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Western Parkland City Authority

Bradfield City Centre  
Master Plan Application

# Aviation Assessment

Prepared by AECOM

October 2023

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# Acknowledgement of Country

Aboriginal people have had a continuous connection with the Country encompassed by the Western Parkland City (the Parkland City) from time immemorial. They have cared for Country and lived in deep alignment with this important landscape, sharing and practicing culture while using it as a space for movement and trade.

We Acknowledge that four groups have primary custodial care obligations for the area: Dharug/Darug, Dharawal/Tharawal, Gundungurra/Gundungara and Darkinjung. We also Acknowledge others who have passed through this Country for trade and care purposes: Coastal Sydney people, Wiradjuri and Yuin.

Western Sydney is home to the highest number of Aboriginal people in any region in Australia. Diverse, strong, and connected Aboriginal communities have established their families in this area over generations, even if their connection to Country exists elsewhere. This offers an important opportunity for the future of the Parkland City.

Ensuring that Aboriginal communities, their culture, and obligations for Country are considered and promoted will be vital for the future of the Parkland City. A unique opportunity exists to establish a platform for two-way knowledge sharing, to elevate Country and to learn from cultural practices that will create a truly unique and vibrant place for all.



**Garungarung Murri Murri Nuru**  
(Beautiful Grass Country)

Artwork created by Dalmarrri artists Jason Douglas and Trevor Eastwood for the Western Parkland City Authority

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# Executive Summary

AECOM has been engaged by WPCA to provide an Aviation Assessment in relation to the Master Plan being prepared for the Aerotropolis Core Precinct, one of five initial planning precincts forming the Aerotropolis.

The Aerotropolis Core Precinct (immediately south-east of Western Sydney Airport) is 1,342 Ha in area – with a focus on jobs creation, housing and city building in the Aerotropolis.

Currently, the Aerotropolis Core Precinct is a mixture of rural residential and rural lots, Commonwealth land adjacent the future Airport, with a proposed Metro Station within the Precinct.

The Bradfield City Centre Master Plan for the Stage 1 Aerotropolis Core Precinct covers an area of approximately 114.6 Ha.

A core objective for the planning for the Aerotropolis is to minimise potential impacts on the community while still maintaining the safe 24-hour operation of the Western Sydney International Airport.

Key planning documents and guidelines prepared for the Western Sydney Aerotropolis reference the National Airports Safeguarding Framework (NASF) which address the long-term and effective protection and safeguarding guidelines and community amenity considerations for airports.

This report considers the strategic and planning policy context of the Western Sydney Aerotropolis and the Bradfield City Centre Master Plan against the NASF Guidelines.

Due to its location in the context with the Western Sydney Airport, the orientation of its proposed parallel runways and anticipated flightpaths, the Bradfield City Centre is not directly impacted by aircraft noise, potential for windshear/turbulence issues, or lighting distraction to pilots, and does not pose significant restrictions on building heights.

One of the challenges facing Western Sydney Airport is managing the risk of wildlife in the vicinity of the Airport to mitigate the potential for aircraft wildlife strikes. The vision for the Western Sydney Aerotropolis includes natural area revitalisation, water retention, enhancing biodiversity, establishing an extensive blue-green grid, and increasing tree canopy coverage. As a result, mitigation options and recommendations have been developed to help land users manage wildlife hazards, wildlife buffers have been developed, and processes embedded in the planning framework to help achieve the vision of the Western Sydney Aerotropolis whilst safeguarding the airport.

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# Glossary of Terms

Term	Definition
AAWSF	Aerotropolis Aviation Wildlife Safeguarding Framework
AHD	Australian Height Datum
ANEC	Aircraft Noise Exposure Contour
ANEF	Aircraft Noise Exposure Forecast
AMRF	Advanced Manufacturing Research Facility
AS	Australian Standard
Aerotropolis	Western Sydney Aerotropolis
Airservices	Airservices Australia
BC Act	Biodiversity Conservation Act 2016
CASA	Civil Aviation Safety Authority
CIV	Capital Investment Value
CSIRO	Commonwealth Scientific and Industrial Research Organisation
DA	Development Application
DITRDCA	Department of Infrastructure, Transport, Regional Development, Communications, and the Arts
DP	Deposited Plan
DPE	Department of Planning and Environment
EP&A Act	Environmental Planning and Assessment Act 1979
EP&A Regulation	Environmental Planning and Assessment Regulation 2021
ICAO	International Civil Aviation Organization
LEP	Local Environmental Plan
LGA	Local Government Area
MOS Part 139	CASA Manual of Standards Part 139 - Aerodrome
MPRs	Master Plan Requirements

N Contour	Number-above Noise Contour
NASAG	National Airports Safeguarding Advisory Group
NASF	National Airports Safeguarding Framework
NATS	National Air Traffic Services (United Kingdom)
NSW Government	State Government for NSW
OLS	Obstacle Limitation Surface
PANS-OPS	Procedures for Air Navigation Services – Aircraft Operations Surfaces
SEPP	State Environmental Planning Policy
Western Parkland City State Environmental Planning Policy (Precincts – Western Parkland City 2021) SEPP	
WSAP	Western Sydney Aerotropolis Plan
WPCA	Western Parkland City Authority



# 1 Introduction

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## 1.1 Purpose of this report

This report accompanies the Master Plan Application for the Bradfield City Centre submitted to the Department of Planning and Environment (DPE).

Consultation was undertaken with a range of State Authorities, services providers, and members of the community during the preparation of this Master Plan Application.

No direct consultation has been undertaken with the Department of Infrastructure, Transport, Regional Development, Communications, and the Arts (DITRDCA), Airservices Australia or the Civil Aviation Safety Authority (CASA). Such consultation is not considered necessary.

All matters were considered to have been adequately addressed within the Master Plan Application or in the accompanying appendices.

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## 1.2 The Western Sydney Aerotropolis

The Western Sydney Aerotropolis is an 11,200-hectare region set to become Sydney's third city (the Western Parkland City), and the gateway and economic powerhouse of Western Sydney.

The Aerotropolis comprises of the new Western Sydney (Nancy-Bird Walton) International Airport surrounded by five initial precincts which include the Aerotropolis Core, Wianamatta–South Creek Northern Gateway, Agri-business and Badgerys Creek outlined in **Figure 1** below.

The final Aerotropolis planning package, including the Precinct Plan and State Environmental Planning Policy (SEPP) Amendment, was gazetted by DPE in March 2022 and the Development Control Plan Phase 2 was finalised in November 2022. A further update of the Precinct Plan was released in May 2023. These documents have been used to inform the preparation of the Bradfield City Centre Master Plan.

The proposed Master Plan Application for the site has also been prepared using the Western Sydney Aerotropolis Master Plan Guideline and Master Plan Requirements.

# 2 Bradfield City Centre

## 2.1 Strategic Context

The Bradfield City Centre is located to the south-east of the new Western Sydney International (Nancy-Bird Walton) Airport at the intersection of Badgerys Creek Road and The Northern Road (see **Figure 1** below).

The Sydney Metro Western Sydney Airport line runs through the site, providing connections from the key centre of St Marys through to stations at Orchard Hills, Luddenham, Airport Business Park, Airport Terminal and the Aerotropolis which is located within the site.

The site is surrounded by several key roads and infrastructure corridors including Bringelly Road, Badgerys Creek Road, Elizabeth Drive, M12 and The Northern Road.

**Figure 1 Strategic Context**



Set on natural waterways, Bradfield City Centre presents a rare opportunity to showcase the best urban design and to create a thriving, blue and green, connected City in which Australians will want to live, learn and work. The Bradfield City Centre will be a beautiful and sustainable 22nd Century City. It will foster the innovation, industry and technology needed to sustain the broader Aerotropolis and fast track economic prosperity across the Western Parkland City.

## 2.2 The Master Plan Site

The street address for Bradfield City Centre is 215 Badgerys Creek Road, Bradfield (the Site) within the Liverpool Council Local Government Area (LGA). The site is legally described as Lot 3101 DP 1282964 and has an area of 114.6 hectares, with road access to Badgerys Creek Road located at the north-western corner. The site spans across the Aerotropolis Core and Wianamatta-South Creek Precinct, within Western Sydney Aerotropolis. The Site is outlined in **Figure 2** below.

The Site is predominantly zoned Mixed Use under the Western Parkland City SEPP, with a small portion of Enterprise zoned land located on the north-western corner of the site. The site also includes Environment and Recreation zoned land mostly along Thompsons Creek.

**Figure 2 Master Plan Site**





The Master Plan sets out a framework for future development within the Bradfield City Centre which includes:

- ### Figure 3 Master Plan



## 2.4 The Proposal

The Bradfield City Centre Master Plan is intended to facilitate the growth of the centre over time. The Master Plan has established the following three planning horizons for technical assessments.

**Table 1 - Planning & Development Horizons**

Phase	Indicative Timeframe	Estimated employment	Estimated residential population	Estimated Gross Floor Area (cumulative)
Immediate	2026	1,000 - 1,200 jobs	0 residents	48,500 sqm
Medium-term	2036	8,000 - 8,300 jobs	3,000 - 3,100 residents	341,000 sqm
Long-term	2056	20,000 – 24,000 jobs	15,000 – 15,200 residents	1,258,000 sqm

*Note: The table above is an estimate of the population and employment forecast used for the purposes of modelling only.*

*The master plan has the capacity to accommodate ~10,000 residential dwellings. In accordance with NSW Government policy a proportion of the residential dwellings will be affordable housing. The timing and delivery of residential dwellings will be subject to market demand and future master plan reviews that consider the impact of additional population on the scope and timing of social and physical infrastructure.*

# 3 Baseline Investigations

A key aspect of the capacity of an airport to operate and respond to growth in the aviation sector is the impact of what occurs on and surrounding the Airport. Long-term and effective protection and safeguarding of Western Sydney Airport is critical to ensuring ongoing aviation operations and safety.

A core objective for the planning for the Aerotropolis is to minimise potential impacts on the community while still maintaining the safe 24-hour operation of the Western Sydney International Airport.

This report considers the strategic and planning policy context of the Western Sydney Aerotropolis and the Bradfield City Centre Master Plan, with reference to recognised land use planning aviation safety requirements and consideration of community amenity associated with aircraft noise.

Section 4 of this report considers the strategic context, legislative and statutory planning policy framework which guides the development of Western Sydney Airport and the various precincts, including the Master Plan for the Aerotropolis Core Precinct, the Bradfield City Centre Master Plan.

Section 5 of this report considers each of the NASF Guidelines, their reference/relationship to the Strategic Planning Context – specifically, the maps and policies relating to Airport Safeguarding as contained in the Western Parkland City SEPP – and with the Bradfield City Centre Master Plan.

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## 3.1 National Airports Safeguarding Framework

The National Airports Safeguarding Advisory Group (NASAG), consisting of representatives from the Commonwealth, State and Territory Governments, and the Australian Local Government Association, has produced the National Airports Safeguarding Framework (NASF).

