLS is a specific nominated area (not located on an aerodrome) wholly or partly used for the arrival or departure of helicopters for strategically important purposes.

#### **Key Considerations:**

*It will be the responsibility of each jurisdiction to consult with the asset owner to identify those HLS that are considered to be of strategic importance or those that are to be protected in the interest of public safety.*

*SHLS to protect should include:*

- a) a HLS associated with a hospital; or*
- b) an elevated HLS1, located within a populated area; or*
- c) a HLS subject to instrument flight procedures; or*

- d) any other facility identified as strategic by State/Territory or Commonwealth government/authorities.

Where otherwise not required under state/territory provisions, a responsible planning authority or proponent is encouraged to consult with the relevant SHLS asset owner to establish protocols for the referral process within their jurisdiction including:

- a) material to be provided as part of the referral;
- b) the timeframes in which advice is required to be provided; and
- c) the format of any advice provided and the wording of appropriate conditions that can be applied to mitigate any impacts. This should include standard conditions that can be applied in the event that the asset owner is unable to respond within the required assessment timeframes.

### 3.1.9. NASF Guideline I: Managing the Risk in Public Safety Areas at The Ends of Runways

Guideline I provides guidance to Australian Government, state, territory and local government decision makers on the assessment and treatment of potential increases in risk to public safety which could result from an aircraft incident or development proposal in areas near the end of an airport runway. Guideline informs a more consistent approach to the application of Public Safety Areas (PSAs) at and near Australian airports.

This Guideline suggests a balanced approach with the PSA made up of two different areas:

*Outer area = 1 in 100,000 ( $1 \times 10^{-5}$ ) risk level per year*

This identifies the area (or risk contour) within which, any person living or working for a period of a year, has approximately a 1 in 100,000 chance per year of being killed as a result of an aircraft incident (see Figure 4).

*Inner area = 1 in 10,000 ( $1 \times 10^{-4}$ ) risk level per year*

This identifies the higher risk area (or risk contour) immediately adjoining the end of the runway within which, any person living or working for a period of a year, has approximately a 1 in 10,000 chance per year of being killed as a result of an aircraft incident (see Figure 4).

The dimensions of the two areas are dependent on a range of airport specific factors (such as forecasts about the numbers and types of aircraft movements).

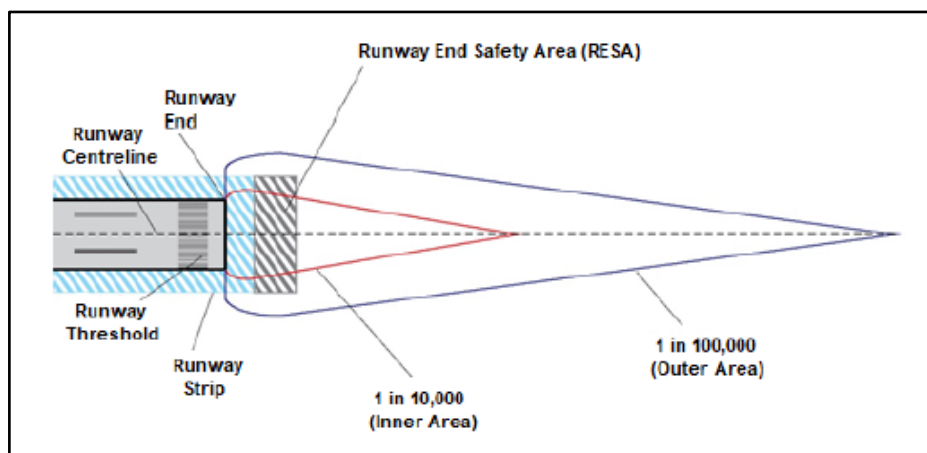


Figure 4 Example of PSA showing inner area and outer area.

### 3.2. Airports (Protection of Airspace) Regulations 1996

Part 12 of the *Airports Act 1996* and the *Airports (Protection of Airspace) Regulations 1996* establish a framework for the protection of airspace at and around airports. The following summary of these requirements is provided on the Commonwealth Department of Infrastructure, Transport, Regional Development and Communications website.

The *Airports Act 1996* defines any activity resulting in an intrusion into an airport's protected airspace to be a "controlled activity", and requires that controlled activities cannot be carried out without approval.

The Regulations provide for the Department or the airport operator to approve applications to carry out controlled activities, and to impose conditions on an approval.

Any activity that infringes an airport's protected airspace is called a **controlled activity** and requires approval before it can be carried out. Controlled activities include the following:

- permanent structures, such as buildings, intruding into the protected airspace;
- temporary structures such as cranes intruding into the protected airspace; and
- any activities causing intrusions into the protected airspace through glare from artificial light or reflected sunlight, air turbulence from stacks or vents, smoke, dust, steam or other gases or particulate matter.

The Regulations differentiate between **short-term** (less than 3 months) and **long-term** controlled activities. The Regulations provide for the airport operator to approve *short-term* controlled activities, excluding PANS-OPS infringements, and for the Department to approve long-term controlled activities, or *short-term* controlled activities referred to it by the airport operator, including short-term infringements of the PANS-OPS surface. However, long term intrusions of the PANS-OPS surface are prohibited.

Applications to carry out a controlled activity are to be made to the airport operator in writing. The information required in the application must include:

1. a description of the proposed controlled activity (building construction, crane operation etc);
2. its precise location (street directory grid references are suitable);
3. if the controlled activity consists of the erection of a building or structure:
  - a. the proposed maximum height of the structure above the Australian Height Datum (including any antennae or towers), and
  - b. the proposed maximum height of any temporary structure or equipment (e.g. cranes) intended to be used in the erection of the structure.
4. the purpose of the controlled activity.

The airport operator will conduct the initial assessment of the application in terms of:

- whether the activity results in an intrusion into the OLS or PANS-OPS surface;
- the extent of the intrusion; and
- the precise location of the development or activity.

The airport operator is required to invite the following organisations to assess or comment on an application:

- **the Civil Aviation Safety Authority (CASA)** for an assessment of the impact on aviation safety;

- **Airservices Australia** for assessments of proposals resulting in a penetration of the PANS-OPS surface or temporary redirection of flight paths;
- **the local council authority** responsible for building approvals; and
- **the Department of Defence** in the case of joint-user airports.

For short term controlled activities, comments are only required from CASA and Airservices.

The approval process varies depending on the type of controlled activity:

- **short-term controlled activities** which penetrate the OLS can be approved/refused by the airport operator after consultation with CASA and Airservices Australia or referred by the airport to the Department for a decision. However, if the short term controlled activity penetrates the PANS-OPS surfaces, airport operators are 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 controlled activities penetrating the OLS** are referred by the airport to the Department for a decision after consultation with CASA, Airservices and the relevant building authority; and
- **long-term controlled activities penetrating the PANS-OPS airspace** are not permitted, and the airport operator can notify the refusal of such controlled activities.

The Regulations require any decision by the airport operator to be made in the interests of the *safety, efficiency or regularity* of existing or future air transport operations into or out of the airport.

### **3.3. Civil Aviation Safety Regulations Part 139—Aerodromes**

The Civil Aviation Safety Authority (CASA) regulates aviation activities in Australia. Applicable requirements include the Civil Aviation Safety Regulations (CASR) Part 139—*Aerodromes*, the associated Manuals of Standards CASR Part 139—*Aerodromes* and other guidance and advisory material.

### **3.4. Western Sydney Airport – Airport Safeguarding**

Land near Western Sydney Airport comes with specific planning protection overlays, which are referred to in Part 3 of the State Environmental Planning Policy (Precincts-Western Parkland City) 2021 (SEPP) and the National Airports Safeguarding Framework (NASF).

1. *The maximum height developments can be built to on land within the airport without breaching the obstacle limitation surface and becoming an obstacle or hazard to aircraft operations;*
2. *Wildlife buffer zones, which refers to land within certain distances of the airport where wildlife hazard issues need to be considered;*
3. *Land within the lighting intensity areas – where significant lighting and/or coloured lighting is restricted or needs to be designed to reduce the risk of distracting pilots;*
4. *Areas of land that are likely to be affected by aircraft operations. In these cases, strict assessments will be carried out to make sure the development doesn't lead to unnecessary constraints on airport operations;*
5. *Areas of land near the airport where buildings could potentially generate or increase wind turbulence or windshear and cause aircraft instability during landing or take-off;*

6. The areas of land at the end of the airport runways that are considered to be risk areas for aircraft incidences involving take-off or landing – and need to be strictly controlled and managed to reduce the amount of people who could be affected if such an incident took place.

### 3.5. Western Sydney Aerotropolis State Environmental Planning Policy (SEPP) Maps

Western Sydney Aerotropolis SEPP Maps including the following:

- Noise Exposure Contour Map (Figure 5)
- Obstacle Limitation Surface Map (Figure 6)
- Lighting Intensity and Wind Shear Map (Figure 7)
- Wildlife Buffer Zone Map (Figure 8)
- Public Safety Area Map (Figure 9).

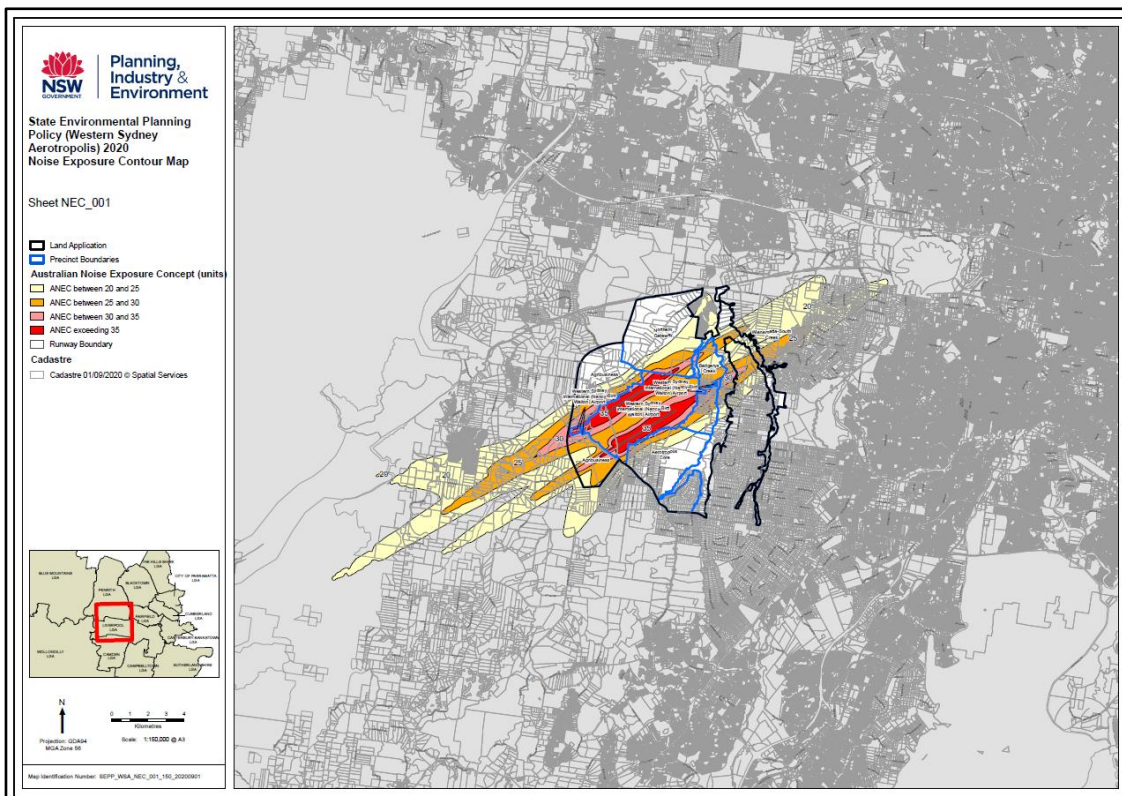


Figure 5 Noise Exposure Contour Map.

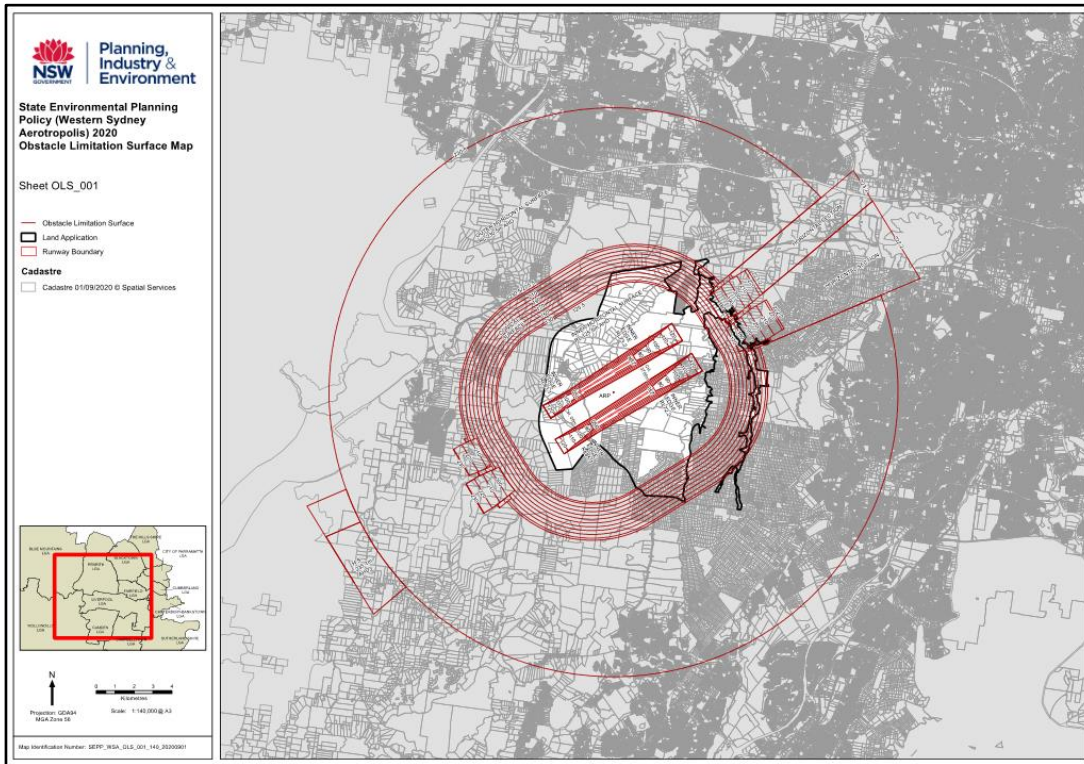


Figure 6 Obstacle Limitation Surface Map.