NASF is a national land use planning framework which aims to:

- Improve community amenity by minimising noise sensitive developments near airports, including through the use of additional noise metrics and improved noise-disclosure mechanisms
- Improve safety outcomes by ensuring aviation safety requirements are recognised in land use planning decisions through guidelines being adopted on various safety-related issues.

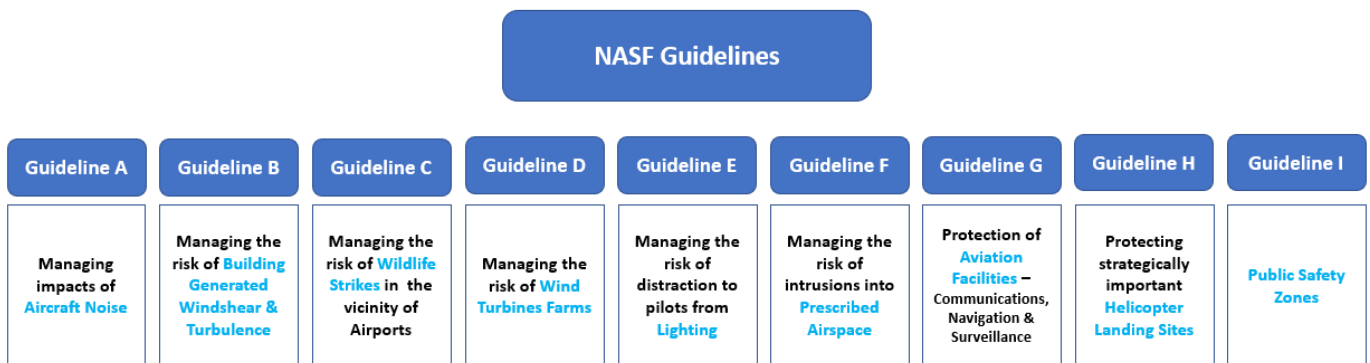
It applies to all airports in Australia and affects planning and development around airports, including development activity that might penetrate operational airspace and/or affect navigational procedures for aircraft.

This report provides advice and services in relation to the Aviation Assessment associated with the Master Plan for the Aerotropolis Core Precinct, the Bradfield City Centre Master Plan, contributing to the vision of the Aerotropolis and seeking to ensure safeguarding the 24-hour operations of the new Western Sydney Airport.

### 3.1.1 NASF Guidelines

The NASF includes nine guidelines for the operation of Airports and related land use planning measures associated with Airports in Australia, as detailed in **Figure 4**.

**Figure 4 NASF Guidelines**



### 3.1.2 NSW Government position on NASF

It is the responsibility of each jurisdiction to implement the NASF into their respective planning systems. Each state and territory will align their respective planning processes with the NASF principles and guidelines, as appropriate.

NSW Government supports the NASF with the exception of Guideline A. The NSW Department of Planning, Industry and Environment relies on ANEF contours and Australian Standard AS2021-2015 *Acoustics – Aircraft Noise Intrusion Building Sitting and Construction*.

# 4 Assessment Requirements and Policy Context

The Western Sydney Airport – Airport Plan (Airport Plan) was originally prepared in 2016 to provide the authorisation for Stage 1 design and development of Western Sydney International Airport. There have been subsequent variations to the Airport Plan in 2020 and 2021.

The Western Sydney Aerotropolis Planning Package was released on 13 September 2020. The planning package included:

- Western Sydney Aerotropolis Plan (WSAP)
- Western Sydney Aerotropolis Plan Finalisation Report
- Amendment to the *Environmental Planning and Assessment Regulation 2000*
- New Ministerial Direction 3.5 and 7.8 Implementation of Western Sydney Aerotropolis Plan
- Western Sydney Aerotropolis Development Control Plan (DCP) Phase 1
- Western Sydney Aerotropolis – Draft Wildlife Management Assessment Report, May 2020

The Western Sydney Aerotropolis Development Control Plan 2021 – Draft Phase 2 (Western Sydney Aerotropolis DCP - Draft Phase 2) was released for public exhibition in October 2021. The DCP was supported by an accompanying document, the Western Sydney Aerotropolis and Surrounding Area – Draft Aviation Safeguarding Guidelines, October 2021 (Draft Aviation Safeguarding Guidelines).

The finalisation of the planning package included the update of the State Environment Planning Policy (Precincts – Western Parkland City) 2021 (Western Parkland City SEPP).

Since this time, the Western Sydney Aerotropolis Development Control Plan – Phase 2 (Phase 2 DCP) and the accompanying Aviation Safeguarding Guidelines were finalised on 10 November 2022.

The following is an overview of the relevant planning documents and their role in the safeguarding of aviation operations and community amenity at the new Western Sydney Airport relevant to the Bradfield City Centre Master Plan.



## 4.1 Master Plan Requirements

The DPE have issued Master Plan Requirements (MPRs) to the Authority for the preparation of a Master Plan for Bradfield City Centre. This report has been prepared to address the following MPRs.

**Table 2 - Master Plan Requirements**

Reference	Master Plan Requirement	Where addressed
General Requirements (pages 1 & 2)	Demonstrate consistency with the Western Sydney Aerotropolis Plan, the Western Sydney Aerotropolis Development Control Plan – Phase 2 and the relevant guidelines (such as Aviation safeguarding)	Sections 4.2 and 5.1
3. The draft master plan (page 3)	The draft master plan must be supported by an analysis of the site opportunities and constraints, including aviation restrictions	Sections 4.2 and 5.1
21. Aviation safeguarding (page 10)	The draft master plan must address aviation safeguarding as required in the WPC SEPP, Precinct Plan, Stage 2 DCP and relevant guidelines	Sections 4.2 and 5.1

**Table 3 - Agency and Council Comments**

Reference	Agency and Council Comment	Where addressed
Liverpool City Council Attachment 1 – Council Comments e) Building Heights	<p>The SEPP identifies maximum building heights for Bradfield of 62 metres, however this maximum permitted height is limited by an Obstacle Limitation Surface (OLS) of Reduced Level (RL) 125.5 AHD.</p> <p>The Master Plan should identify how the existing and future proposed topography of the site and street layout when considered with maximum possible building heights will impact on the capacity of the public domain at street level to capture cooling breezes and shade during summer and solar access during the winter.</p> <p>In this regard, the Master Plan has the opportunity to detail a more detailed and fine grain approach than that adopted by the WSA Precinct Plan and should nominate a range of building heights that respond to the site orientation, topography, prevalent breezes, available view corridors and views, public amenity at street level and the capacity to achieve excellent amenity in future built form.</p>	Sections 4.2.5, 4.2.6 and 5.1.6

## 4.2 Western Sydney Aerotropolis

The following section considers the key planning documents and guidelines prepared for the Western Sydney Aerotropolis and identified in Sections 4 and 4.1, and their response to dealing with the long-term and effective protection and safeguarding of Western Sydney Airport, ensuring aviation safety requirements are recognised in land use planning decisions whilst addressing community amenity by minimising noise sensitive developments near the Airport.

### 4.2.1 Western Sydney Aerotropolis Plan

The Western Sydney Aerotropolis Plan was released by the Western Sydney Planning Partnership (WSPP) in September 2020. The Plan includes:

- Overarching principles, distribution of land uses, the phasing of precincts and identification of high-level transport framework, Blue-Green infrastructure, and other key infrastructure
- Introduces statutory mechanisms to implement the vision and objectives
- Includes a Structure Plan (see **Figure 5**) – which divides the 11,200 Ha Aerotropolis site into 10 precincts (identifying the intended land use planning outcomes for each precinct).

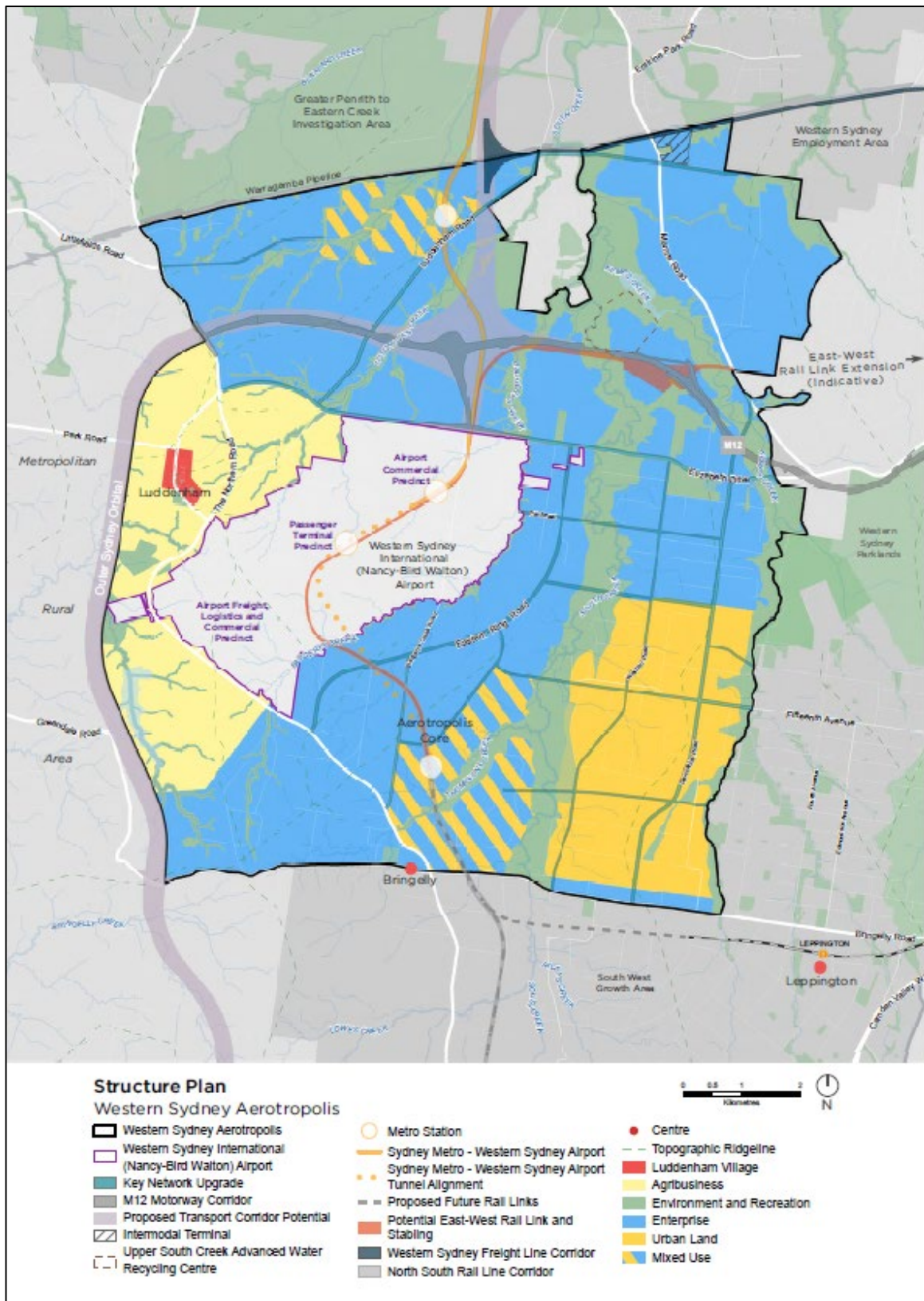
The Vision for the Western Sydney Aerotropolis Plan states, among other matters, the following relevant to aviation operations and community amenity:

*“The WSAP will safeguard the 24-hour operating status of the Airport as land in the Aerotropolis develops and evolves while also including appropriate protections for the community.”*

Chapter 5 of the Western Sydney Aerotropolis Plan recognises the importance of safeguarding the Airport’s 24-hour operations, considering the National Airports Safeguarding Framework (NASF) guidelines and its implications for land use planning both on and off-airport. Detailed assessment has been undertaken in relation the following guidelines:

- Aircraft noise development
- Protected operational airspace
- Wildlife hazards
- Windshear and turbulence
- Public safety areas
- Lighting and reflectivity
- Wind turbines
- Communications, navigation, and surveillance facilities
- Helicopter landing sites associated with hospitals

Figure 5 Western Sydney Aerotropolis Structure Plan



Source: Western Sydney Aerotropolis Plan, September 2020



## 4.2.2 Western Parkland City SEPP

The Western Parkland City SEPP came into effect on 1 March 2022.

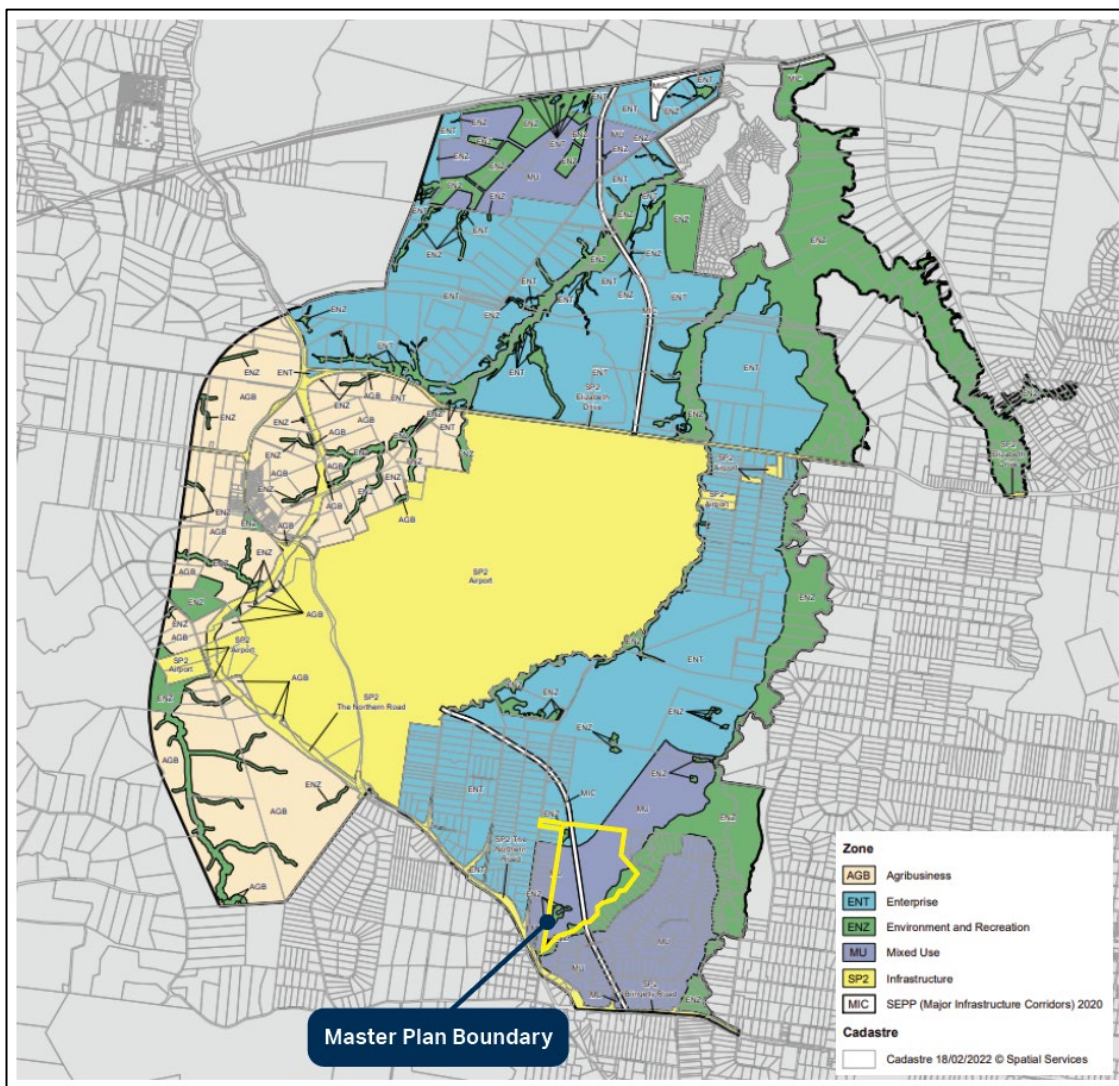
The Western Parkland City SEPP consolidated and repealed a number of previous SEPP documents, including the SEPP (Western Sydney Aerotropolis) 2020.

The Western Parkland City SEPP provides the statutory basis to achieve the vision for the Aerotropolis – guiding how land will be zoned, developed, and protected.

The Western Parkland City SEPP applies zoning to the initial precincts and provides performance criteria (planning rules) for master plans – and describes a framework for planning pathways (process for development projects and assessment).

The Land Use Zoning Map from the SEPP, highlighting the boundary of the Stage 1 Master Plan, is included as **Figure 6**.

**Figure 6 Western Parkland City SEPP - Land Zoning Map**



Source: Western Parkland City SEPP Land Zoning Map (and AECOM – Master Plan Boundary)

The Land Zoning Map illustrates that the majority of the Bradfield City Centre is zoned Mixed Use, with a small section of the northern part of the Precinct zoned Enterprise.

The Mixed Use Zone is intended to promote business, office, retail, entertainment and tourist use, and to provide for residential and other forms of accommodation.

The Enterprise Zone is intended to encourage employment and businesses related to professional services, high technology, aviation, logistics, food production and processing, health, education and creative industries.

Both zones seek to ensure an appropriate transition from non-urban land uses and environmental conservation areas in surrounding areas.

The SEPP also includes maps and policies relating to Airport safeguarding. These include:

- Maps
  - Sheet NEC\_001      Noise Exposure Contour Map
  - Sheet OLS\_001      Obstacle Limitation Surface Map
  - Sheet LIW\_001      Lighting Intensity and Wind Shear Map
  - Sheet WBZ\_001      Wildlife Buffer Zone Map
  - Sheet TBZ\_001      Wind Turbine Buffer Zone Map
  - Sheet PSA\_001      Public Safety Area Map
  - Sheet BRA\_001      Building Restricted Area Map
- Development Control – Airport safeguards (Part 4.3 of the SEPP)
  - Aircraft noise
  - Building wind shear and turbulence
  - Wildlife hazards
  - Wind turbines
  - Lighting
  - Airspace operations
  - Public safety
  - Operation of certain air transport facilities

A detailed review of such maps/policies is included in Section 5.

### 4.2.3 Western Sydney Aerotropolis Development Control Plan Phase 1

The Western Sydney Aerotropolis Development Control Plan 2020 (Phase 1) (Phase 1 DCP) identified the precinct planning principles, objectives, and performance outcomes to allow precinct planning to progress.

The Phase 1 DCP provided the following detailed planning controls:

- Vision and objectives for the initial precincts
- Performance outcomes for development in initial precincts (including airport safeguarding and bushfire hazard management)

The Phase 1 DCP also recognises that a Phase 2 DCP would be released once precinct planning for the initial precincts within the Western Sydney Aerotropolis (Aerotropolis) is finalised.

The Phase 1 DCP has now been superseded by the Western Sydney Aerotropolis Development Control Plan – Phase 2 (Phase 2 DCP).

## 4.2.4 Western Sydney Aerotropolis Development Control Plan – Phase 2

The Western Sydney Aerotropolis Development Control Plan – Phase 2 (Phase 2 DCP) was finalised on 10 November 2022. Phase 2 DCP supports the implementation of the Precinct Plan by providing controls to guide development across the initial precincts in the Aerotropolis. The initial precincts for development are Aerotropolis Core, Badgerys Creek, Wianamatta-South Creek, Agribusiness and Northern Gateway Precincts.

The Phase 2 DCP has two accompanying documents: the Recognise Country Guideline and the Aviation Safeguarding Guidelines.

The following section provides a review and assessment of specific references within the Phase 2 DCP relating to safeguarding of airport operations. Section 4.2.5 of this report provides a review and assessment of the Aviation Safeguarding Guidelines.

**Table 4 – Draft Phase 2 DCP – Part 1: Background**

Section	Description	Commentary
1.2	<p>Aims of this DCP</p> <p>Section 1.2 of the Phase 2 DCP lists the aims of the DCP, with the following being most relevant to the safeguarding of airport operations:</p> <p>Safeguard the airport operations of the Western Sydney International (Nancy-Bird Walton) Airport (the Airport)</p>	<p>The DCP aims are consistent with the need to safeguard airport operations and aligns with the Bradfield City Centre Master Plan.</p>
1.4.1	<p>Performance Based Approach</p> <p>Section 1.4.1 states that the DCP uses a flexible performance-based approach, by providing objectives, performance outcomes and benchmark solutions.</p> <p>It further states:</p> <p><i>“While a performance based approach is generally encouraged, where impacts relate to aviation safeguarding these controls need to be adhered to</i></p>	<p>The DCP recognises the importance of ensuring that aviation safeguarding controls are adhered to, aligning with the Bradfield City Centre Master Plan.</p>

Section	Description	Commentary
	<i>and there is limited flexibility in their application.”</i>	
1.4.2	Relationship to Other Documents & Instruments	
	Of relevance to this report, Section 1.4.2 states that this DCP references and should be read in conjunction with:	This section gives reference to the <i>Aviation Safeguarding Guidelines – Western Sydney Aerotropolis and Surrounding Areas</i> .
	Aviation Safeguarding Guidelines – Western Sydney Aerotropolis and Surrounding Areas.	These are reviewed and assessed in Section 4.2.5 of this report.