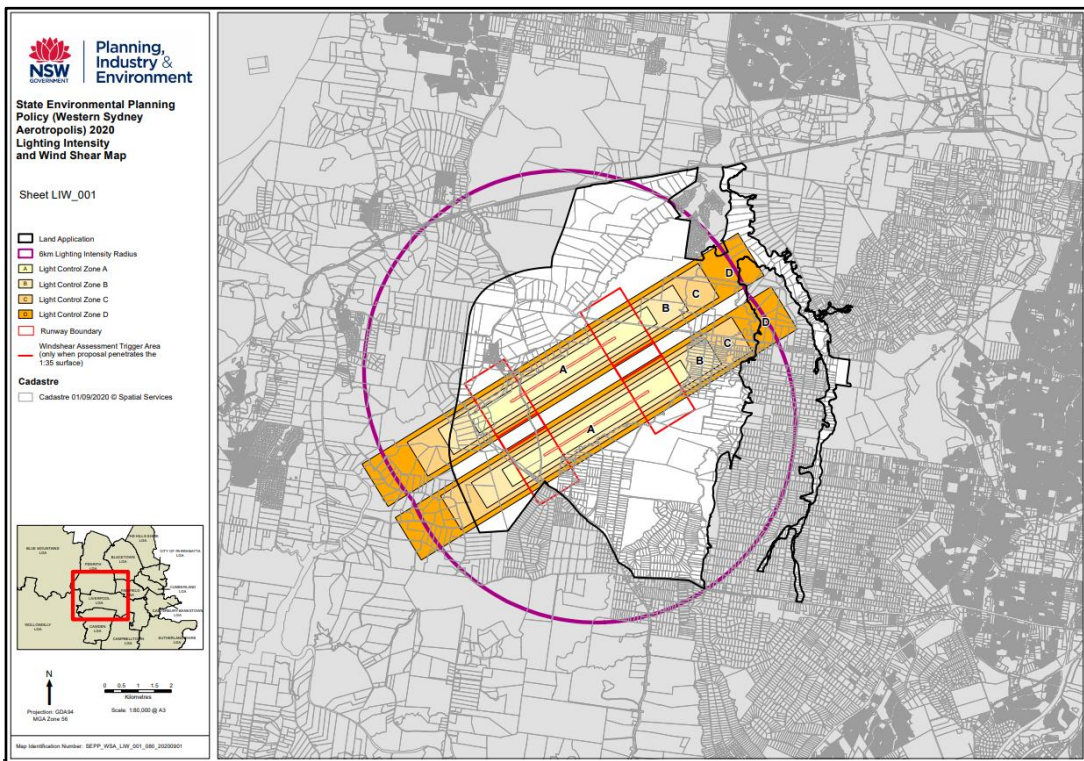


Figure 7 Lighting Intensity and Wind Shear Map.

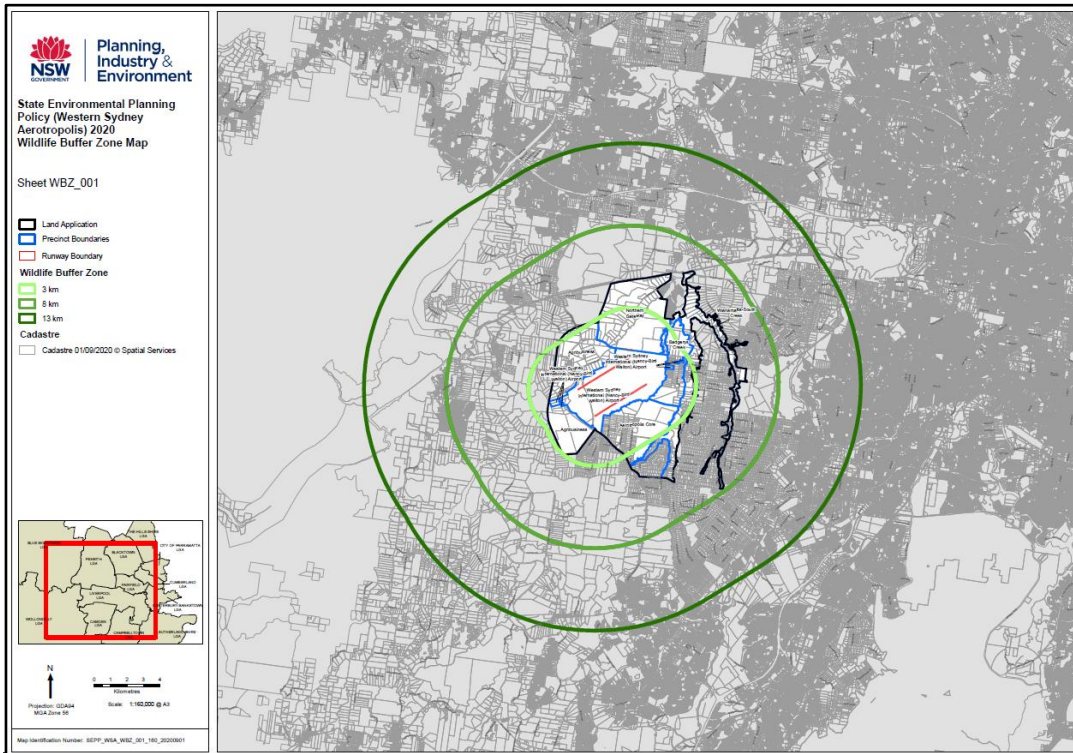


Figure 8 Wildlife Buffer Zone Map.

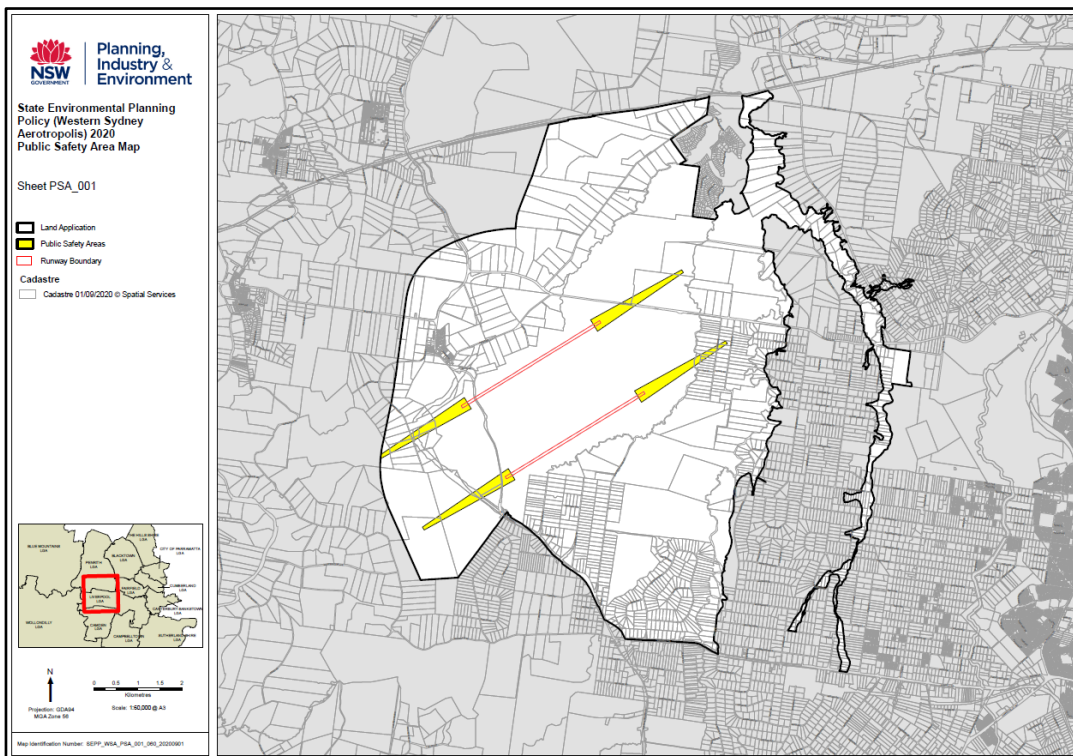


Figure 9 Public Safety Area Map.

### **3.6. NSW State Environmental Planning Policy (Western Parkland City) 2021**

NSW State Environmental Planning Policy (Western Parkland City) 2021 (current version for 28 June 2024)  
Part 4.3 Development Controls – Airport safeguards including:

#### *4.17 Aircraft Noise*

(1) *The objectives of this section are—*

- (a) to prevent certain noise sensitive development on land near the Airport, and*
- (b) to minimise the impact of aircraft noise for other noise sensitive development, and*
- (c) to ensure that land use and development near the Airport do not hinder or have other adverse impacts on the ongoing, safe and efficient 24 hours a day operation of the Airport.*

*(2) Development consent must not be granted to noise sensitive development if the development is to be located on land that is in an ANEF or ANEC contour of 20 or greater.*

*(3) Subsection (2) applies despite the following—*

- (a) Part 2, Divisions 7 and 8 of State Environmental Planning Policy (Affordable Rental Housing) 2009,*
- (b) Chapter 3 of State Environmental Planning Policy (Housing for Seniors or People with Disability) 2004,*
- (c) State Environmental Planning Policy (Educational Establishments and Child Care Facilities) 2017.*

*(4) Despite subsection (2), development consent may be granted to development for the purposes of dwelling houses on land that is in an ANEF or ANEC contour of 20 or greater if—*

*(a) immediately before the commencement of this Chapter—*

- (i) there were no dwellings on the land, and*
- (ii) development for the purposes of dwelling houses was permitted on the land, and*

*(b) the consent authority is satisfied that the development will meet the indoor design sound levels.*

*(4A) Subsection (2) does not apply to development for the purposes of subdivision of land in an ANEF or ANEC contour of 20 or greater if the development application was made before 1 October 2020.*

#### *4.18 Building wind shear and turbulence*

*(1) The objective of this section is to safeguard Airport operations from wind shear and turbulence generated by buildings.*

*(2) This section applies to development—*

- (a) on land shown as the “Windshear Assessment Trigger Area” on the Lighting Intensity and Wind Shear Map, and*
- (b) that penetrates the 1:35 surface.*

(2A) Development consent must not be granted to the development unless the consent authority has consulted the relevant Commonwealth body.

(3) For the purposes of this section, development penetrates the 1:35 surface if the distance from the runway centreline to the closest point of the building is less than or equal to 35 times the height above runway level of the building.

#### 4.19 Wildlife hazard

(1) The objective of this section is to regulate development on land surrounding the Airport where wildlife may present a risk to the operation of the Airport.

(2) Development consent must not be granted to relevant development on land in the 13 km wildlife buffer zone unless the consent authority—

(a) has consulted the relevant Commonwealth body, and

(b) has considered a written assessment of the wildlife that is likely to be present on the land and the risk of the wildlife to the operation of the Airport provided by the applicant, which includes—

(i) species, size, quantity, flock behaviour and the particular times of day or year when the wildlife is likely to be present, and

(ii) whether any of the wildlife is a threatened species, and

(iii) a description of how the assessment was carried out, and

(c) is satisfied that the development will mitigate the risk of wildlife to the operation of the Airport, including, for example, measures relating to—

(i) waste management, landscaping, grass, fencing, stormwater or water areas, or

(ii) the dispersal of wildlife from the land by the removal of food or the use of spikes, wire or nets.

(3) Despite subsection (2), development for the following purposes is prohibited on land in the 3 km wildlife buffer zone—

(a) livestock processing industries,

(b) turf farming,

(c) waste or resource management facilities that consist of outdoor processing, storage or handling of organic or putrescible waste.

#### 4.20 Wind turbines

(1) The objective of this section is to regulate the construction of wind turbines and wind monitoring towers on land within 30 kilometres of the Airport.

(2) Development for the following purposes is prohibited on land in the 3 km zone—

(a) electricity generating works comprising a wind turbine,

(b) wind monitoring towers that are not ancillary or incidental to the Airport.

(3) Development consent must not be granted to development for the purposes of a large wind monitoring tower in the 3–30 km zone unless the consent authority has consulted the relevant Commonwealth body.

(4) Development consent must not be granted to development for the purposes of a electricity generating works comprising a wind turbine on land in the 3–30 km zone unless the consent authority—

(a) has consulted the relevant Commonwealth body, and

(b) has considered a written assessment of the risk of the development to the safe operation of the Airport provided by the applicant, and

(c) is satisfied that the development will adequately mitigate the risk to the safe operation of the Airport.

#### 4.21 Lighting

(1) The objective of this section is to safeguard Airport operations from the risk of lighting and reflectivity distractions for pilots.

(2) Development consent must not be granted to development for the following purposes on land shown as the “6km Lighting Intensity Radius”, a “Light Control Zone” or a “Runway Boundary” on the Lighting Intensity and Wind Shear Map unless the consent authority has consulted the relevant Commonwealth body—

(a) installation and operation of external lighting (whether coloured or white lighting) in connection with development for the following purposes—

(i) classified roads,

(ii) freight transport facilities,

(iii) heavy industrial storage establishments,

(iv) recreation facilities (major),

(v) recreation facilities (outdoor),

(b) installation and operation of external lighting in connection with construction works that is likely to be obtrusive or create light spill outside the land on which the construction works are carried out.

#### 4.22 Airspace operations

(1) The objectives of this section are—

(a) to provide for the effective and ongoing operation of the Airport by ensuring that its operation is not compromised by development that penetrates the prescribed airspace for the Airport, and

(b) the relevant Commonwealth body does not object to the development.

(2) This section applies to development on land shown on the Obstacle Limitation Surface Map that is a controlled activity within the meaning of Part 12, Division 4 of the Airports Act 1996 of the Commonwealth.

(3) Development consent must not be granted to development to which this section applies unless—

- (a) the consent authority has consulted the relevant Commonwealth body, and
- (b) the relevant Commonwealth body advises the consent authority that—
  - (i) the development will penetrate the prescribed airspace but it does not object to the development, or
  - (ii) the development will not penetrate the prescribed airspace.

#### 4.23 Public safety

(1) The objective of this section is to regulate development on land on which there is an appreciable risk to public safety from the operation of the Airport.

(2) Development for the following purposes is prohibited on land shown as the “public safety area” on the Public Safety Area Map—

*Camping grounds; Caravan parks; Cemeteries; Centre-based child care facilities; Commercial premises; Community facilities; Correctional centres; Crematoria; Eco-tourist facilities; Education establishments; Entertainment facilities; Function centres; Funeral homes; Health services facilities; Heavy industrial storage establishments; Industrial retail outlets; Industrial training facilities; Industries; Information and education facilities; Passenger transport facilities; Places of public worship; Recreation areas; Recreation facilities (indoor); Recreation facilities (major); Recreation facilities (outdoor); Registered clubs; Residential accommodation; Service stations; Tourist and visitor accommodation*

(3) Development consent must not be granted to development for a purpose not specified in subsection (2) on land shown as the “public safety area” on the Public Safety Area Map unless the consent authority—

- (a) has considered a written assessment of the risk of the development to persons provided by the applicant, which includes—
  - (i) the risk to persons on the land in the event of an emergency or other incident at or around the Airport, including an incident involving an aircraft landing or taking off from the Airport, and
  - (ii) the likely number of people who will use or otherwise be present on the land, and
  - (iii) the compatibility of the development with the risk, including in relation to the number of people who will use or otherwise be present on the land, and
- (b) is satisfied that the development will adequately mitigate the risk to persons on the land, including by limiting the number of people or vehicles.

#### 4.23A Operation of certain air transport facilities

(1) The objective of this section is to regulate development that may impact the operation of certain air transport facilities.