**Table 5 – Phase 2 DCP – Part 2: General Controls**

Section	Description	Commentary
2.10	Airport Safeguarding	
	This section includes the following introductory paragraph:	The Airport Safeguarding Objectives and Performance Outcomes/ Benchmark Solutions provide an excellent planning policy framework for the following NASF Guidelines:
	<i>“This section of the DCP is to be read in conjunction with Part 4.3 of the Parkland City SEPP which details airport safeguard development controls in relation to aircraft noise, building wind shear and turbulence, wildlife hazards, wind turbines, lighting, airspace operations and public safety areas.”</i>	Guideline A: Managing Aircraft Noise
	Objectives and Performance Outcomes/ Benchmark Solutions are provided in Section 2.10 for the following:	Guideline B: Managing Building Generated Windshear and Turbulence
	2.10.1 Protection of Operational Airspace	Guideline C: Managing Wildlife Strike Risk
	Objective	Guideline E: Managing Pilot Lighting Distraction
	Safeguard the future 24-hour operations of the Airport and provide appropriate protections for the surrounding community	Guideline F: Managing Protected Airspace Intrusion
	Performance Outcomes	NASF Guideline D: Managing Wind Turbine Risk to Aircraft, is not considered particularly relevant to this area, but is addressed in the Aviation Safeguarding Guidelines. Specifically, the guidelines state that wind turbines are prohibited within 3km of the Western Sydney Airport. In all other circumstances, wind turbines within 30km of Western Sydney Airport are to be referred to WSA who will coordinate responses from other Commonwealth bodies such as CASA, Airservices and DITRDCA. No wind turbines are proposed
	Development does not generate turbulent emissions into the protected airspace	
	Development does not impact on aviation or the operation of the Airport regarding light emission	

Section	Description	Commentary
	and reflective surfaces.	within the Bradfield City Centre.
2.10.2 Noise	Objectives	In relation to Guideline H: Protecting Strategically Important Helicopter Landing Sites, the Aviation Safeguarding Guidelines provide guidance in relation to the location and protection of strategically important helicopter landing sites, stating that these guidelines should be considered if any hospitals or health care facilities are to be located within or in proximity of the Aerotropolis (Bradfield City Centre Master Plan) in the future.
	Safeguard the future 24-hour operations of the Airport and provide appropriate protections for the surrounding community	
	Development does not introduce or intensify noise sensitive uses.	
	Performance Outcomes	Due to the location of the identified Public Safety Areas extending from the ends of the proposed runways for the new Airport, NASF Guideline I: Managing the Risk in Public Safety Areas at the Ends of Runways is also considered unnecessary for this DCP (and is covered by the SEPP). These Public Safety Areas do not impact on the Bradfield City Centre.
	Development within the ANEC 20 and above contours (including extensions to existing development) is constructed to achieve indoor design sound levels as per the Indoor Design Sound Levels for Determination of Aircraft Noise Reduction in AS 2021 – Acoustics Noise Intrusion – Building Siting and Construction.	
2.10.3 Wildlife Hazards	Objective	There are a number of elements in the DCP that are not fully addressed. These include:
	Safeguard the Airport from incompatible development that could compromise safe operations.	Protection of Airspace
	Performance Outcomes	Height of buildings, structures, landscaping, and cranes is not reference in Section 2.10.1
	Development does not attract wildlife which would create a safety hazard to the operations of the Airport.	No reference is provided to the Obstacle Limitation Surface Map (Sheet OLS_001) which is referenced in the SEPP
	Landscaping does not attract wildlife that could create a safety hazard to the operations of the Airport.	Such information is provided and referenced in the Aviation Safeguarding Guidelines
		Noise
		Until the ANEF contour is approved for Western Sydney Airport, the ANEC contour is to be used to inform land use planning



Section	Description	Commentary
		Wildlife Hazards
		Section 2.10.3 addresses wildlife hazards within the 3 km wildlife buffer – but excludes the Parkland Priority Areas (Figure 9 in the DCP)
		Aerotropolis Core Precinct is bisected by the 3km wildlife buffer boundary. This is further detailed in Section 5.1.3

**Table 6 – Phase 2 DCP – Appendices**

Appendix	Description	Commentary
<b>A.</b>	<b>Dictionary</b>	
	<p>Appendix A contains a number of ‘aviation specific’ terms and definitions, including:</p> <ul style="list-style-type: none"> <li>• Australian Noise Exposure Contours (ANEC)</li> <li>• Australian Noise Exposure Forecast (ANEF)</li> <li>• Communications, navigation, and surveillance (CNS) facilities</li> <li>• Controlled activities</li> <li>• National Airports Safeguarding Framework (NASF)</li> <li>• Obstacle Limitation Surface (OLS)</li> <li>• Operational airspace</li> <li>• Procedures for Air Navigation Services – Aircraft Operations Surfaces (PANS-OPS)</li> <li>• Public safety area</li> <li>• Western Sydney Airport</li> <li>• Western Sydney International (Nancy-Bird Walton) Airport</li> <li>• Windshear</li> </ul>	The dictionary in Appendix A provides specific definitions for a number of aviation-related terms – providing greater clarity to the Objectives and Performance Outcomes/ Benchmark Solutions set out in the remainder of the Phase 2 DCP.
<b>B.</b>	<b>Western Sydney Aerotropolis Landscape Species List</b>	
	The Western Parkland City Vision Government Commitment Areas Map in Appendix B (Figure 1)	

Appendix	Description	Commentary
	<p>recognises the 3 km and 8 km landscape buffers around Western Sydney Airport, as prescribed in NASF Guideline C: Managing Wildlife Strike Risk.</p> <p>The commentary associated with the landscape species lists states:</p> <p><i>“Any alternative landscaping species and/or groupings and spacing (as specified in the DCP) outside the Western Parkland Vision Government Commitment Areas and within the 3km wildlife buffer will require an ecologist report submitted with the landscape plan.”</i></p>	<p>This approach is consistent with NASF Guideline C: Managing Wildlife Strike Risk – and is consistent with the Objectives and Performance Outcomes/ Benchmark Solutions for Wildlife Hazards in Section 2.10.3 of the Phase 2 DCP.</p>
<b>D.</b>	<p><b>Supporting Documentation for Development Application</b></p> <p>Appendix D provides a description of input and the high level requirements for certain development.</p> <p>Specifically, Section D.7 relates to the preparation of an Aviation Safeguarding Assessment, stating:</p> <ul style="list-style-type: none"> <li>• An Aviation Safeguarding Assessment is required when triggered by Section 13 Aviation Safeguarding of this DCP. The following table details the matters and various documents that are required as part of an Aviation Safeguarding Assessment.</li> <li>• The table list the matters to be address and the details/assessment required. The matters include: <ul style="list-style-type: none"> <li>○ Protection of Airspace</li> <li>○ Windshear and Turbulence</li> <li>○ Airport Public Safety Areas</li> <li>○ Wildlife Hazards</li> <li>○ Communications, Navigation and Surveillance Systems</li> </ul> </li> </ul>	<p>The details/assessment required in relation to safeguarding matters are aligned with and consistent with the relevant NASF Guidelines.</p>

Based on the detailed review of the Phase 2 DCP, and that any master plan or development must also be assessed against the Aerotropolis SEPP and the Precinct Plan, sufficient controls are provided to ensure the safeguarding of the new Airport, whilst limiting the impact of development of the Aerotropolis Precinct.

## 4.2.5 Western Sydney Aerotropolis and Surrounding Areas – Aviation Safeguarding Guidelines

The NSW Government released the Western Sydney Aerotropolis and Surrounding Area – Aviation Safeguarding Guidelines (Aviation Safeguarding Guidelines) in October 2021. The document was subsequently updated in November 2022 and is now read in conjunction with the Phase 2 DCP.

The purpose of these guidelines is to:

- Assist relevant planning authorities, consultants and proponents when assessing and, preparing development applications which are impacted by aviation safeguarding controls
- Protect community safety and amenity
- Safeguard the 24-hour operations of the Western Sydney International Airport.

In preparing these guidelines, the NSW Government has sought input and data from the Department of Infrastructure, Transport, Regional Development, Communications, and the Arts (DITRDCA); Western Sydney Airport (WSA); and other relevant stakeholders.

These guidelines provide a set of consolidated aviation safeguarding planning guidelines for the Western Sydney Aerotropolis, covering the NASF Guidelines that are detailed in Section 5 of this report.

Within Section 1.1 of the guidelines, the following statement is provided:

*“These guidelines are advisory only. In the event of any inconsistency with relevant legislative requirements and the Aerotropolis DCP, the legislative requirements and Aerotropolis DCP prevail.”*

Western Sydney Airport has developed a supplementary online aviation safeguarding mapping tool which interprets some of the planning protection overlays referred to in Part 3 of the Aerotropolis SEPP, on any particular parcel of land in the vicinity of Western Sydney Airport. This tool shows:

- Maximum height at which a building may be constructed on land within the Aerotropolis, without breaching the obstacle limitation surface (OLS)
- Wildlife buffer zones
- Land within the lighting intensity areas which restricts certain lighting that may distract pilots
- Areas of land which are likely to be affected by aircraft operations and which must therefore undergo strict assessment in terms of the type of development that can be carried out
- Areas of land within a certain proximity of Western Sydney Airport where buildings have the potential to generate or increase wind turbulence or windshear and therefore aircraft instability during landing or take-off
- The areas of land at the end of Western Sydney Airport runways which are considered to be risk areas for aircraft incidences involving take-off or landing which must be strictly controlled and managed

A link to Western Sydney Airport’s online aviation safeguarding mapping tool is provided below.

<http://westernsydney.com.au/your-airport/airport-safeguarding-tool>

The guidelines also address managing impacts of aircraft noise, with the objectives being:

- Manage the impacts of aircraft noise on the community and noise sensitive uses
- Ensure development around Western Sydney Airport does not result in unnecessary constraints on airport operations

- Ensure planning authorities consider the aircraft noise guidelines and noise exposure contour maps when undertaking land use planning for the Aerotropolis and surrounding areas of influence.

The final airspace design is expected to be confirmed by the Australian Government closer to the opening of the airport in 2026. Land use planning will progress based on the most up-to-date information.

#### 4.2.6 Western Sydney Aerotropolis Precinct Plan

The Western Sydney Aerotropolis Precinct Plan was published on 24 March 2022 and updated in May 2023.

The Precinct Plan enables development to commence across the initial precincts of the Aerotropolis and realise the benefits and opportunities that a new international airport in Western Sydney brings.

The Precinct Plan sets the strategic vision, proposed land uses, approach to infrastructure and water management for the initial precincts (Aerotropolis Core, Agribusiness, Badgerys Creek, Northern Gateway, and Wianamatta-South Creek) of the Aerotropolis. This Plan sets out the finer grain detail to support the land use zoning and other provisions of the Aerotropolis SEPP.

There is a reference in Objective 04 to the protection of operations of the Airport, including 24-hour operations, and protecting future communities for aircraft noise. Section 5.2 relates to building heights. This section and Figure 12 of the Precinct Plan includes details of maximum building heights, including a note on the Figure stating:

*“Notwithstanding maximum heights, all buildings and structures, including equipment used during construction (such as cranes) are required to be contained within Obstacle Limitation Surface (OLS) limits established in the Western Sydney Aerotropolis Plan and associated SEPP maps.”*

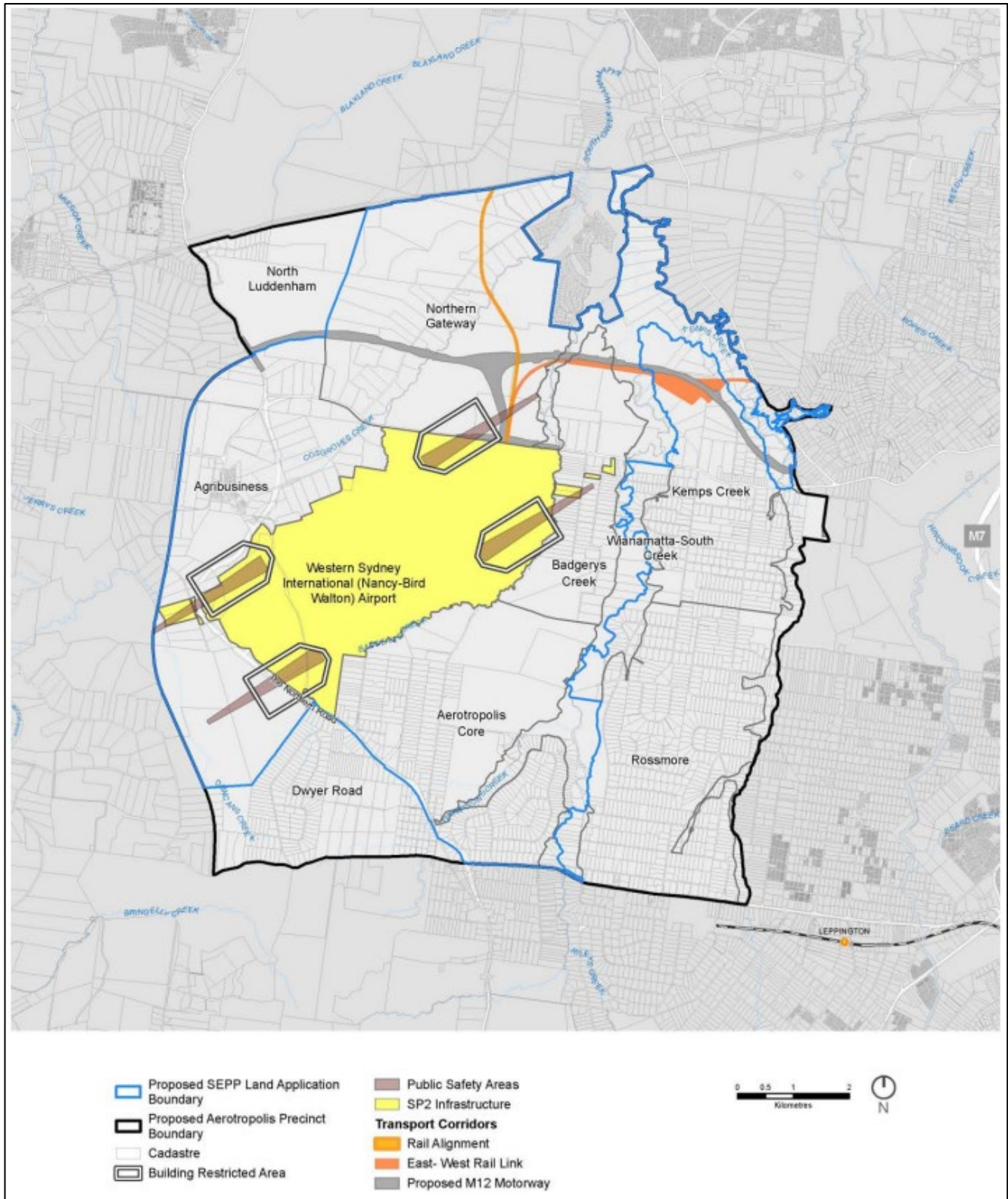
#### 4.2.7 Ministerial Directions 5.3 and 1.10 Implementation of Western Sydney Aerotropolis Plan

The NSW Minister for Planning can issue Local Planning Directions under Section 9.1(2) of the *Environmental Planning and Assessment Act 1979*. Directions 5.3 and 1.10 (amended 20 August 2018 and issued on 13 September 2020, respectively – and renumbered on 1 March 2022) relate to ‘Development Near Regulated Airports and Defence Airfields’ and ‘Implementation of the Western Sydney Aerotropolis Plan’.

Direction 5.3 provides direction to a relevant planning authority when preparing a planning proposal that will create, alter, or remove a zone or a provision relating to land near a regulated airport (including a defence airfield).

Direction 1.10 applies when a relevant planning authority prepares a planning proposal for land in the Blacktown, Blue Mountains, Camden, Campbelltown, Fairfield, Liverpool, Penrith, and Wollondilly local government areas that applies to land that is the subject of the Chapter 4 of the Western Parkland City SEPP.

**Figure 7 Building Restricted Area identified by Western Sydney Airport**



Source: Explanation of Intended Effect of amendment to Environmental Planning Instruments in relation to the Western Sydney Aerotropolis, October 2021

## 4.2.8 Western Sydney Aerotropolis – Draft Wildlife Management Assessment Report, May 2020

The Western Sydney Planning Partnership engaged Avisure in December 2019 to help identify wildlife attraction issues associated with land use planning for the Western Sydney Aerotropolis and Western Parkland City and develop mechanisms to mitigate wildlife strike risks for aircraft operating at Western Sydney Airport once the airport is operational.

The aim is to safeguard the airport whilst not compromising the vision of the Western Sydney Aerotropolis and Western Parkland City.

The report states:

*“Safeguarding the Western Sydney Airport against wildlife strikes is seemingly at odds with the vision of the Western Sydney Aerotropolis that includes natural area revitalisation, water retention, enhancing biodiversity, establishing an extensive blue-green grid, and increasing tree canopy coverage to 40%. Despite the contradictory nature of this challenge, we have taken a balanced approach, with the National Airports Safeguarding Framework at its core, which affords the area amenity but minimises the wildlife threats to aviation.”*

The report provides Acceptable Solutions for inclusion in the draft Western Sydney Aerotropolis Development Control Plan – Phase 2. The proposed Acceptable Solutions aligns with the relevant Performance Outcome described in the Development Control Plan – Phase 1 (PO.11 Development does not cause wildlife to create a safety hazard in the operational airspace of the airport).

The report concludes the following:

*“The report also provides mitigation options and recommendations to help land users manage wildlife hazards. The modified wildlife buffers, the AAWSF, and the proposed wildlife assessment process provides a standardised approach to evaluating potential wildlife hazards, regardless of land use type. This process, when embedded in the planning framework along with performance outcomes, will help achieve the vision of the Western Sydney Aerotropolis whilst safeguarding the airport.”*



# 5 Technical Approach/ Framework

As detailed in Section 4.2, the National Airports Safeguarding Framework (NASF) aims to improve:

- Safety outcomes by ensuring aviation safety requirements are recognised in land use planning decisions
- Community amenity by minimising noise sensitive developments near Airports
- Aircraft noise-disclosure mechanisms.

Details of the NASF Guidelines are referenced throughout the key planning documents and guidelines for the Western Sydney Aerotropolis.

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## 5.1 NASF Guidelines Assessment

The following section considers each of the NASF Guidelines, their reference/relationship to the Strategic Planning Context – specifically, the maps and policies relating to Airport Safeguarding as contained in SEPP (Western Sydney Aerotropolis) – and with the Phase 2 DCP and Aviation Safeguarding Guidelines.

### 5.1.1 Guideline A – Aircraft Noise

Aircraft noise can negatively impact on community amenity and may result in constraints on airport operations.

The established Australian Noise Exposure Forecast (ANEF) System and the *Australian Standard AS 2021-2015 Acoustics – Aircraft Noise Intrusion – Building Siting and Construction* (AS2021) are recognised by a number of jurisdictions in their land use planning regimes.

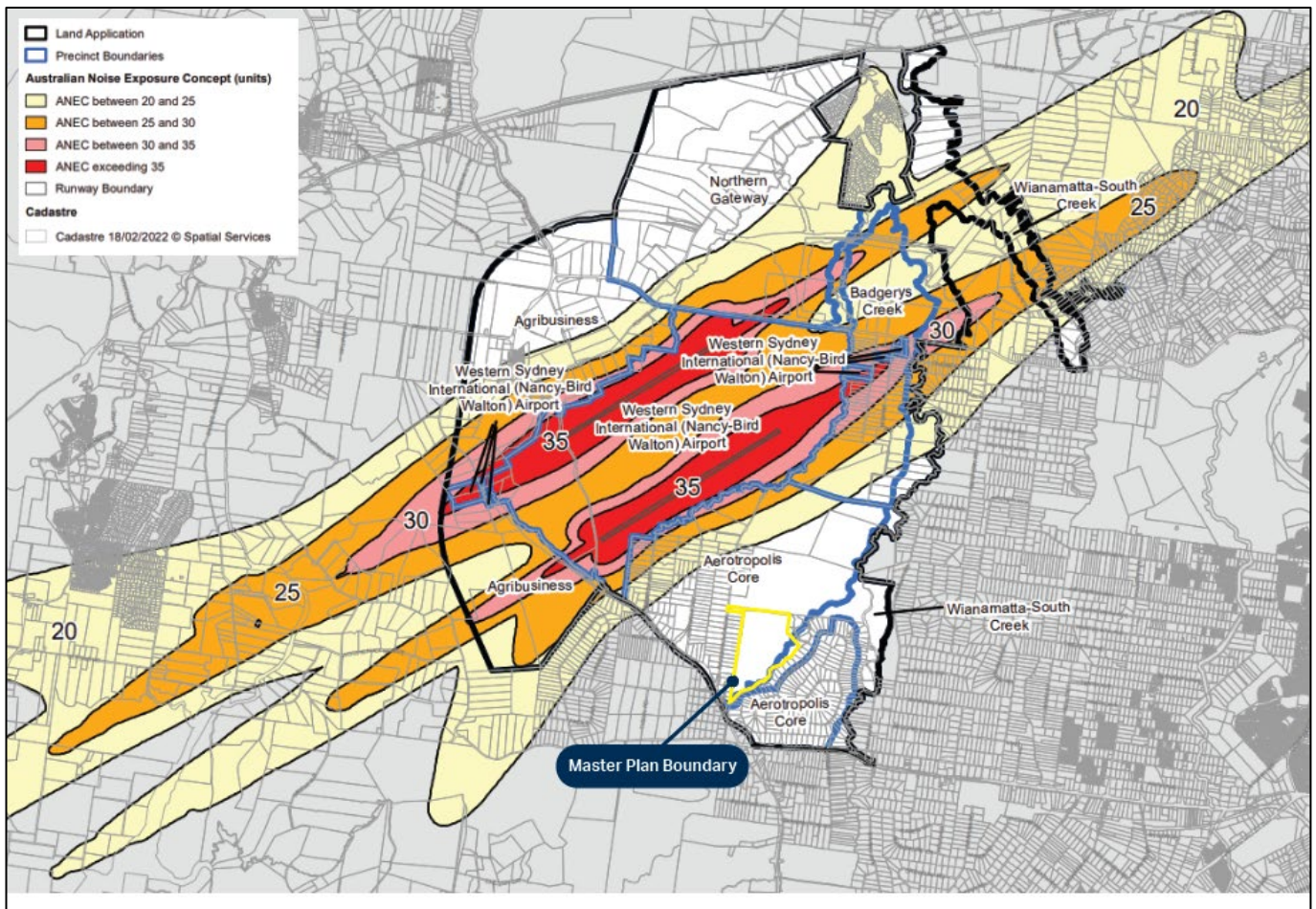
Western Sydney Airport has obtained endorsement for Aircraft Noise Exposure Capacity (ANEC), considering the long term (20 year+) or ultimate capacity of the new Airport – which is used as a land use planning tool to identify areas that are likely to be impacted by future aircraft noise.