(2) Development consent must not be granted to development on land shown as the “Building Restricted Area” on the Building Restricted Area Map unless the consent authority—

- (a) has consulted the relevant Commonwealth body, and

*(b) is satisfied that the development will not adversely impact the operation of communication and air traffic control facilities or structures associated with the Airport's air transport facilities.*

### **3.7. State Environmental Planning Policy (Industry and Employment) 2021**

NSW State Environmental Planning Policy (Industry and Employment) 2021 (current version - 04 March 2024)  
Part 2.5 Miscellaneous provisions including:

#### *2.36 Development in areas subject to aircraft noise*

*(1) The objectives of this section are as follows—*

*(a) to prevent certain noise sensitive developments from being located near the Airport and its flight paths,*

*(b) to assist in minimising the impact of aircraft noise from the Airport and its flight paths by requiring appropriate noise attenuation measures in noise sensitive buildings,*

*(c) to ensure that land use and development in the vicinity of the Airport do not hinder, or have other adverse impacts on, the ongoing, safe and efficient operation of the Airport.*

*(2) This section applies to development—*

*(a) on land that is—*

*(i) in the vicinity of the Airport and its flight paths, and*

*(ii) in either an ANEF contour of 20 or greater or an ANEC contour of 20 or greater, and*

*(b) that the consent authority considers is likely to be adversely affected by aircraft noise.*

*(2A) Despite subsection (2), this section does not apply to development on land to which State Environmental Planning Policy (Precincts—Western Parkland City) 2021, Chapter 4 applies.*

*(3) Before determining a development application for development to which this section applies, the consent authority—*

*(a) must consider whether the development will result in an increase in the number of dwellings or people affected by aircraft noise, and*

*(b) must consider the location of the development in relation to the criteria set out in Table 2.1 (Building Site Acceptability Based on ANEF Zones) in AS 2021:2015, and*

*(c) must be satisfied that the development will meet the indoor design sound levels set out in Table 3.3 (Indoor Design Sound Levels for Determination of Aircraft Noise Reduction) in AS 2021:2015.*

*(4) Despite another provision of this Chapter, development consent must not be granted to development on land to which this section applies for the purposes of a place of public worship, a centre-based child care facility or a TAFE establishment or for residential development.*

#### *2.37 Airspace operations*

*(1) The objectives of this section are as follows—*

*(a) to provide for the effective and ongoing operation of the Airport by ensuring that such operation is not compromised by proposed development that penetrates the prescribed airspace for the Airport,*

*(b) to protect the community from undue risk from that operation.*

*(2) If a development application is received and the consent authority is satisfied that the proposed development will penetrate the prescribed airspace, before granting development consent, the consent authority must consult with the relevant Commonwealth body about the application.*

*(3) The consent authority may grant development consent for the development if the relevant Commonwealth body advises that—*

*(a) the development will penetrate the prescribed airspace but it has no objection to its construction, or*

*(b) the development will not penetrate the prescribed airspace.*

*(4) To avoid doubt, the consent authority must not grant development consent for the development if the relevant Commonwealth body advises that the development will penetrate the prescribed airspace and should not be constructed.*

#### **2.38 Development of land adjacent to Airport**

*(1) The objectives of this section are as follows—*

*(a) to provide for the effective and ongoing operation of the Airport by ensuring that such operation is not compromised by proposed development in close proximity to the Airport,*

*(b) to protect the community from undue risk from that operation.*

*(2) This section applies to development on land, any part of which is less than 13 kilometres from a boundary of the Airport.*

*(3) The consent authority must not grant consent for development to which this section applies unless the consent authority is satisfied that the proposed development will not attract birds or animals of a kind and in numbers that are likely to increase the hazards of operating an aircraft.*

### **3.8. Penrith Local Environmental Plan 2010**

Penrith Local Environmental Plan 2010 (current version for 20 May 2024) only states Dwelling houses (in Zones RU1, RU2, RU4, R5 and C4) and additions to dwelling houses (in Zone C4)

*Must not be on land in the 20 ANEF contour, or a higher ANEF contour, of the proposed Badgerys Creek Airport.*

## 4. CONSULTATION

The following list of stakeholders were identified as requiring consultation:

1. Airservices Australia
2. Department of Defence
3. Western Sydney Airport

Details and results of the consultation activities are provided in Table 1.

Table 1 Stakeholder consultation details

<i>Agency/Contact</i>	<i>Activity/Date</i>	<i>Response/ Date</i>	<i>Issues Raised During Consultation</i>	<i>Action Proposed</i>
Airservices				
Department of Defence				
Western Sydney Airport				

## 5. AVIATION IMPACT STATEMENT

The proposed Project Site is located within 30 nm of 4 certified airports and 2 military airports:

- Western Sydney Airport - 3.2 km (1.77 nm)
- Camden Airport (YSCN) – 19.7 km (10.6 nm)
- Bankstown Airport (YSBK) – 24.4 km (13.2 nm )
- Holsworthy Military Airport (YSHW) – 24.7 km (13.4 nm)
- RAAF Richmond Military Airport (YSRI) – 30.1 km (16.3 nm)
- Sydney Airport (YSSY) – 42 .1 km (22.7 nm)

### 5.1. Western Sydney Airport

Western Sydney International (Nancy-Bird Walton) Airport (the Airport) will be developed and operated under the Airports Act 1996 (the Act).

Two parallel runways of equal length are proposed to meet the anticipated long-term passenger and freight demand at the airport.

The Stage 1 Development is expected to serve approximately 63,000 Air Traffic Movements (ATM) on the first runway. This equals approximately 10 Million Annual Passengers (MAP). Following development of additional supporting infrastructure, at full capacity the first runway could operate at approximately 49 ATM per hour, or 185,000 ATM per year, and serve approximately 37 MAP.

The second runway could be required around 2063. In the long term, two runways are expected to be able to service approximately 370,000 ATM per year, and serve approximately 82 MAP.

Figure 10 shows the runway threshold coordinates and indicative runway elevation (Source: Western Sydney Airport – Airport Plan – September 2021).

RUNWAY END	EASTING	LATITUDE (SOUTH)	NORTHING	LONGITUDE (NORTH)	INDICATIVE ELEVATION (AHD <sup>23</sup> )
<b>Northern (first) runway</b>					
05L	286914.0611	S033° 53' 30.70733"	6247443.7898	E150° 41' 44.61083"	93.09 m
23R	290067.1149	S033° 52' 30.17441"	6249379.8297	E150° 43' 48.93780"	73.22 m
<b>Southern (second) runway</b>					
05R	287916.7743	S033° 54' 23.79624"	6245829.8388	E150° 42' 22.21606"	85.16 m
23L	291069.8277	S033° 53' 23.25343"	6247765.8799	E150° 44' 26.55829"	72.21 m

Figure 10 Runway threshold coordinates and indicative runway elevation.

#### 5.1.1. Obstacle Limitation Surface (OLS)

Obstacle Limitation Surfaces (OLS) are established for each certified aerodrome runway.

The OLS published in the Airport Safeguarding tool on Western Sydney Airport webpage is based on Code 4 precision approach runway for both runways in accordance with CASR Part 139 MOS. The maximum horizontal distance that an OLS may extend for an aerodrome is 15 km (8.1 nm) from the edge of a runway strip. The Project Site is approximately 1.1 km (0.6 nm) away from the runway 23R's end. Therefore, it is constrained by the inner horizontal surface and transitional surface, as shown in Figure 11 (source: Google Earth, Airport Safeguarding tool @ Western Sydney Airport webpage).

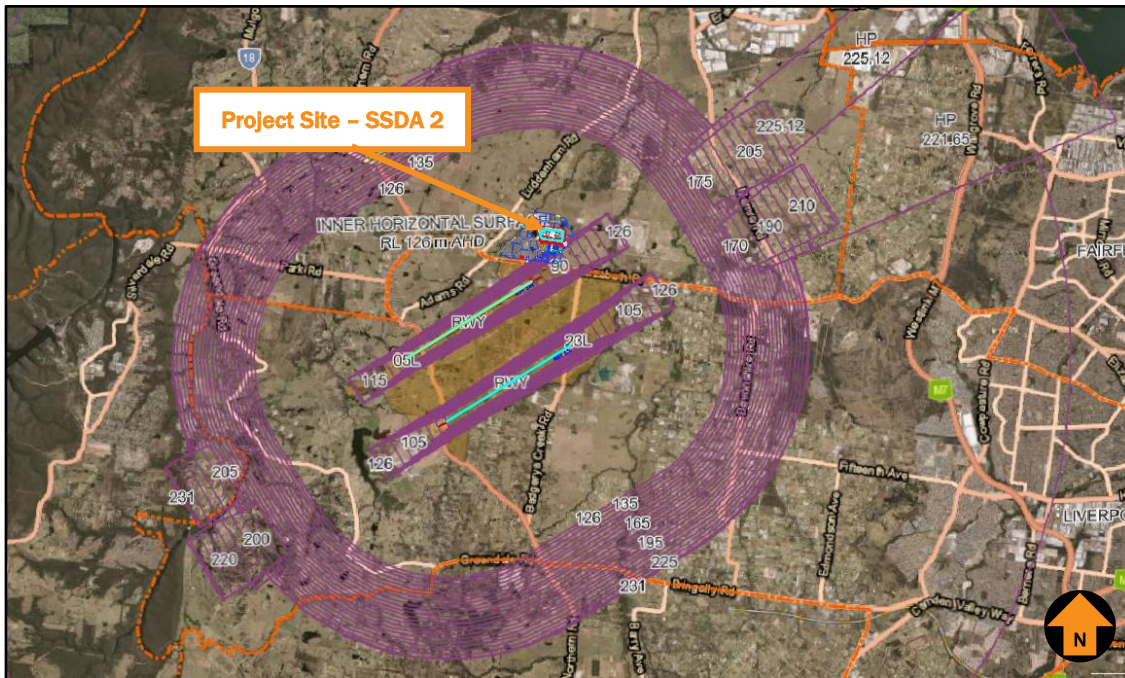


Figure 11 Western Sydney Airport OLS contours and Project Site

A detailed description and diagram of each individual surface follows.

### Transitional Surface

The Transitional Surface comprises inclined planes that originate at the lower edge from the side of the runway strip and at the side of the Approach Surface below the Inner Horizontal Surface. It rises 14.3% from the runway strip edge until it reaches the Inner Horizontal Surface.

Figure 12 shows the Transitional Surface overhead at the Project Site, which is from approximately 117.5 m AHD till reach the Inner Horizontal Surface (126 m AHD).

The height of roof of the warehouse 1 and 2 will be 79.6 m AHD. Plus, the assumption of 15 m crane above the building, the height at the top of the warehouses will be 94.6 m AHD. It will be lower than the OLS Transitional Surface.

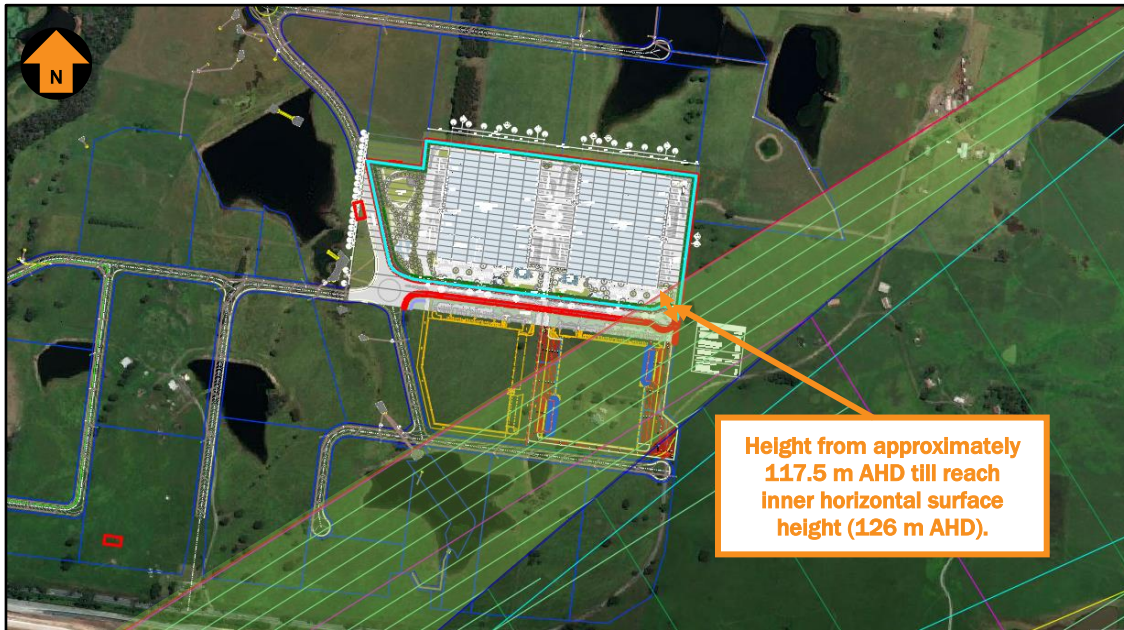


Figure 12 Transitional Surface joined to the Approach Surface.

## Inner Horizontal Surface

An inner horizontal surface is located horizontally above an aerodrome and its environs. For a code 4 runway as Western Sydney Airport, the radius of the inner horizontal surface is 4 km from ARP. The height of the inner horizontal surface will be 45 m above the Aerodrome Reference Point (ARP). The inner horizontal surface's height will be 126m AHD, as shown in Figure 13.

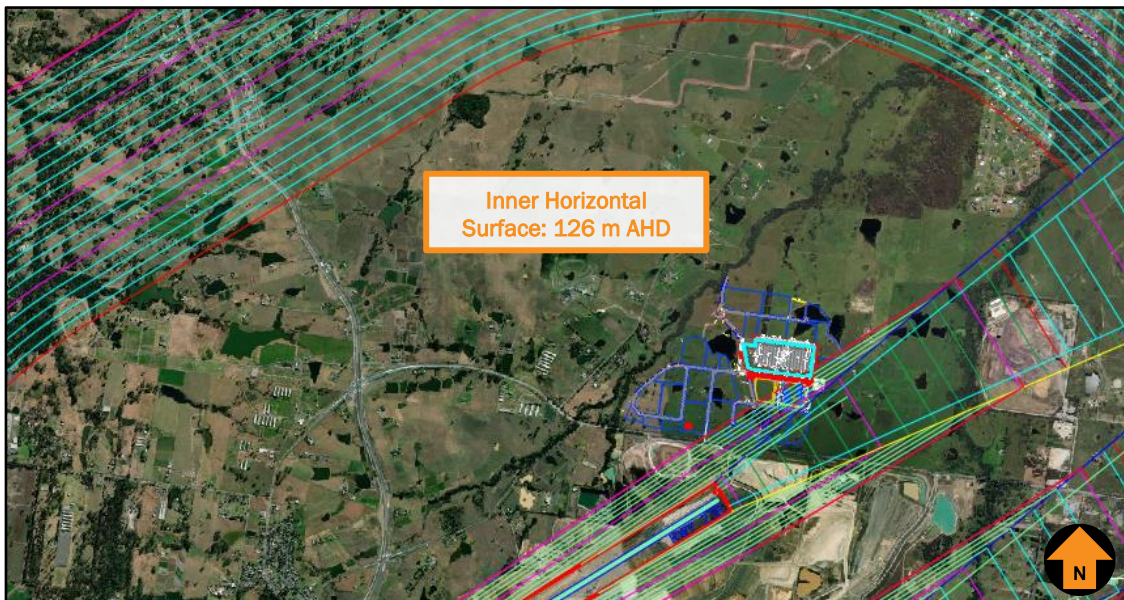


Figure 13 Inner horizontal surface to the Project Site

The Project's maximum Structure's height will be 79.6 m AHD (261.2 ft AMSL) and during construction the height of the Crane at the site will be 94.6 m AHD (310.4 ft AMSL), which is lower than the inner horizontal surface.

## In Summary

The height of the warehouse 1 and 2, plus the temporary crane operations will not infringe the OLS surface of Western Sydney Airport.

### 5.1.2. PANS-OPS surfaces

Certified aerodromes have flight protection (PANS-OPS) surfaces associated with them. The PANS OPS surfaces associated with a 25 nm Minimum Sector Altitude (MSA) include a 5 nm buffer and therefore exist out to a maximum of 55.5 km (30 nm) from an airport with instrument approach procedures.

The Project boundary is approximately 3.2 km away from Western Sydney Airport's ARP, it will be within the 25 nm (55.5 km) MSA.

The SID procedures have PANS OPS surfaces determined by the Procedure Design Gradient (PDG) that is the minimum climb gradient that aircraft are required to perform to in order to ensure obstacle clearance during the initial climb after take-off.

The lowest SID PANS OPS surface above the development site is 107.8 m AHD, based on an estimated turn height of 800 ft AMSL and PDG of 3.3%.

An Instrument Landing System (ILS) is a navigational aid that emits radio signals to provide vertical and horizontal guidance to pilots landing in low-visibility and inclement weather conditions.

Both warehouses are within all four runways' ILS procedure's protection surfaces. As shown in the in Figure 14, the lowest Basic ILS surface is related to the Runway 23R ILS and is at a height of 116 m AHD. Both warehouses will not infringe those runways' ILS procedures.