The final airspace design is expected to be confirmed by the Australian Government closer to the opening of the airport in 2026.

As described in the SEPP (Western Sydney Aerotropolis) (Part 3 Development Controls – Airport Safeguards – 19 Aircraft noise), development that will impact upon the aviation operations of the Airport will not be supported. New residential and other noise sensitive development will not be located within the ANEC/ANEF 20 and above contours.

As can be seen in **Figure 8**, the Stage 1 Aerotropolis Core Precinct is well outside of areas likely to be affected by aircraft noise.

Figure 8 Noise Exposure Contours



Source: Western Parkland City SEPP Land Zoning Map (and AECOM – Master Plan Boundary)

## 5.1.2 Guideline B – Windshear and Turbulence

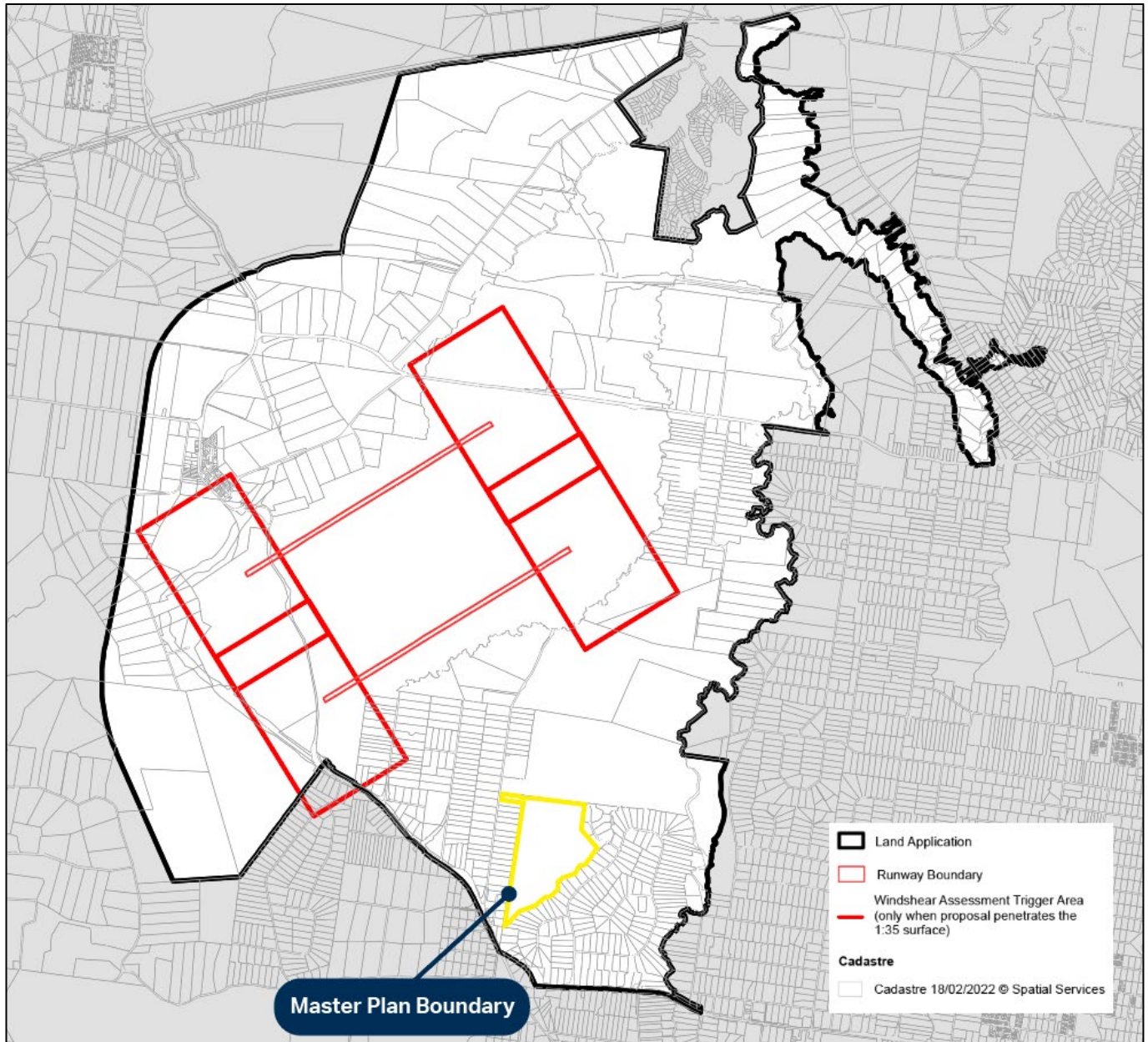
Building-induced windshear may adversely impact on aviation operations where structures are situated close to airport runways. Further, discharge from vent stacks can significantly impact aviation operations.

NASF Guideline B presents a layered risk approach to the siting and design of buildings near airport runways to reduce the risk of building-generated windshear and turbulence.

The *Airports (Protection of Airspace) Regulations 1996* provides further protection of airspace against stack and vent exhaust plumes, which may impact on aviation operations.

The Airport's windshear assessment envelopes, as shown in **Figure 9**, identify an 'envelope' at the end of each runway where structures situated close to the runway may impact on wind flow and cause the crosswind speed to vary along the runway.



**Figure 9 Windshear Assessment Trigger Area**

Source: Western Parkland City SEPP Lighting Intensity and Wind Shear Map (Sheet LIW\_001) (and AECOM – Master Plan Boundary)

The windshear assessment envelopes provide a means of consideration of the location and design of any structure within such areas to minimise the impacts of building-induced windshear.

The windshear assessment envelopes are supported by SEPP (Precincts – Western Parkland City) 2021 (Western Parkland City SEPP) (Part 3 Development Controls – Airport Safeguards – 20 Building wind shear and turbulence).

As can be seen in **Figure 9**, the Stage 1 Aerotropolis Core Precinct is well outside of areas likely to be affected by building-induced windshear and, due to the distance and orientation from the runways, stack and vent exhaust plumes within the Stage 1 Aerotropolis Core Precinct are not likely to cause any issue on airport safeguarding operations.

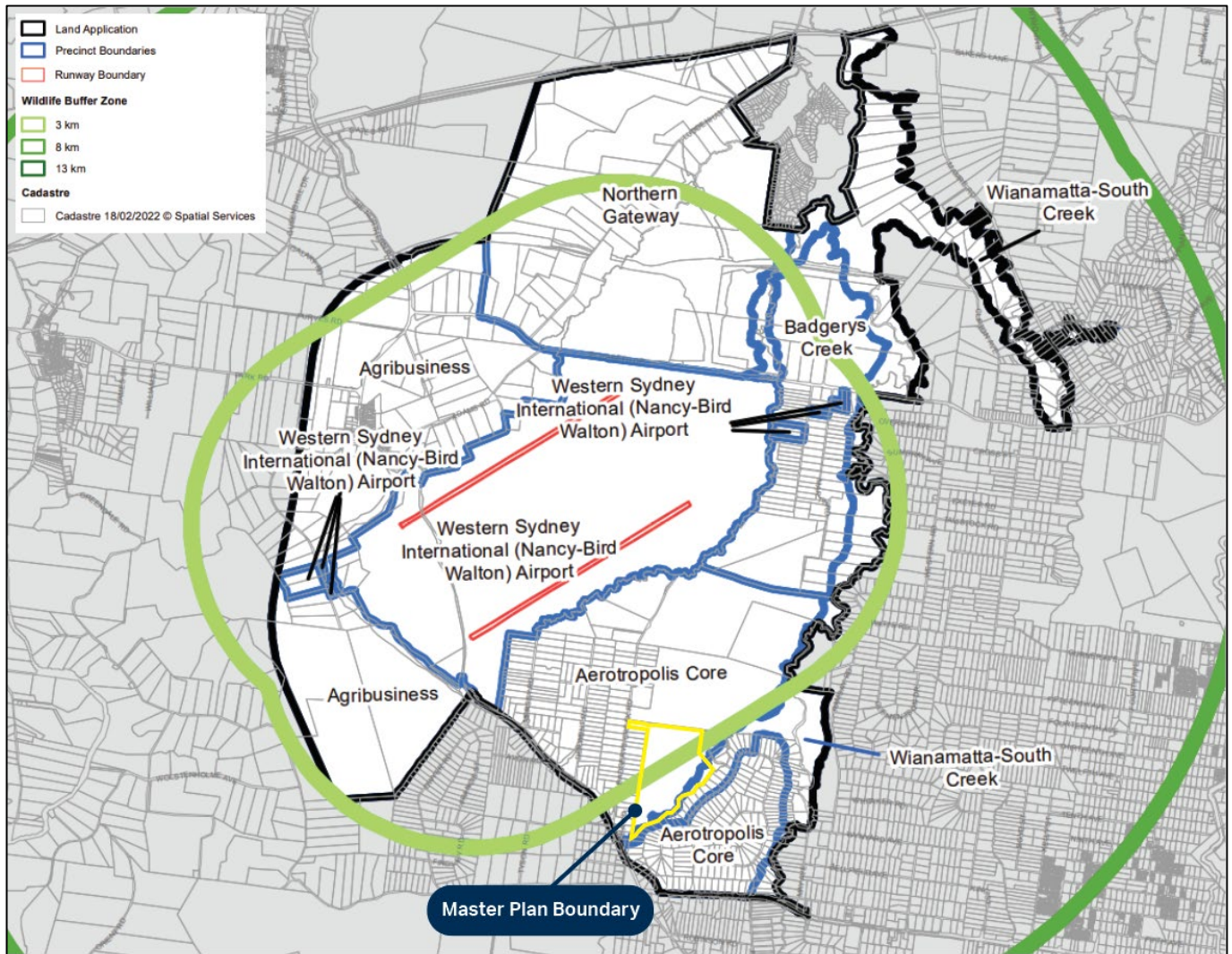
### 5.1.3 Guideline C – Wildlife Strikes

Wildlife strikes can cause major damage to aircraft and/or compromise aircraft safety. Western Sydney Airport, like many other Airports, is surrounded by areas that are attractive to wildlife, especially birds.