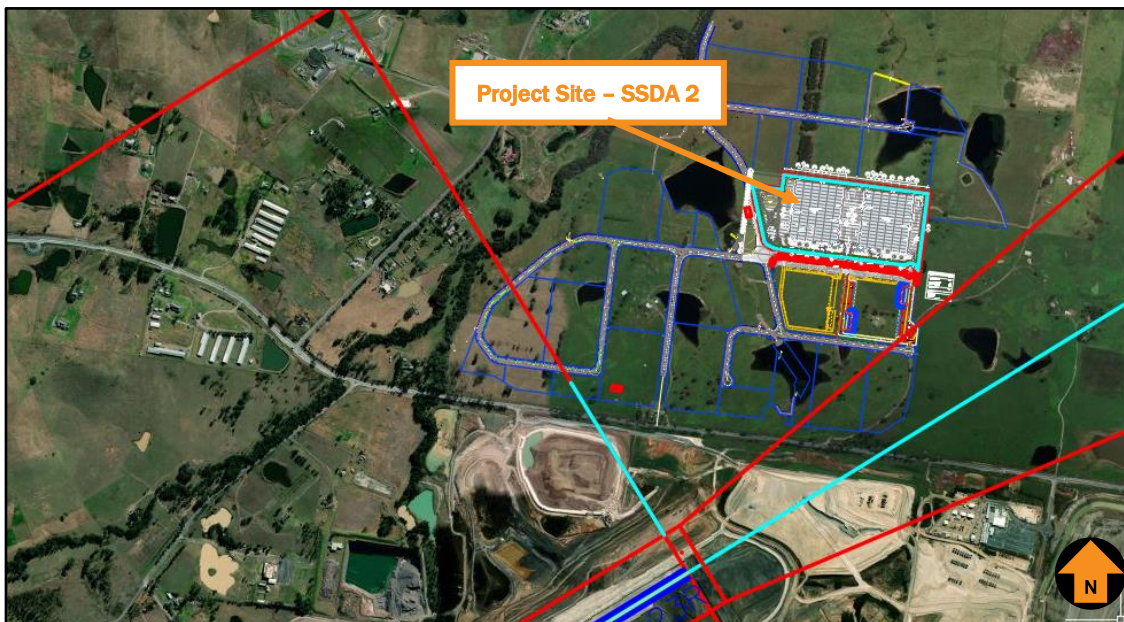


Figure 14 Runway 23 R ILS procedure related to the Project Site

Other instrument approach procedures will be promulgated for Western Sydney Airport once construction of the first runway, Runway 05L/23R, nears completion. ILS, RNAV (GNSS) and RNP-AR approached are likely to be implemented for both runways.

Calculating PANS-OPS surfaces is complex because of the highly technical nature of the design and interaction of procedures. The design of a full set of PANS-OPS for Stage 1 and long-term operations will be required following the formal flight path design before the start of operations. Once designed, the PANS-OPS will be protected under the Airspace Protection Regulations.

Once the construction details can be provided before starting the procedure design, the height of the warehouse will be considered into the design and won't affect the PANS-OPS surfaces.

## 5.2. Other Certificated Airports

The proposed Project Site is located within 30 nm of 3 other certificated airports and 2 military airports:

- Camden Airport (YSCN) – 19.7 km (10.6 nm)
- Bankstown Airport (YSBK) – 24.4 km (13.2 nm)
- Holsworthy Military Airport (YSHW) – 24.7 km (13.4 nm)
- RAAF Richmond Military Airport (YSRI) – 30.1 km (16.3 nm)
- Sydney Airport (YSSY) – 42 .1 km (22.7 nm)

### 5.2.1. Obstacle Limitation Surface (OLS)

Table 2 summarised the OLS of the rest 5 airports and relation with the Project Site. The Project Site is outside of the OLS surface of the 5 airports.

Table 2 Summary of the OLS surfaces

	<i>Runway classification</i>	<i>Maximum laterals extend of the OLS of the Airport</i>	<i>Distance from the Project Site to Airport's ARP</i>	<i>Affection of OLS</i>
<b>Camden Airport (YSCN)</b>	Code 2 non-precision	4.7 km	19.7 km (10.6 nm)	Outside
<b>Bankstown Airport (YSBK)</b>	Code 3 non-precision	15 km	24.4 km (13.2 nm)	Outside
<b>Holsworthy Military Airport (YSHW)</b>	Military	2.7 km	24.7 km (13.4 nm)	Outside
<b>RAAF Richmond Military Airport (YSRI)</b>	Military	15 km	30.1 km (16.3 nm)	Outside
<b>Sydney Airport (YSSY)</b>	Code 4 precision	15 km	42 .1 km (22.7 nm)	Outside

### 5.2.2. PANS-OPS Surfaces

A detailed assessment of the PANS-OPS surfaces associated with the published instrument approach procedures was undertaken:

- MSA Surfaces
- IFR Circling Areas
- PANS-OPS Approach and Departure Procedure Surfaces.

#### MSA surfaces

The minimum sector altitude (MSA) applies to each instrument approach procedure at certified airports. The CASR Part 173 MOS requires a minimum obstacle clearance (MOC) of 984 ft to be applied above the highest terrain or obstacle within the applicable segment.

Obstacles within the 10 nm MSA (10 nm + 5 nm buffer) and 25 nm MSA (25 nm MSA + 5 nm buffer) of the certified airport's ARP define the minimum height at which an IFR aircraft can fly when within 10 nm and 25 nm of the airport when not in visual flight conditions.

#### IFR Circling areas

A circling approach is an extension of an instrument approach to the specified circling minima (lowest altitude permitted without visual reference to the ground) at which point the pilot will visually manoeuvre the aircraft to align with the runway for landing. Typically, a circling approach is only conducted where there is no runway-aligned instrument procedure or if the runway used for the approach procedure is not suitable for landing.

Circling areas are established by the instrument flight procedure designer based on ICAO specifications related to the performance category of the designed aircraft. The circling area is determined by drawing an arc centred on the threshold of each usable runway and joining these arcs by tangents.

#### Summary

Table 3 details the PANS-OPS surfaces associated with the five (5) airports in relation to the Project Site. The Project Site will be lower than all MSA surfaces of the five (5) airports and outside both IFR circling Area and PANS-OPS procedure surfaces of those airports.

Table 3 Summary of the PANS-OPS surfaces

<i>The maximum building height + Crane operations: 94.6 m AHD (310.4 ft AMSL)</i>	<i>Distance from the Project Site to Airport's ARP</i>	<i>10 nm / 25 nm MSA Surfaces' PANS-OPS elevation</i>	<i>IFR Circling Area radii</i>	<i>PANS-OPS Approach and Departure Procedure surfaces</i>
<b>Camden Airport (YSCN)</b>	19.7 km (10.6 nm)	10 nm: 736 m AHD (2416 ft AMSL) 25 nm: 1346 m AHD (4416 ft AMSL)	7.62 km	Outside
<b>Bankstown Airport (YSBK)</b>	24.4 km (13.2 nm)	10 nm: 462 m AHD (1516 ft AMSL) 25 nm (western sector): 828 m AHD (2716 ft AMSL)	7.78 km	Outside
<b>Holsworthy Military Airport (YSHW)</b>	24.7 km (13.4 nm)	10 nm: 462 m AHD (1516 ft AMSL) 25 nm (western sector): 797 m AHD (2616 ft AMSL)	N/A	Outside
<b>RAAF Richmond Military Airport (YSRI)</b>	30.1 km (16.3 nm)	25 nm (western sector): 1224 m AHD (4016 ft AMSL)	9.78 km	Outside
<b>Sydney Airport (YSSY)</b>	42.1 km (22.7 nm)	25 nm: 523 m AHD (1716 ft AMSL)	9.78 km	Outside

### 5.3. Grid and Air routes LSALT

CASR Part 173 MOS requires that the published lowest safe altitude (LSALT) for a particular airspace grid or air route provides a minimum of 1000 ft clearance above the controlling (highest) obstacle within the relevant airspace grid or air route tolerances.

#### 5.3.1. Grid LSALT

The Project Site is located within an airspace grid with LSALT of 1798 m AHD (5900 ft AMSL), which provides clearance above obstacles with heights up to 1493 m AHD (4900 ft AMSL).

Figure 15 provides the Grid LSALT in proximity to the project site (source: ERC Low National, OzRunways, October 2024, Google Earth). The maximum height (including crane operation) of the Project Site is 94.6 m AHD (310.4 ft AMSL), below the 4900 ft obstacle height limit.

Therefore, the Project Site will not impact the Grid LSALT.

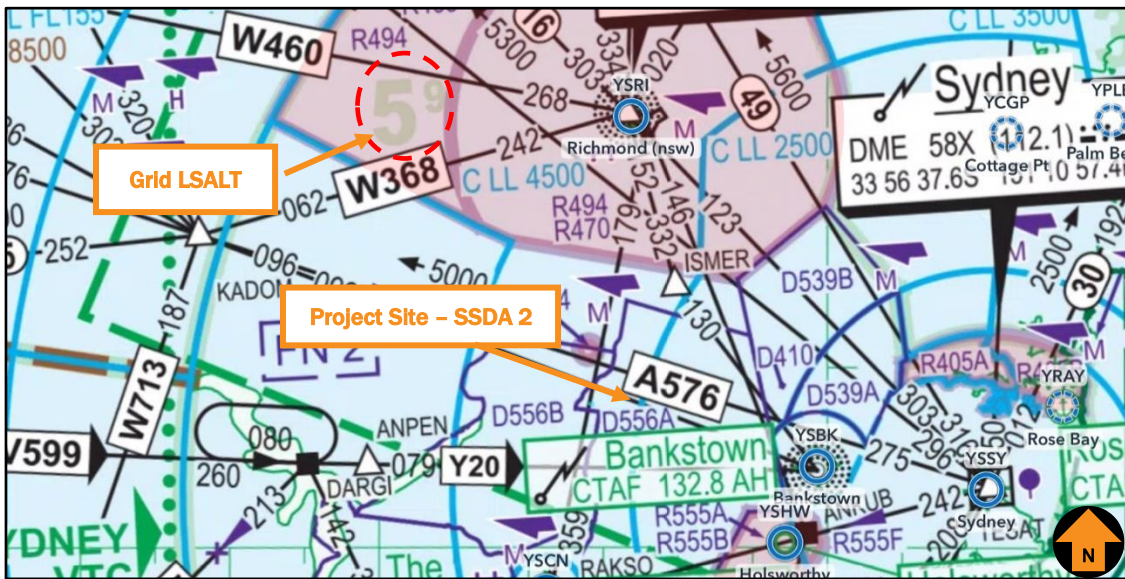


Figure 15 Grid LSALT in proximity to the Project Site

### 5.3.2. Air Route LSALTs

A protection area 7 nm laterally either side of an air route is used to assess the LSALT for the air route.

Several air routes are within 7 nm of the project site. The maximum height of the Project Site is 94.6 m AHD (310.4 ft AMSL), which is below all air route LSALTs. Therefore, the Project will not impact the air route LSALT.

### 5.4. Airspace

The project Site is located outside of controlled airspace (wholly within Class G airspace) and is not located in any Prohibited and Restriction areas.

The project Site is located within the Danger area D556A, as shown in Figure 17. And the dimensions of D556A on the airspace is shown below in Figure 16 (Source: DAH 13 June 2024).

Within D556A, the aircraft can fly between surface and 2500 ft AMSL without infringing controlled airspace. Consultation with CASA will be required. Airservices Australia will provide this report to CASA when they receive the consultation advice.

<p><b>YMMM/D556A BANKSTOWN FLYING TRAINING</b></p> <p><b>LATERAL LIMITS:</b> 341100S 1505000E - 340231S 1504422E  then along ROAD 6 - 335827S 1504425E  then along ROAD 7 - 335634S 1504401E  then along ROAD 8 - 335227S 1504445E  then along ROAD 10 - 335216S 1504309E  then along ROAD 11 - 334908S 1504543E  then along ROAD 12 - 334616S 1504634E  334702S 1504943E - 334813S 1505449E  335349S 1505617E - 335753S 1505719E  335800S 1505443E - 340600S 1504930E  341100S 1505000E</p> <p><b>VERTICAL LIMITS:</b> SFC - 2500</p> <p><b>HOURS OF ACTIVITY:</b> HJ</p> <p><b>CONTACT:</b> Regulatory Services and Surveillance (Sydney Region)</p>
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Figure 16 Dimensions of D556A

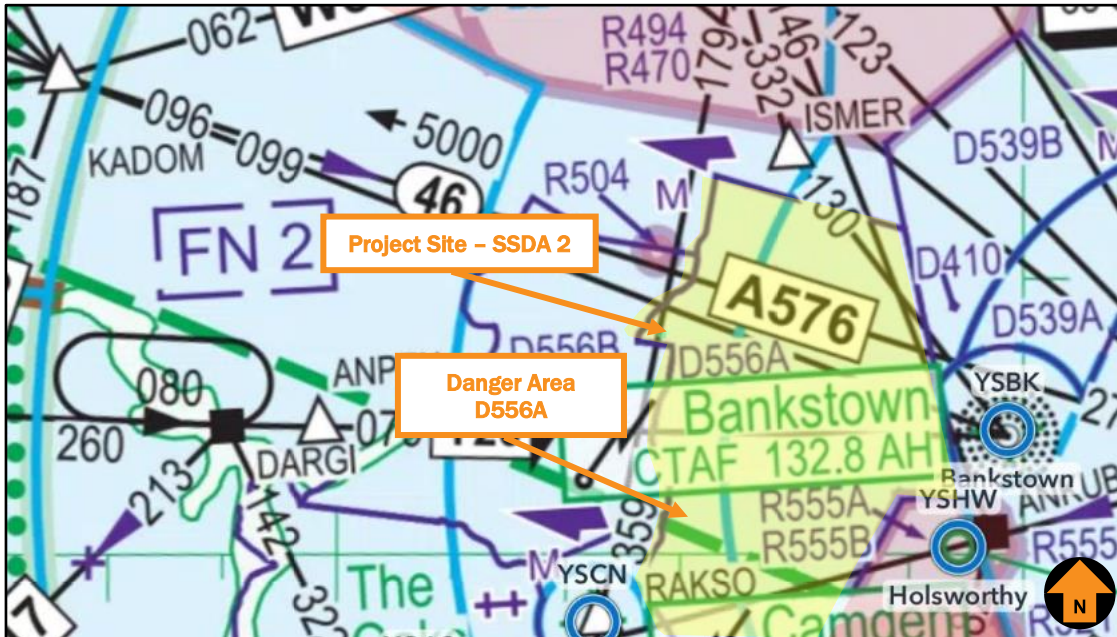


Figure 17 Project site in relation to Danger area.

## 5.5. Aviation facilities

Based on Western Sydney Airport Key-Functional Specifications as published, Nav aids at the airport will include:

- Precision Approach Path Indicator
- Instrument Landing System (ILS) – CAT IIIB incl. Glide Path (GP) and Localiser (LOC)
- Far Field Monitor (FFM)
- Distance Measuring Equipment (DME)
- Advanced Surface Movement Guidance and Control System
- Ground Based Augmentation System (GBAS)

### 5.5.1. Instrument Landing System – CAT IIIB (ILS)

According to National Airports Safeguarding Framework Guideline G *Protecting Aviation Facilities - Communications, Navigation and Surveillance (CNS)*, the navigation facilities have areas restricted to developments.

*The Instrument Landing System is a precision navigation aid that consists of a Localizer, Glide Path, markers and monitors. Beams emanate from the antennas to provide:*

- *Horizontal Guidance (Localizer), and*
- *Vertical Guidance (Glide Path).*

*Aircraft are guided down the horizontal and vertical beams towards the antennas to arrive at the touchdown point.*

## Middle and Outer Marker beacon:

General guidance - within 5 metres of the marker beacon, grass and other vegetation should be less than 60cm tall.

If application within Zone A, all applications must be referred to Airservices Australia for assessment. No action required within Zone B.