A key aspect of reducing the wildlife hazard risk is building design, appropriate waste management strategies, and ensuring that new landscaping is designed, and plant species are selected that reduce the attractiveness of the Airport to bird species.

**Figure 10** identifies the buffer zones as outlined in NASF Guideline C and included in the SEPP (Western Sydney Aerotropolis) (Sheet WBZ\_001 Wildlife Buffer Zone Map).

**Figure 10 Wildlife Buffer Zone**



Source: Western Parkland City SEPP (Sheet WBZ\_001 Wildlife Buffer Zone Map) (and AECOM – Master Plan Boundary)

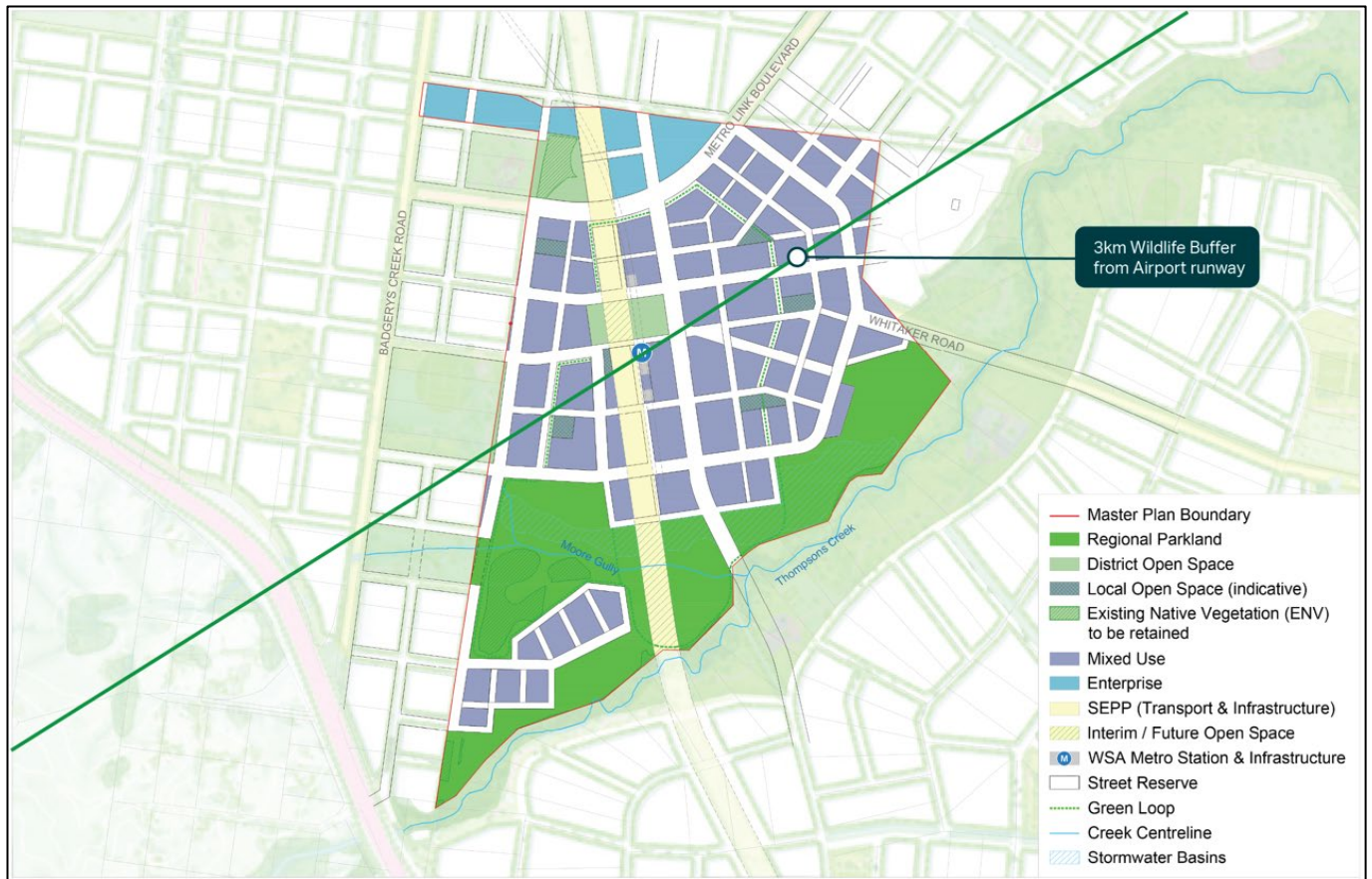
Recognising that an overarching principle of the Western Sydney Aerotropolis Plan is the natural setting of the Aerotropolis and ensuring Blue-Green infrastructure is developed, this poses an interesting balance with airport safeguarding to consider land uses, landscaping, and wildlife habitats to reduce the wildlife hazard risk around the Airport.



Wildlife buffers, as prescribed in NASF Guideline C and the Western Parkland City SEPP (Sheet WBZ\_001 Wildlife Buffer Zone Map), are split into three categories (radius taken from each runway end):

- Area A (3km radius)
- Area B (8km radius)
- Area C (13km radius).

**Figure 11 Wildlife Buffer Zone - outlined on the Master Plan**



Source: Bradfield City Centre Master Plan (Hatch & Roberts Day, with AECOM annotation of Wildlife Buffer)

As shown in **Figure 10** and **Figure 11**, the Stage 1 Aerotropolis Core Precinct is bisected by the 3km wildlife buffer boundary, with the northern part of the Precinct being located within Area A (3km buffer radius from the runway end of the southern runway).

Detailed guidelines are contained within the SEPP (Precincts – Western Parkland City) 2021 (Western Parkland City SEPP) (Part 3 Development Controls – Airport Safeguards – 21 Wildlife Hazards), including more specific guidelines within the Phase 2 DCP. The Phase 2 DCP also includes Appendix B – Western Sydney Aerotropolis Landscape Species List. The commentary associated with the landscape species lists states:

*“Any alternative landscaping species and/or groupings (as specified in the DCP) outside the Western Parkland Vision Government Commitment Areas within the 3km wildlife buffer will be required to have an ecologist report submitted with the landscape plan. The report will need to discuss wildlife attraction in proximity to the airport and will be subject to a merit-based assessment. The proponent will need to*

*demonstrate suitability in relation to wildlife management and/or encroachments into operational airspace”*

Appendix B also includes *Table 1 – Western Sydney Aerotropolis Landscape Species List* which identifies specific landscaping species, including additional requirements for some species within the 3km wildlife buffer (i.e., some species are not permitted or only allowed where supported by an ecologist report, confirming that the landscape design minimises wildlife attraction).

Permissible uses within the Precinct will also need to consider the restrictions imposed within the wildlife buffer zones (refer to SEPP (Western Sydney Aerotropolis) (Part 3 Development Controls – Airport Safeguards – 21 Wildlife Hazards)).

In addition, due to the overarching vision that the Western Sydney Aerotropolis includes natural area revitalisation, water retention, enhanced biodiversity and an extensive blue-green grid with increased tree canopy, wildlife management strategies to mitigate wildlife strike risk for aircraft operating at Western Sydney Airport is critical.

In response, the Western Sydney Planning Partnership has engaged Avisure to help identify wildlife attraction issues and identify mitigation options and recommendations to help manage wildlife hazards. Implementation of the management and mitigation strategies will be critical to maintain safe airport operations and minimise wildlife strikes.

The master plan will utilise the planting types from DCP 2.

## 5.1.4 Guideline D – Wind Turbine Farms

Wind turbines can constitute a risk to low-flying aviation operations, for example, agricultural operations and can be expected to continue to develop as a renewable energy option.

NASF Guideline D provides advice on location and safety management for wind turbines and other similar structures.

The NSW planning system includes off-airport planning controls relating to wind turbine farms. These require any wind turbine farms nearby airports to be considered. Specifically, SEPP (Western Sydney Aerotropolis) (Part 3 Development Controls – Airport Safeguards – 22 Wind turbines) prohibits wind turbines within 3km of the Airport and provides further guidelines and assessment up to 30km from the Airport.

The Aviation Safeguarding Guidelines address wind turbines. Specifically, the guidelines state that wind turbines are prohibited within 3km of the Western Sydney Airport. In all other circumstances, wind turbines within 30km of Western Sydney Airport are to be referred to WSA who will coordinate responses from other Commonwealth bodies such as CASA, Airservices and DITRDCA. There are no wind Turbine Farms proposed as part of the master plan.

## 5.1.5 Guideline E – Lighting Distractions

Pilots rely on specific patterns of aeronautical ground lights during inclement weather, low light and at night. Aeronautical ground lights, such as runway lights and approach lights, play a vital role in enabling pilots to align their aircraft with the runway in use. They also enable the pilot to land the aircraft on the appropriate part of the runway. Adverse impacts from ground lighting can often be associated with outdoor advertising displays, sports field lighting and street lighting.

SEPP (Western Sydney Aerotropolis) (Part 3 Development Controls – Airport Safeguards – 23 Lighting) is aligned with NASF Guideline E.