*Zone A: If development is located,*

- a. *Within 5 meters of the marker beacon antenna; or*
- b. *Between 5 -10 meters of the marker beacon antenna and the development will cross the zone boundary (defined as an elevation angle of 50° from ground level at the marker beacon antenna).*

*Zone B: If development is located between 5 - 50 metres of the marker beacon antenna and the development will not cross the zone boundary.*

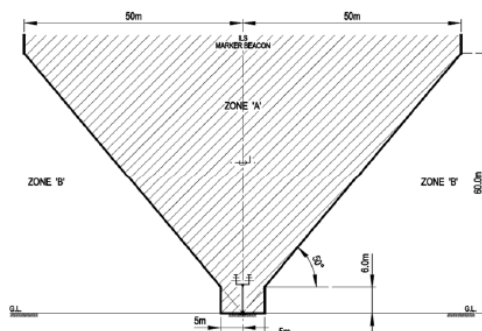


Figure 18 Middle and Outer Marker Beacon BRA

The project site is located approximately 1.1 km from Runway 23 R end and outside the areas restricted to developments for noted aviation facilities, and therefore will not interfere with this facility.

## Glide Path:

If application within Zone A, all applications must be referred to Airservices Australia for assessment. No action required within Zone B.

*Zone A: If development is located,*

- a. *within the area defined as greater than 0.5° elevation longitudinally and 2° elevation laterally from the edges of the vehicle critical area (runway) (measured from the ground level at the Glide Path Antenna Tower); and*
- b. *within 40 metres either side of the extended glide path centreline to a distance of 50 metres behind the Glide Path Antenna Tower.*

*Zone B: All other areas not described by Zone A.*

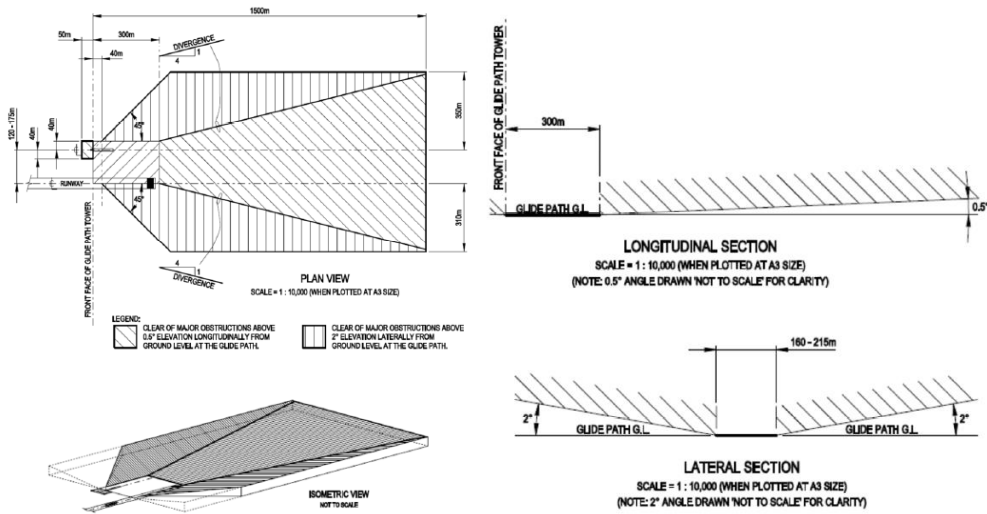


Figure 19 Glid Path BRA

As shown in the in Figure 20, only small portion of the Project Site will be with the Glid Path BRA area. As the location of the ILS is still not available to public, Aviation Projects apply the maximum BRA covered area for this analysis. The height at the Project Site will be approximately 83.7 m AHD. And as the portion within the BRA area will be landscape, which will be not affect the Glid Path BRA.

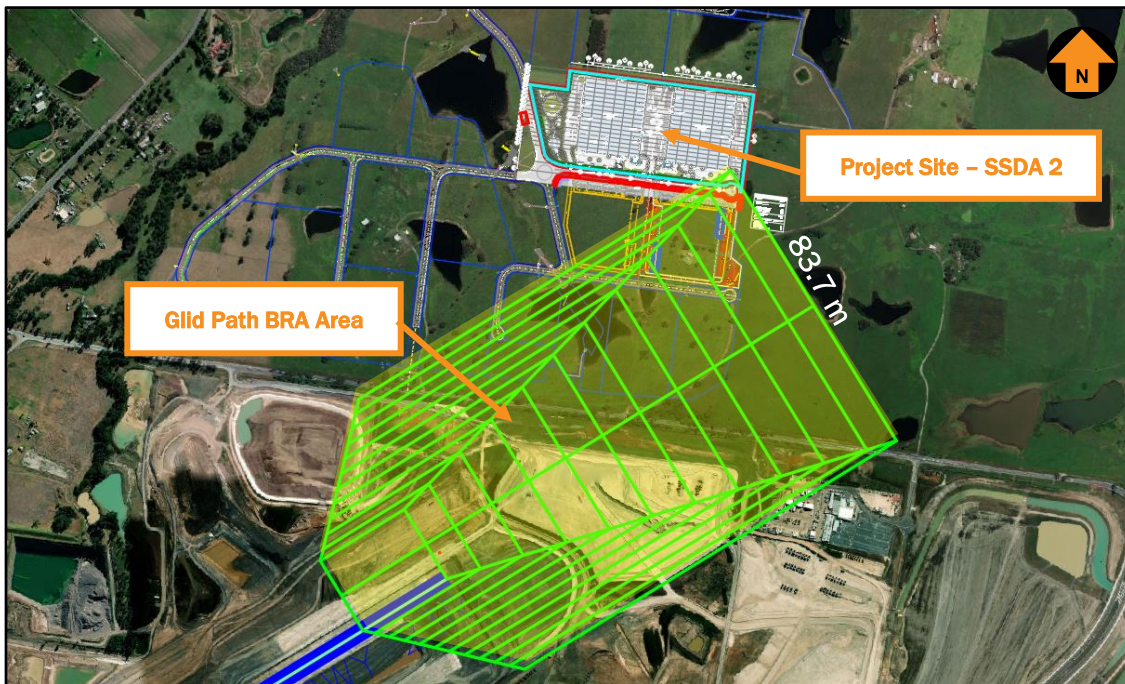


Figure 20 Runway 23 R ILS Glid Path BRA related to the Project Site

## Localizer

General guidance - all buildings within 1,000 metres of the runway centreline, which have a vertical wall facing the runway that exceeds 2,000 square metres in area and a height more than 20 metres above the Localizer ground level (e.g. hangars/office blocks) will require assessment by Airservices Australia.

If application within Zone A, all applications must be referred to Airservices Australia for assessment. No action required within Zone B.

Zone A: If development is located,

a. with the area defined as greater than  $0.5^\circ$  elevation longitudinally and  $2^\circ$  elevation laterally from the edges of the vehicle critical area (runway) (measured from the ground level at the Localizer antenna); and

b. within 45 metres either side of the extended runway centreline to a distance of 50 metres behind the Localizer antenna. within 40 metres either side of the extended glide path centreline to a distance of 50 metres behind the Glide Path Antenna Tower.

Zone B: All other areas not described by Zone A.

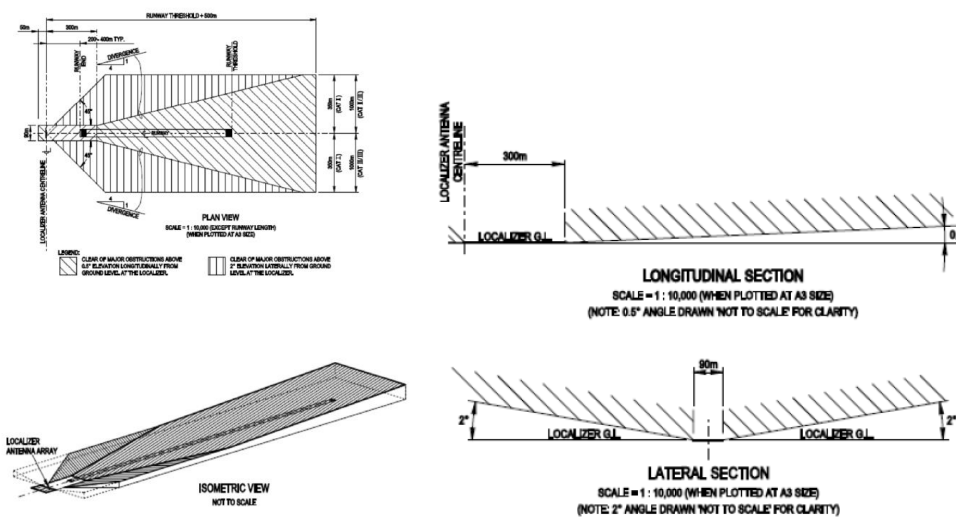


Figure 21 Localizer BRA

As shown in the in Figure 22, the project site is located approximately 1.1 km from Runway 23 R end and outside the Localizer BRA area, and therefore will not interfere with this facility.

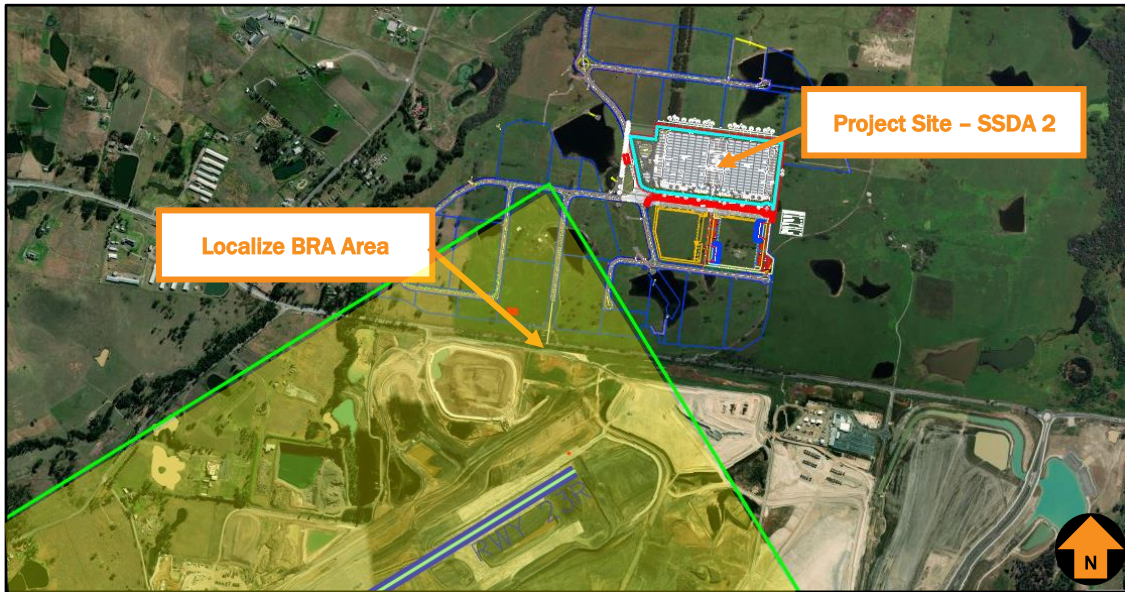


Figure 22 Runway 23 R ILS Localize BRA related to the Project Site

## 5.5.2. Distance Measuring Equipment (DME)

Distance Measuring Equipment measures the slant range between an aircraft and the Distance Measuring Equipment antenna.

If application within Zone A, all applications must be referred to Airservices Australia for assessment. No action required within Zone B.

*Zone A: If development is located,*

- a. within 100 metres of the Distance Measuring Equipment antenna and above a horizontal plane located 4 metres below the centre of the Distance Measuring Equipment antenna; or*
- b. between 100–1500 metres from the Distance Measuring Equipment antenna and the development will cross the zone boundary (defined as an elevation angle of 2°, measured from the above horizontal plane beneath the Distance Measuring Equipment antenna).*

*Zone B: If development is located between 100 - 1500 metres from the centre of the Distance Measuring Equipment antenna and the development will not cross the zone boundary.*

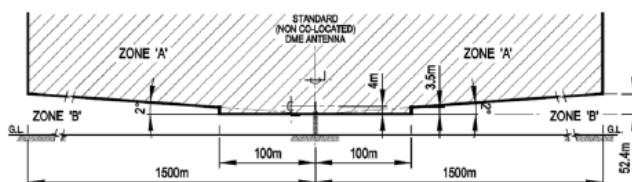


Figure 23 Distance Measuring Equipment BRA

The DME is generally planned in the middle of the airport. And the Project Site is approximately 3.2 km away from the middle of the airport. So, the Project Site be potentially outside the DME BRA area.

### 5.5.3. Ground Based Augmentation System (GBAS)

Based on Guidelines G, Zone A is 200 m radii from the GBAS, and Zone B is 3 km radii from the GBAS.

Normally the GBAS planned to be based in the middle of the airport but may move to the north side of the airport as the second runway is developed. The Project Site is approximately 3.2 km away from the middle of the airport. Therefore, the Project Site will be potentially within the GBAS BRA area. Consultation with the Airservices Australia will be required.

### 5.5.4. Summary

The proposed development site is potentially located within the GBAS BRA area.

Aviation Projects cannot confirm any specifics as to the potential impacts as public information on the planned equipment and final locations is not available.

Consultation with Airservices Australia will be required.

## 5.6. ATC Surveillance Radar installations

Airservices Australia currently requires an assessment of the potential for a development site to affect radar lines of sight.

With respect to aviation radar facilities, the following facilities are referenced:

- Cecil Park Primary Surveillance Radar (PSR) and Secondary Surveillance Radar (SSR) - approximately 9.2 km east of the Project Site
- Sydney PSR and SSR - approximately 42 km southeast of the Project Site
- Mt Boyce Route Surveillance Radar (RSR) – approximately 60.2 km northwest of the Project Site.

EUROCONTROL guidelines for assessing the potential impact on wind turbines on radar surveillance sensors stipulate the following assessment requirements:

#### Primary Surveillance Radar (PSR)

- Zone 1 0-500 m: Not permitted
- Zone 2 500 m – 15 km: Detailed assessment
- Zone 3: Further than 15 km but within maximum instrumented range and in radar line of sight: Simple assessment
- Zone 4: Anywhere within maximum instrumented range but not in radar line of sight or outside the maximum instrumented range: No assessment.

#### Secondary Surveillance Radar (SSR)

- Zone 1: 0 - 500 m: Not permitted
- Zone 2: 500 m - 16 km but within maximum instrumented range and in radar line of sight: Detailed assessment
- Zone 4: Further than 16 km or not in radar line of sight: No assessment

(Zone 3 is not established for secondary surveillance radar)

The antenna elevation at Cecil Park is assumed to be 180 m AHD (approximately 150 m ground elevation based on google earth + 30 m AGL tower height). The clearance plane elevation at the development will be 220.1 m AHD. The maximum height of the warehouse will be 94.6 m AHD (310.4 ft AMSL), including the assumed 15 m crane above the building, which will not affect the Cecil Park PSR and SSR. Table 4 explained the Cecil Park Surveillance System clearance plane

And the project site is outside the line-of-sight range of Sydney PSR/SSR and Mt Boyce RSR radars and will not impact these facilities.

Table 4 Surveillance System Clearance Plane

<i>Surveillance System</i>	<i>Distance from development</i>	<i>Antenna Elevation (m AHD)</i>	<i>Clearance Plane Elevation at development site (Distance x Tan 0.25 + TAR elevation (m AHD))</i>
Cecil Park PSR/SSR	9.2 km	180	220.8

## 6. GUIDELINE A: MEASURE FOR MANAGING IMPACT OF AIRCRAFT NOISE

This guideline principally provides recommendations to local planning authorities on the implementation of noise policies within their legislative frameworks using principles set out in Australian Noise Exposure Forecast (ANEF) System and the Australian Standard AS 2021-2015 Acoustics – Aircraft Noise Intrusion – Building Siting and Construction (AS2021).

The guidelines gives guidance to planning officials when considering the following scenarios:

- *Rezoning of greenfield areas for noise sensitive uses<sup>1</sup> (i.e. areas that are predominantly rural or non-urban, including specifically identified urban boundary areas around airport sites);*
- *Rezoning of brown-field areas for noise sensitive uses (i.e. areas that are predominantly urban where changes of land use from industrial, commercial or low-density residential are being considered); and*
- *Assessment of new developments applications for noise sensitive uses within existing residential areas.*

Western Sydney Airport below to greenfield area. It is important that consideration be given to the application of the following approach to land use planning

- *No new designations or zoning changes that would provide for noise sensitive developments within a 20 ANEF where that land was previously rural or for non urban purposes (in keeping with AS2021).*
- *Zoning for noise-sensitive development be avoided where ultimate capacity or long range noise modelling for the airport indicates either:*
  - *20 or more daily events greater than 70 dB(A);*
  - *50 or more daily events of greater than 65 dB(A); or*
  - *100 events or more daily events of greater than 60 dB(A).*
- *Zoning for noise-sensitive development should take into account likely night time movements and their impact on residents' sleeping patterns. For example, where there are more than 6 events predicted between the hours of 11pm to 6am which create a 60 dB(A) or greater noise impact, measures for aircraft noise amelioration and restriction on noise sensitive development may be appropriate.*

### 6.1. Stage 1 (Year 2033)

The Department of Infrastructure, Transport, Regional Development, Communications and Arts public the noise modelling tool for Western Sydney Airport Stage 1.

Noise predictions for Stage 1 (2033) represent the anticipated noise exposure levels associated with an airport handling about 10 million annual passengers. A single runway would be constructed initially.

"Prefer 05 Direction" refers to the primary mode of operation; i.e. prioritising the use of runway direction "05". This mode would result in the majority of departures to the northeast and arrivals from the south west.

"Prefer 23 Direction" refers to the primary mode of operation; i.e. prioritising the use of runway direction "23". This mode would result in the majority of departures to the south west and arrivals from the north east.

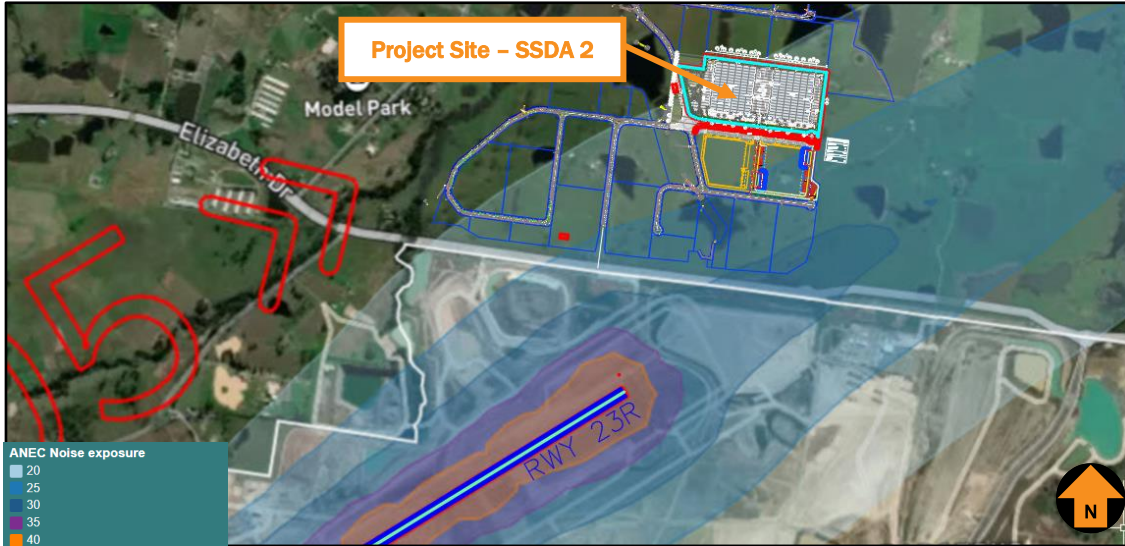


Figure 24 Stage 1 (Yr 2033) Prefer 05 Direction

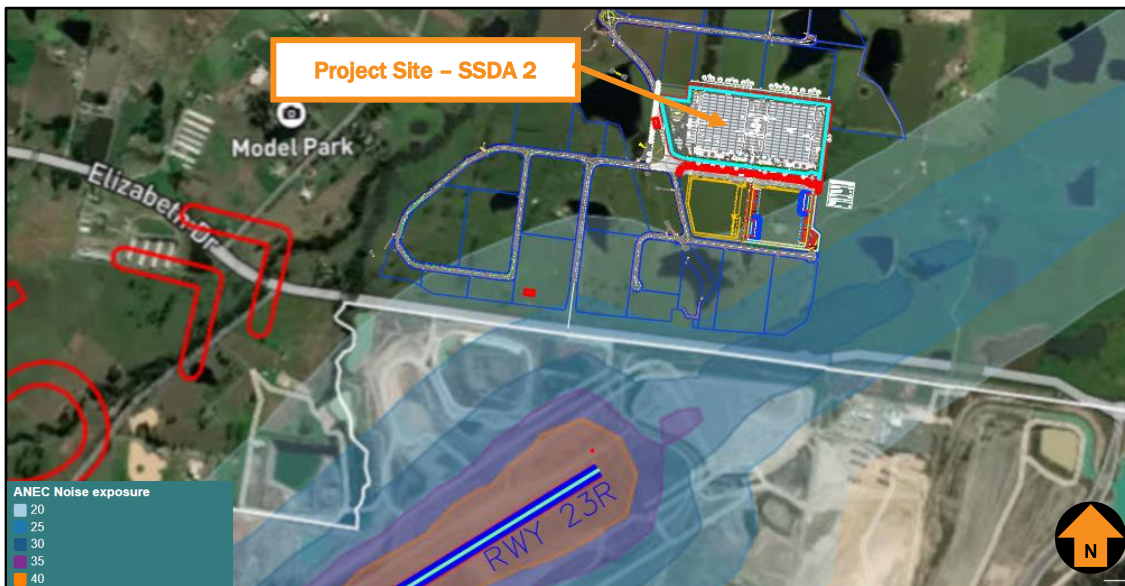


Figure 25 Stage 1 (Yr 2033) Prefer 23 Direction

## 6.2. Stage 1 Year 2040

Noise predictions for the year 2040 consider the anticipated growth of Western Sydney Airport. This scenario considers noise exposure levels at a time when the initial single runway would likely be approaching approximately 15 million annual passengers.

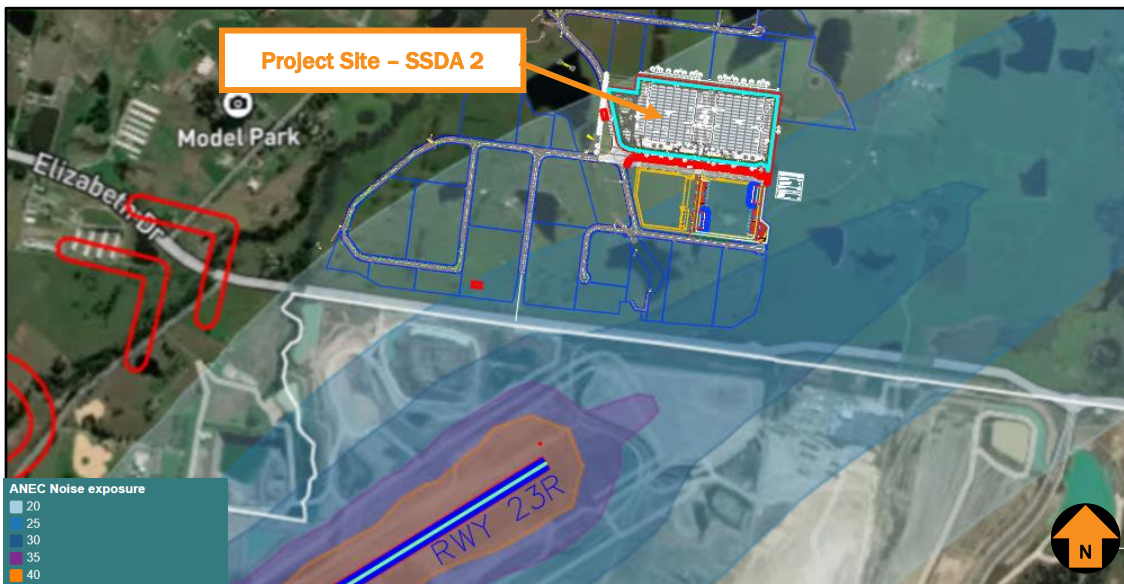


Figure 26 Stage 1 (Yr 2040) Prefer 05 Direction

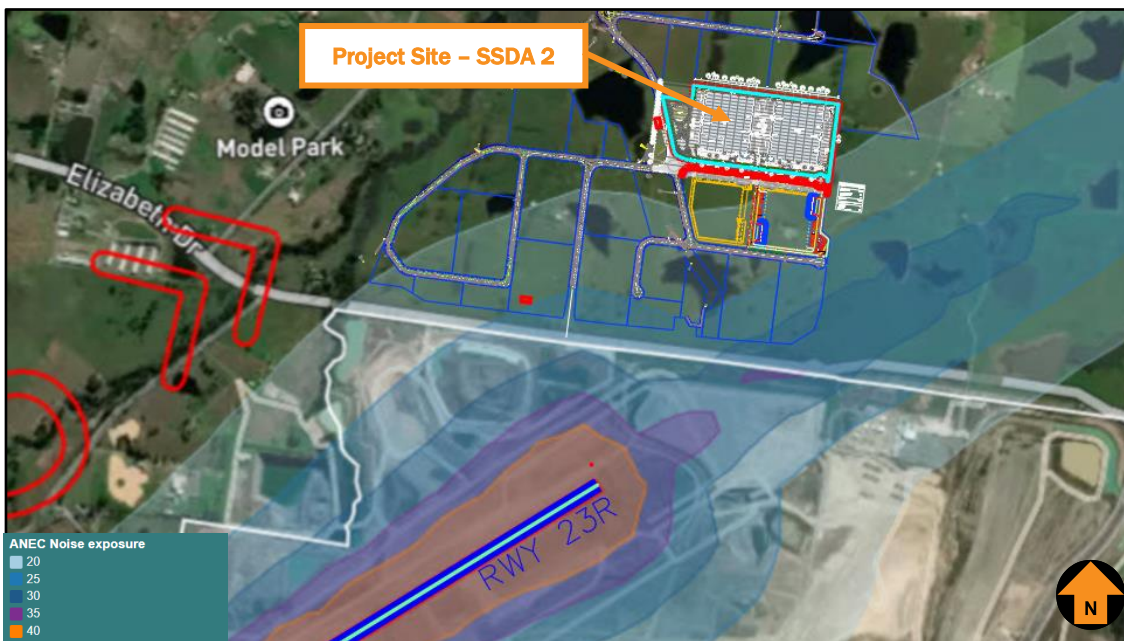


Figure 27 Stage 1 (Yr 2040) Prefer 23 Direction

### 6.3. Stage 1 (Year 2055)

Noise predictions for the year 2055 consider the anticipated growth of Western Sydney Airport. This scenario considers noise exposure levels at a time when the initial single runway would likely be approaching its capacity. (approximately 37 million annual passengers)

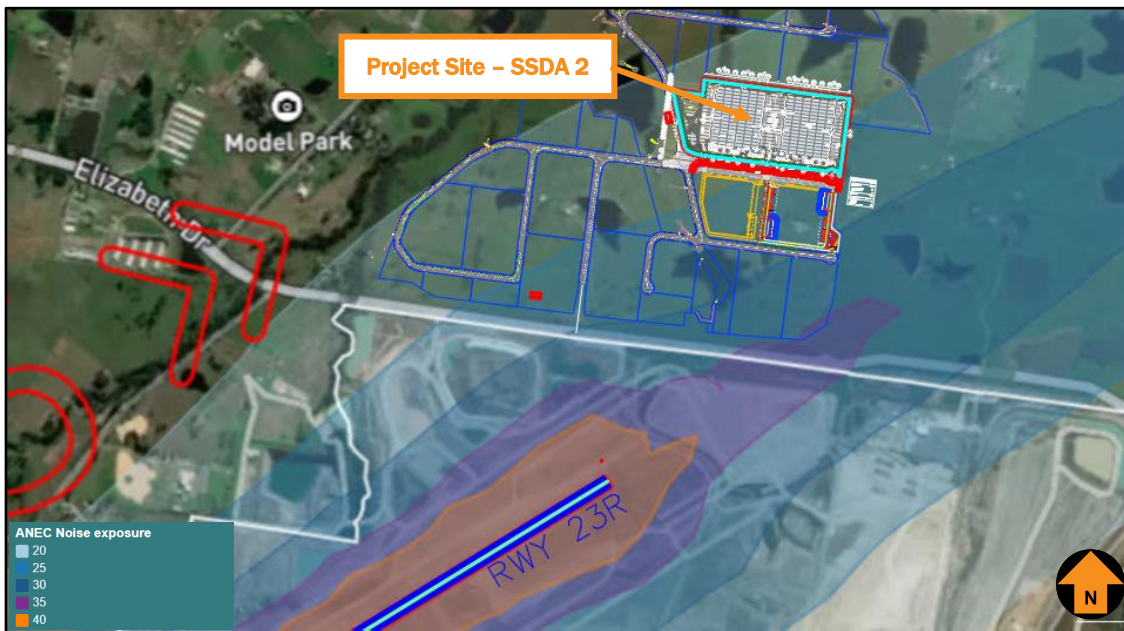


Figure 28 Stage 1 (Yr 2055) Prefer 05 Direction

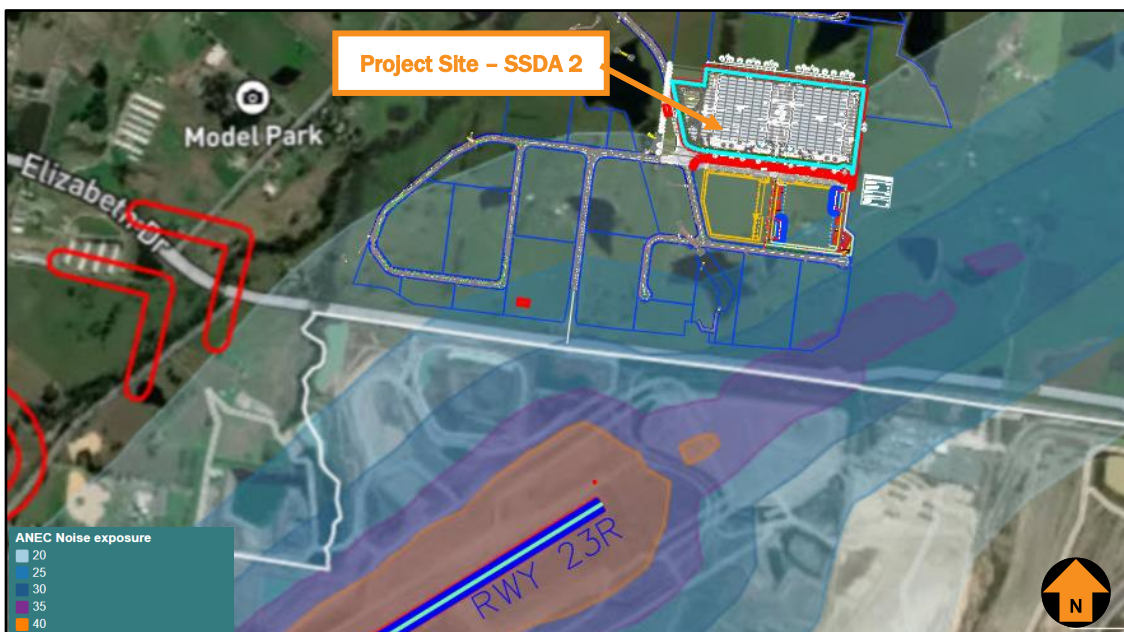


Figure 29 Stage 1 (Yr 2055) Prefer 23 Direction

## 6.4. Long Term

Western Sydney Airport's web page publish the Airport Safeguarding tool, which includes the Long Term Combine noise contour.

Noise predictions for the long-term development. The long-term development would operate with two runways.

"Prefer 05 Direction" refers to the primary mode of operation; i.e. prioritising the use of Runways "05L" (left) (northern runway) and "05R" (right) (southern runway). This mode would result in the majority of departures to the north east and arrivals from the south west.

"Prefer 23 Direction" refers to the primary mode of operation; i.e. prioritising the use of runway directions "23L" (left) (northern runway) and "23R" (right) (southern runway). This mode would result in the majority of departures to the south west and arrivals from the north east.

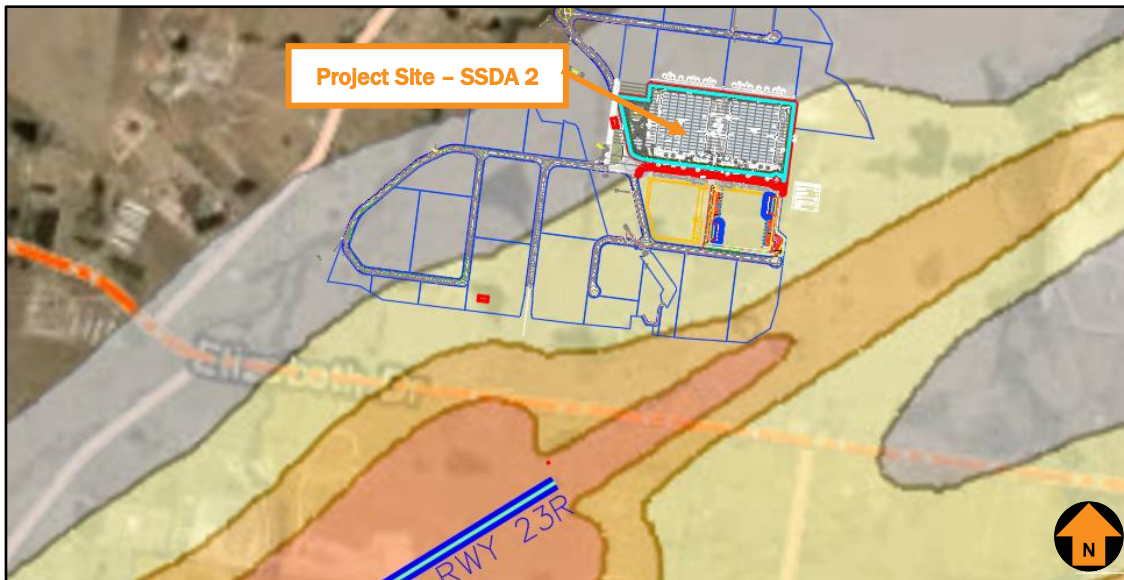


Figure 30 Long term ANEC contours for Prefer 05 and Prefer 23 operating modes

## 6.5. In Summary

Based on above analysis, the development site falls within the following ANEC contour, which is summarised in Table 5.

Table 5: DHL Badgerys Creek (SSDA 01 - South) ANEC Inclusion Contour

<i>Airport Runway Development Stages</i>	<i>Prefer 05 Direction</i>	<i>Prefer 23 Direction</i>
Stage 1 (Year 2033)	ANEC = 20	Outside the ANEC Zone
Stage 1 Year 2040	ANEC = 20 - 25	ANEC = 20
Stage 1 (Year 2055)	ANEC = 20 - 25	ANEC = 20
Long Term	ANEC = 20 - 25	

The Project belongs to the 'other industrial' building type, which is acceptable for all ANEF zones. This is shown in Figure 31 (Source: Australian Standard AS 2021-2000).

Therefore, the Project Site will not be affected by the noise.

Building type	ANEF zone of site		
	Acceptable	Conditionally acceptable	Unacceptable
House, home unit, flat, caravan park	Less than 20 ANEF (Note 1 of AS2021)	20 to 25 ANEF (Note 2 of AS 2021)	Greater than 25 ANEF
Hotel, motel, hostel	Less than 25 ANEF	25 to 30 ANEF	Greater than 30 ANEF
School, university	Less than 20 ANEF (Note 1 of AS2021)	20 to 25 ANEF (Note 2 of AS 2021)	Greater than 25 ANEF
Hospital, nursing home	Less than 20 ANEF (Note 1 of AS2021)	20 to 25 ANEF	Greater than 25 ANEF
Public building	Less than 20 ANEF (Note 1 of AS2021)	20 to 30 ANEF	Greater than 30 ANEF
Commercial building	Less than 25 ANEF	25 to 35 ANEF	Greater than 35 ANEF
Light industrial	Less than 30 ANEF	30 to 40 ANEF	Greater than 40 ANEF
Other industrial	Acceptable in all ANEF zones		

Figure 31 Building site acceptability based on ANEF zones.

## 7. GUIDELINE B: MANAGING THE RISK OF BUILDING GENERATED WINDSHEAR AND TURBULENCE AT AIRPORT

NASF Guideline B – Measures for Managing the Risk of Building Generated Windshear and Turbulence at Airports provide guidance to Commonwealth, state/territory and local government decision makers and airport operators to manage the risk of building generated windshear (i.e. changes in wind speed and/or direction between two points) and building generated turbulence (i.e. rapid irregular changes in wind speed and/or direction at a fixed point) at airports.

Research conducted by the Aeronautical Research Laboratory of the Netherlands (NLR) indicates that safety risk is highest below 200ft (61m) above the runway. This research was conducted in response safety incidents at Amsterdam airport caused by building induced wind effects.

Buildings that could pose a safety risk are those located within a rectangular ‘assessment trigger area’ around the runway ends, as shown in Figure 32 (Source: Guideline B):

- 1200 m or closer perpendicular from the runway centreline (or extended runway centreline)
- 900 m or closer in front of the runway threshold (towards the landside of the airport)
- 500 m or closer from the runway threshold along the runway.

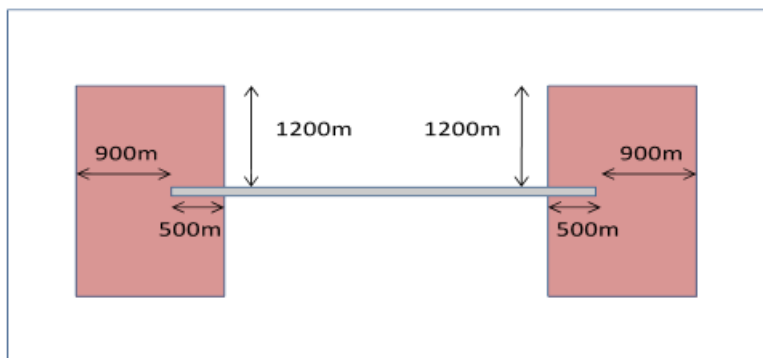


Figure 32 Assessment trigger area around runways within which buildings should be assessed

Plan and elevation views illustrating the concept of the 1:35 surface are provided Figure 33. The footprint of the 1:35 surface is the same as the assessment trigger area (i.e. 1200m on either side of the runway centreline, 500 m along the runway length and 900 m on the landside of the runway threshold). Figure 33 also illustrates the concept of the ‘extended runway centreline’.

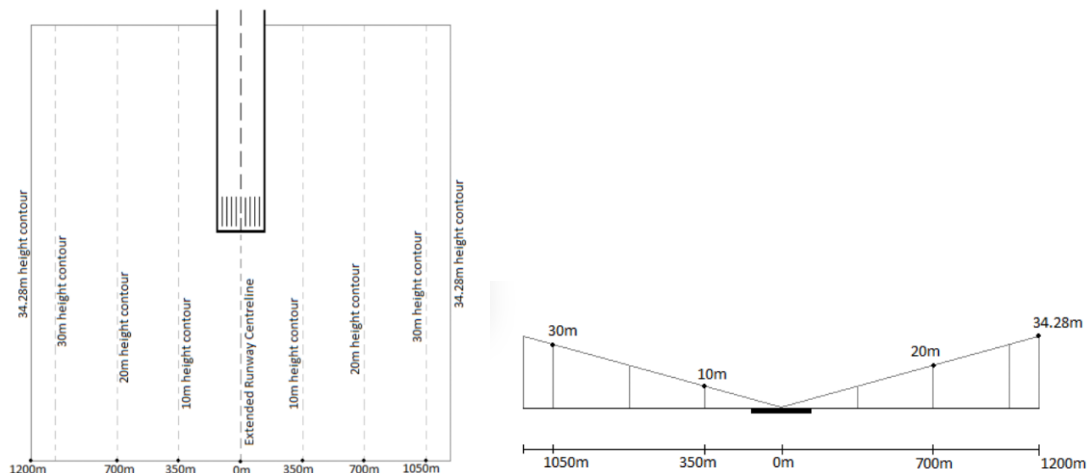


Figure 33 Plan view of the 1:35 surface within the assessment trigger area.

As shown in the in Figure 34, the Project Site will be partly within the windshear trigger area. The height at the Project Site will be from 93.3 m AHD to 103.2 m AHD. The maximum height of the warehouse will be warehouses will be 79.6 m, which will be lower than height of the trigger area.

With the assumption of 15 m above the roof for crane operations, it will up to 94.6 m. However, narrow structures like cranes do not cause significant wind turbulence effects.

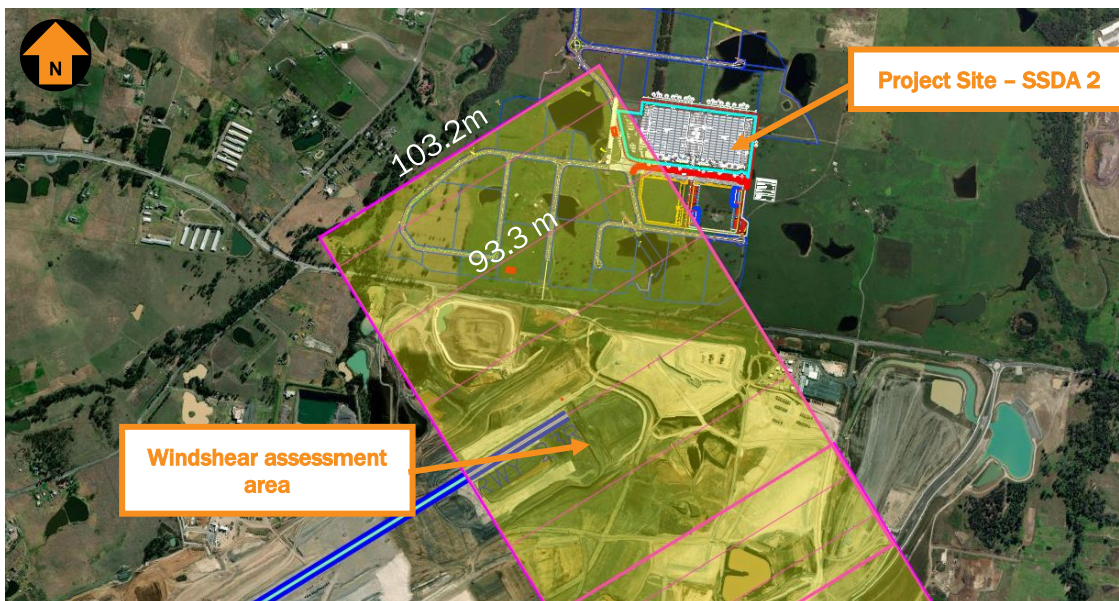


Figure 34 Windshear in related to the project site.

## 8. GUIDELINE C: MANAGING THE RISK OF WILDLIFE IN VICINITY OF AIRPORT

The proposed development should not increase the risk of wildlife strikes at airports. Based on National Airports Safeguarding Framework Guideline C: Managing the risk of wildlife strikes in the vicinity of Airports, land uses that present a risk of attracting wildlife should be controlled (and mitigated) within 3 km, 8 km and 13 km of an airport as shown in Figure 35 (Source: Guideline C- November 2023).

Wildlife Hazard Management Action Table

Attachment 1

Land use types	Likely attractants ▲ natural elements ■ structural elements ● waste and food	Wildlife attraction risk	Actions for existing development and land uses in wildlife management areas			Actions for new and changed development and land uses in wildlife management areas			
			0-3 km (Area A)	3-8 km (Area B)	8-13 km (Area C)	0-3 km (Area A)	3-8 km (Area B)	8-13 km (Area C)	
<b>Agriculture</b>									
Turf farm, piggery, abattoir, aquaculture	▲ ■ ●	High	Mitigate	Mitigate	Monitor	Incompatible	Mitigate	Monitor	
Fruit tree farm/orchard	▲ ■ ●	High	Mitigate	Mitigate	Monitor	Incompatible	Mitigate	Monitor	
Fish processing/packing plant	▲ ■ ●	High	Mitigate	Mitigate	Monitor	Incompatible	Mitigate	Monitor	
Farm (cattle, dairy, poultry, crops)	▲ ■ ●	Moderate	Mitigate	Monitor	Monitor	Mitigate	Mitigate	Monitor	
Horticulture, viticulture, market farms/gardens	▲ ■ ●	Moderate	Mitigate	Monitor	Monitor	Mitigate	Mitigate	Monitor	
Forestry	▲ ■ ●	Low	Monitor	Monitor	No Action	Monitor	Monitor	No Action	
Plant nursery	▲ ■ ●	Low	Monitor	Monitor	No Action	Monitor	Monitor	No Action	
<b>Conservation</b>									
Wildlife/conservation area - wetland, waterways	▲	High	Mitigate	Mitigate	Monitor	Incompatible	Mitigate	Monitor	
Wildlife/conservation area - dryland	▲	Moderate	Mitigate	Monitor	Monitor	Mitigate	Mitigate	Monitor	
<b>Recreation</b>									
Significant open water (ancillary to development)	▲	High	Mitigate	Mitigate	Monitor	Incompatible	Mitigate	Monitor	
Showground	▲ ■ ●	High	Mitigate	Mitigate	Monitor	Incompatible	Mitigate	Monitor	
Significant landscaped space (ancillary to development)	▲	Moderate	Mitigate	Monitor	Monitor	Mitigate	Mitigate	Monitor	
Golf course	▲ ■ ●	Moderate	Mitigate	Monitor	Monitor	Mitigate	Mitigate	Monitor	
Park, playground	▲ ■ ●	Moderate	Mitigate	Monitor	Monitor	Mitigate	Mitigate	Monitor	
Picnic areas, camping ground	▲ ■ ●	Moderate	Mitigate	Monitor	Monitor	Mitigate	Mitigate	Monitor	
Racetrack, horse riding school	▲ ■ ●	Moderate	Mitigate	Monitor	Monitor	Mitigate	Mitigate	Monitor	
Sports facility (tennis, bowls, football fields)	▲ ■ ●	Moderate	Mitigate	Monitor	Monitor	Mitigate	Mitigate	Monitor	
<b>Commercial</b>									
Food processing or storage facility	■ ●	High	Mitigate	Mitigate	Monitor	Incompatible	Mitigate	Monitor	
Fast food, drive-in, outdoor restaurant	■ ●	Low	Monitor	Monitor	No Action	Monitor	Monitor	No Action	
Shopping centre	■ ●	Low	Monitor	Monitor	No Action	Monitor	Monitor	No Action	
Warehouse (food storage)	■ ●	Low	Monitor	Monitor	No Action	Monitor	Monitor	No Action	
Car park	■ ●	Very Low	Monitor	No Action	No Action	Monitor	No Action	No Action	
Cinemas	■ ●	Very Low	Monitor	No Action	No Action	Monitor	No Action	No Action	
Hotel/motel	■ ●	Very Low	Monitor	No Action	No Action	Monitor	No Action	No Action	
Office building	■ ●	Very Low	Monitor	No Action	No Action	Monitor	No Action	No Action	
Petrol station	■ ●	Very Low	Monitor	No Action	No Action	Monitor	No Action	No Action	
Warehouse (non-food storage)	■ ●	Very Low	Monitor	No Action	No Action	Monitor	No Action	No Action	
<b>Utilities</b>									
Food / organic waste facility	■ ●	High	Mitigate	Mitigate	Monitor	Incompatible	Mitigate	Monitor	
Putrescible waste facility - landfill	■ ●	High	Mitigate	Mitigate	Monitor	Incompatible	Mitigate	Monitor	
Putrescible waste facility - transfer station	■ ●	High	Mitigate	Mitigate	Monitor	Incompatible	Mitigate	Monitor	
Water infrastructure (drains, channels, basins)	▲	High	Mitigate	Mitigate	Monitor	Mitigate	Mitigate	Monitor	
Non-putrescible waste facility - landfill	■ ●	Moderate	Mitigate	Monitor	Monitor	Mitigate	Mitigate	Monitor	
Non-putrescible waste facility - transfer station	■ ●	Moderate	Mitigate	Monitor	Monitor	Mitigate	Mitigate	Monitor	
Sewage / wastewater treatment facility	■ ●	Moderate	Mitigate	Monitor	Monitor	Mitigate	Mitigate	Monitor	
Potable water treatment facility	▲ ■ ●	Low	Monitor	Monitor	No Action	Monitor	Monitor	No Action	

Figure 35 Wildlife Control Zones and Mitigations

As shown in Figure 36, the Project Site is within Area A. Specifically in Guideline C, Warehouse (non-food storage) is listed as a 'very low' risk and requirement to 'Monitor' within Area A.

According to Guideline C, the following relevant actions are recommended for new development and land uses in wildlife management areas:

36. Where 'monitor' is indicated, information regarding approved development should be provided to the relevant airport operator and it should be included in future monitoring activity undertaken by the relevant airport operator.

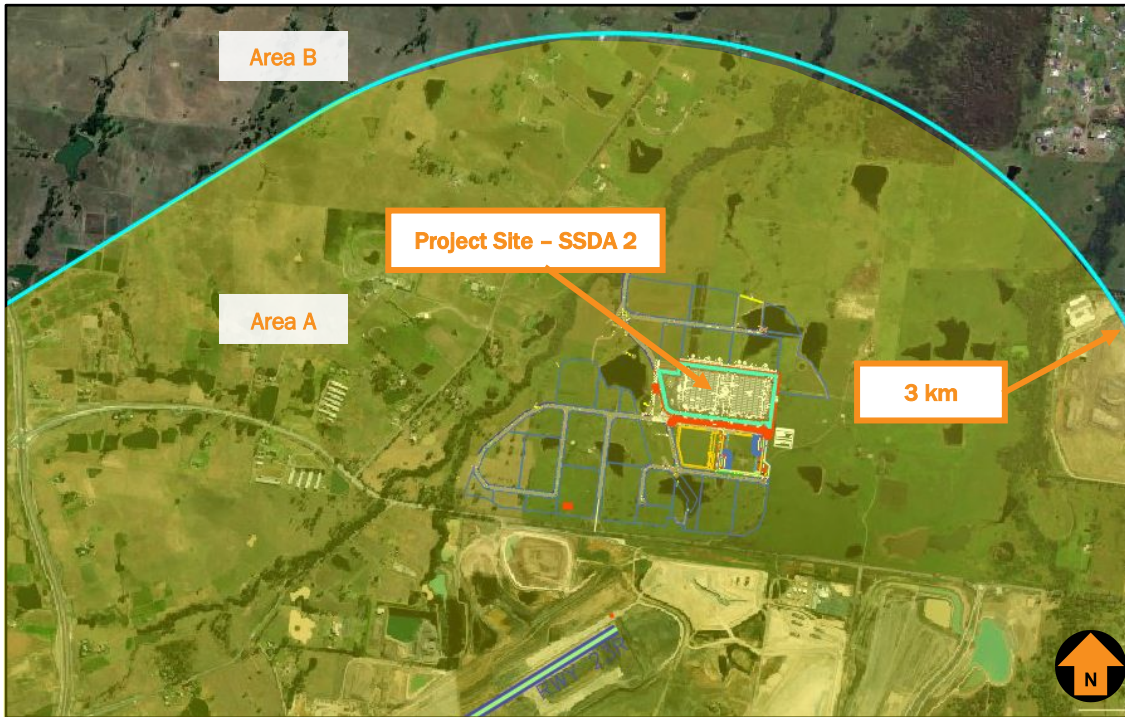


Figure 36 Wildlife Control Zones related to Port Macquarie Airport

## **9. GUIDELINE D: MANAGING THE RISK OF WIND TURBINE FARMS AS PHYSICAL OBSTACLES TO AIR NAVIGATION**

This guideline principally provides recommendations to local planning authorities and proponents of wind farm developments on the implementation of policies to limit the impact of such development on aircraft operations. The “requirements” set out below are extracted from those recommendations.

As the proposed development is not a wind farm nor includes a single wind turbine this Guideline does not apply. Requirements and assessment approach are therefore not included in this report.

## 10. GUIDELINE E: MANAGING THE RISK OF DISTRACTIONS TO PILOTS FROM LIGHTING IN VICINITY OF AIRPORTS

The National Airports Safeguarding Framework, Guideline E, describes a set of zones at either end of a runway used at night or in poor weather conditions, in which lighting that may cause a distraction to pilots due to its intensity, configuration or colour might confuse a pilot and endanger the safety of an aircraft.

The location of the Project Site is within Zone C and D, as shown in Figure 37 (source: Guideline E and Google Earth).

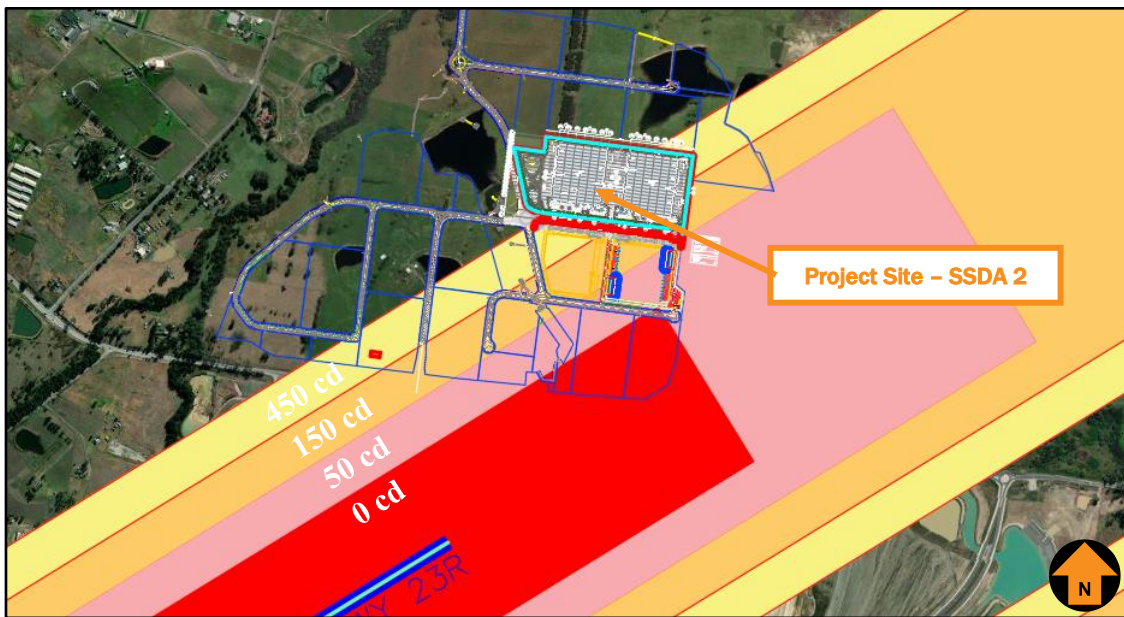


Figure 37 Lighting Hazard identification area

The proponent needs to ensure that the design and construction of the proposed development limits the upward light (measured 3° to the horizontal) is no more than 150 candelas for Zone C area and 450 candelas for Zone D area during both construction and ultimate operation.

## **11. GUIDELINE F: MANAGING THE RISK OF INTRUSIONS INTO THE PROTECTED OPERATIONAL AIRSPACE OF AIRPORTS**

This guideline provides guidance to State/Territory and local government decision makers as well as airport operators to jointly address the issue of intrusions into the operational airspace of airports by tall structures, such as buildings, cranes and transmission lines, as well as trees in the vicinity of airports.

Detail analysis of this section refer to Section 5.1 to 5.4.

## **12. GUIDELINE G: PROTECTING AVIATION FACILITIES – COMMUNICATION, NAVIGATION AND SURVEILLANCE (CNS)**

The guideline provides land use planning information to enable the protection of CNS facilities which support the systems and processes in place by Airservices Australia (Airservices), the Department of Defence (Defence) or other agencies under contract with the Australian Government, to safely manage the flow of aircraft into, out of and across Australian airspace.

Detail analysis of this section refer to Section 5.5 to 5.6.

### 13. GUIDELINE H: PROTECTING STRATEGICALLY IMPORTANT HELICOPTER LANDING SITES (HLS)

The purpose of Guideline H is to protect important Helicopter Landing Sites (HLS) from infringements. An HLS is a specific nominated area (not located on an aerodrome) wholly or partly used for the arrival or departure of helicopters for strategically important purposes

*Any development that exceeds the heights shown in Figure 38, which is consistent with the highest level of HLS classification (Performance Class 1), must be referred to the asset owner and CASA.*

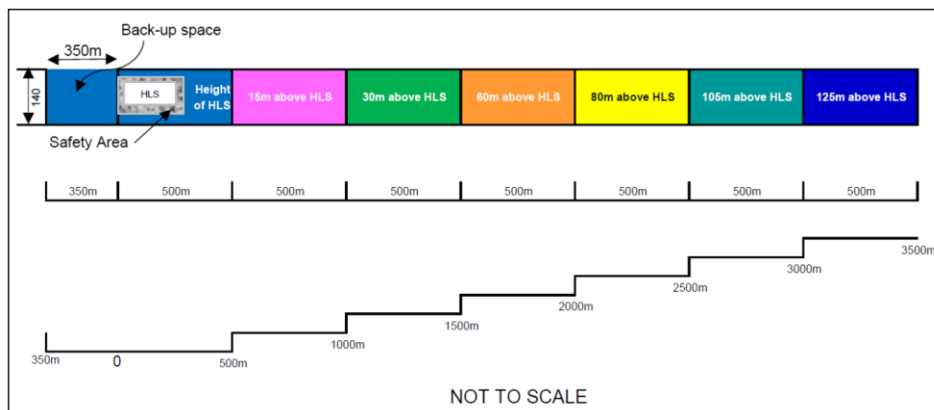


Figure 38 Referral Trigger for SHLS

The proposed Project Site is located more than 3.5km from any relevant helicopter landing sites. Therefore, the Project Site will not impact on any HLS operations.

## 14. GUIDELINE I: MANAGING THE RISK IN PUBLIC SAFETY AREAS AT THE ENDS OF RUNWAYS

Guideline I provides guidance to Australian Government, state, territory and local government decision makers on the assessment and treatment of potential increases in risk to public safety which could result from an aircraft incident or development proposal in areas near the end of an airport runway. Guideline informs a more consistent approach to the application of Public Safety Areas (PSAs) at and near Australian airports.

Western Sydney Airport's web page publish the Airport Safeguarding tool, which includes the Public Safety Area diagram.

As shown in the in Figure 39, the Project Site will be outside the PSA area of Western Sydney Airport.



Figure 39 Western Sydney Airport PSA Area in relation to the Project Site.

## 15. CONCLUSIONS

As a result of this aeronautical assessment, the following conclusions are made:

- The proposed site (SSDA – 2 North) has the following characteristics:
  - Both warehouses' maximum height of 79.6 m AHD (261.2 ft AMSL)
  - Assumed cranes up to 15 m above the building, the maximum height will be up to 94.6 m AHD (310.4 ft AMSL).
- The project development:

- Guideline A: Measure for Managing Impact of Aircraft Noise

The Project belongs to the 'other industrial' building type, which is acceptable for all ANEF zones.

- Guideline B: Managing the Risk of Building Generated Windshear and Turbulence at Airports

The height of the Project Site is lower than the height of windshear trigger area. And narrow structures like cranes do not cause significant wind turbulence effects

- Guideline C: Managing the Risk of Wildlife Strikes in Vicinity of Airports

The Project Site is within Area A. Specifically in Guideline C, Warehouse (non-food storage) is listed as a 'very low' risk and requirement to 'Monitor' within Area A

- Guideline D: Managing the Risk of Wind Turbine Farms as Physical Obstacles to Air Navigation

As the proposed development is not a wind farm nor includes a single wind turbine this Guideline does not apply

- Guideline E: Managing the Risk of Distractions to Pilots from Lighting in Vicinity of Airports

The proponent needs to ensure that the design and construction of the proposed development limits the upward light (measured 3° to the horizontal) is no more than 150 candelas for Zone C area and 450 candelas for Zone D area during both construction and ultimate operation

- Guideline F: Managing the Risk of Intrusions into the Protected Operational Airspace of Airports

Certified airports

- The Project is within 30 nm of 4 certified airports and 2 military airports:
  - Western Sydney Airport
  - Sydney Airport (YSSY)
  - Bankstown Airport (YSBK)
  - Holsworthy Airport (YSHW)
  - Camden Airport (YSCN)
  - RAAF Richmond Airport (YSRI)

Western Sydney Airport:

- Calculating PANS-OPS surfaces is complex because of the highly technical nature of the design and interaction of procedures. The design of a full set of PANS-OPS for Stage 1 and long-term operations will be required following the formal flight path design before the start of operations. Once designed, the PANS-OPS will be protected under the Airspace Protection Regulations.
- Once the construction details can be provided before starting the procedure design, the height of the warehouse will be considered into the design and won't affect the PANS-OPS surfaces.

Other Certified Airports (Sydney Airport, Bankstown Airport, Holsworthy Military Airport, Camden Airport and RAFF Richmond Military Airport):

- Would not affect MSA
- Would not infringe Circling areas
- Would not infringe the obstacle clearance heights applicable to any of the instrument procedures

*Obstacle Limitation Surfaces*

- The Project would not infringe on the obstacle limitation surface (OLS) of any airport.

*Air Routes and Lowest Safe Altitude (LSALT)*

- The Project would not impact the Grid LSALT and any Air Route LSALT

*Airspace*

- The project Site is located outside of controlled airspace (wholly within Class G airspace) and is not located in any Prohibited and Restriction areas
- Is located within Danger Area -D556A. Consultation with the Consultation with CASA will be required. Airservices Australia will provide this report to CASA when they receive the consultation advice.

○ Guideline G: Protecting Aviation Facilities – Communication, Navigation and Surveillance (CNS)

*Aviation Navigation Facilities*

- The Project potentially locate within the GBAS BRA area.
- Aviation Projects cannot confirm any specifics as to the potential impacts as public information on the planned equipment and final locations is not available.
- Consultation with Airservices Australia will be required.

*ATC Surveillance Radar installations*

- The Project site would not impact ATC surveillance radar coverage.

○ Guideline H: Protecting Strategically Important Helicopter Landing Sites (HLS)

The proposed Project Site is located more than 3.5km from any relevant helicopter landing sites. Therefore, the Project Site will not impact on any HLS operations

- Guideline I: Managing the Risk in Public Safety Areas at The Ends of Runways

The Project Site will be outside the PSA area of Western Sydney Airport

## 16. RECOMMENDATIONS

As a result of this aeronautical assessment, the following recommendations are made:

- If approved, details of the Project must be reported to Airservices Australia via this email address: [vod@airservicesaustralia.com](mailto:vod@airservicesaustralia.com), and published in En Route Supplement Australia (ERSA) and other relevant aeronautical chart products.
- Consultation with Airservices Australia regarding PANS-OPS and CNS is required, and once public information available, it is recommended that the assessment is revisited.



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