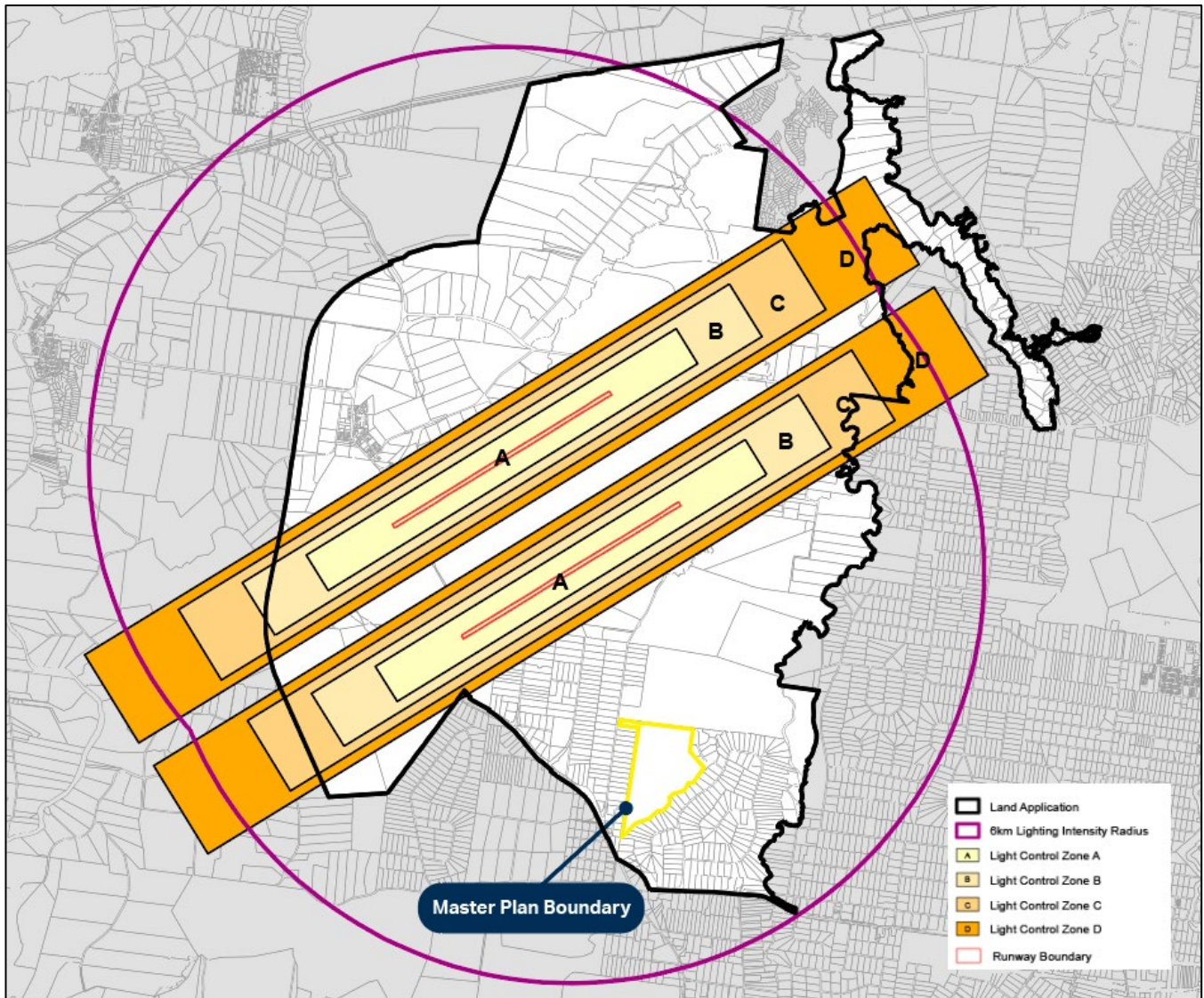


The Civil Aviation Safety Authority (CASA) has powers under the Civil Aviation Act 1988 to regulate potential sources of distractions from lighting. Under Regulation 94 of the *Civil Aviation Regulations 1988*, CASA can require lights which may cause confusion, distraction, or glare to pilots in the air, to be extinguished or modified.

The Lighting Plan (see **Figure 12**) has been prepared to highlight the maximum lighting intensities in areas surrounding the Western Sydney Airport.

There is a primary area which aligns with each of the proposed runways for the Airport, and a wider area within a 6km buffer radius from the centre point of each runway. The wider area is not likely to be the subject of Regulation 94 of the *Civil Aviation Regulations 1988*.

**Figure 12 Lighting Intensity**



Source: Western Parkland City SEPP (LIW\_001 Lighting Intensity and Wind Shear Map) (and AECOM – Master Plan Boundary)

As can be seen in **Figure 12**, the Stage 1 Aerotropolis Core Precinct is well outside of the primary light control area but falls within the 6km lighting intensity radius (wider area). Therefore, consideration needs to be given to the potential impacts of lighting and reflectivity distractions for pilots, with the Commonwealth needing to

be consulted on the installation and operation of external lighting associated with motorway/freeway lighting, stadium flood lighting and construction lighting.

## 5.1.6 Guideline F – Protected Airspace

The operational airspace of Airports is the volume of airspace above a set of imaginary surfaces, the design of which is determined by criteria established by the International Civil Aviation Organisation.

These surfaces are established with the aim of protecting aircraft from obstacles or activities that could be a threat to safety, in particular, high-rise buildings.

Under the *Airports Act 1996* and the *Airports (Protection of Airspace) Regulations 1996*, the airspace around specific Airports may be declared as Prescribed Airspace. This protects the airspace to allow aircraft to arrive and depart safely.

Prescribed Airspace is the airspace above either an Obstacle Limitation Surface (OLS) or Procedures for Air Navigational Services – Aircraft Operations (PANS-OPS) surface.

Under Section 182 of the *Airports Act 1996*, activities that result in intrusions into an Airport's Prescribed Airspace are called 'controlled activities' and cannot be carried out without approval. The airport operator or the Commonwealth must assess applications for controlled activities and may impose conditions on approval. It is an offence to carry out a controlled activity without approval, or to breach a condition of a controlled activity approval.

NASF Guideline F provides advice for planners and decision makers about working within and around protected airspace, including OLS and PANS-OPS intrusions, and how these can be better integrated into local planning processes.

The Western Sydney Airport OLS is shown in **Figure 13**. The OLS is required and defined under the CASA MOS Part 139 – Aerodromes (Section 7.3). These are established in accordance with International Civil Aviation Organization (ICAO) specifications.

The OLS comprises a series of imaginary surfaces in the airspace surrounding the Airport, which must be kept free and clear of obstructions that could be hazardous to aircraft during take-off or landing. It is intended that these surfaces prevent development of obstructions within the airspace, which could adversely impact air navigation or Airport usability.

Height restrictions imposed by the OLS are determined based on the following factors:

- The intended use of the runway, such as take-off, landing, or both
- The runway code, as determined by the runway length and type of aircraft using the runway
- The type of approach, either non-instrument or non-precision, or precision instrument approach.

The OLS standards define both a 'take-off climb' surface and an 'approach surface' for landing extending from the end of each runway. Where take-offs and landings occur in both directions along a runway, more restrictive surfaces are used to determine obstacle height restrictions.

SEPP (Western Sydney Aerotropolis) (Part 3 Development Controls – Airport Safeguards – 24 Airspace operations) is aligned with NASF Guideline F.

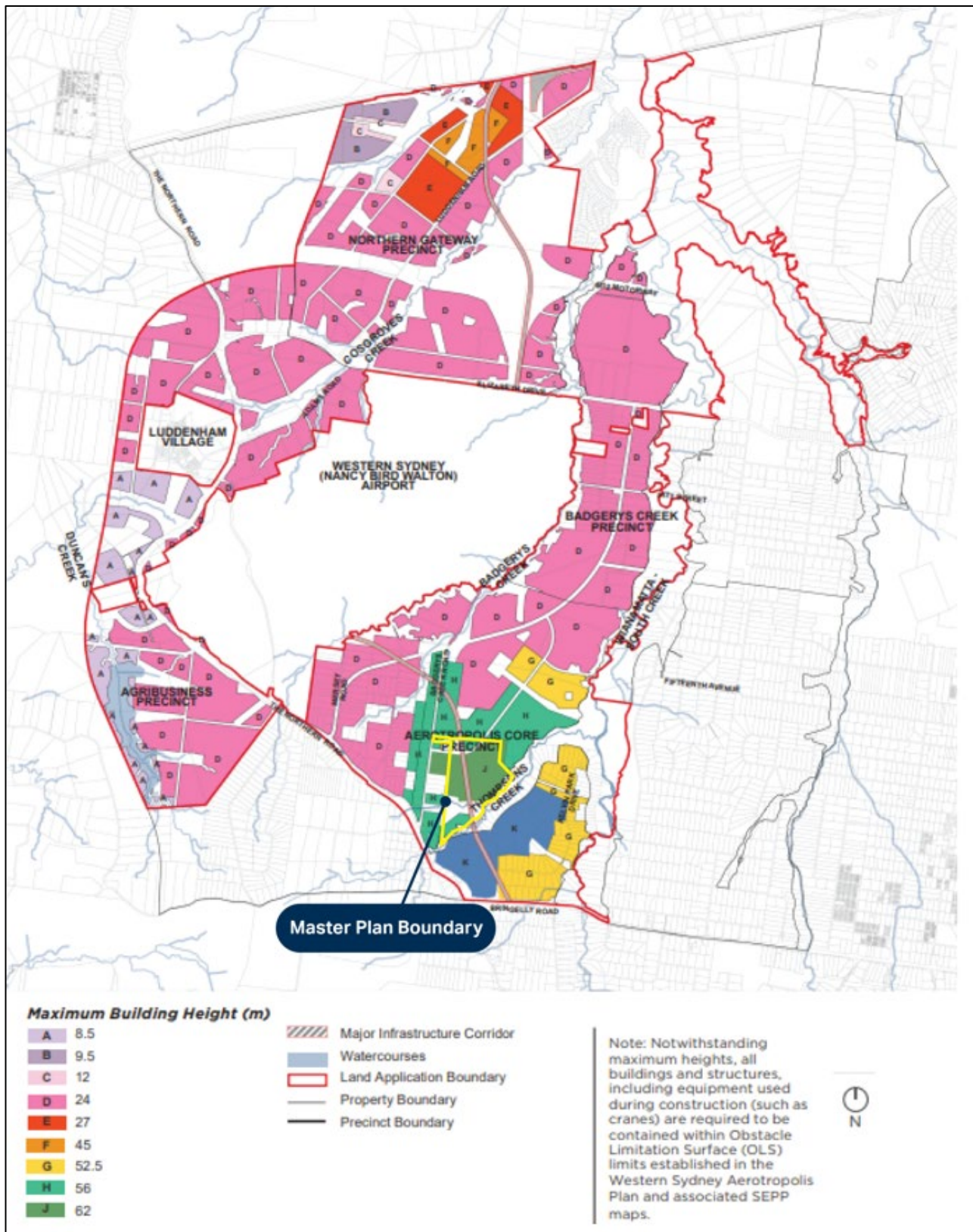
As can be seen in **Figure 13**, the Stage 1 Aerotropolis Core Precinct is within the Inner Horizontal Surface – which has an RL of 125.5 metres AHD. Any development proposed above this height must be considered and assessed by the Commonwealth.



OFFICIAL



Figure 14 Height of Buildings



Source: Western Sydney Aerotropolis Precinct Plan (Figure 12: Height of Buildings) (and AECOM – Master Plan Boundary)



## 5.1.7 Guideline G – Protection of Aviation Facilities

Communication, navigation, and surveillance facilities are crucial to the safety of aviation. Airservices and the Department of Defence rely on these to ensure the safety of civilian and military aircraft operations.

NASF Guideline G provides land use planning guidance to better protect such facilities. These include the control tower and wind indicators.

The Western Sydney Aerotropolis Plan recognises that the NSW Government will work with relevant agencies to ensure these facilities are adequately protected.

## 5.1.8 Guideline H – Protecting Strategically Important Helicopter Landing Sites

Guideline H: Protecting Strategically Important Helicopter Landing Sites provides guidance to protecting the siting and operations of strategically important helicopter landing sites.

In relation to Guideline H, the Aviation Safeguarding Guidelines provide guidance in relation to the location and protection of strategically important helicopter landing sites, stating that these guidelines should be considered if any hospitals or health care facilities are to be located within or in proximity of the Aerotropolis in the future.

## 5.1.9 Guideline I – Public Safety Areas

Public Safety Areas are areas of land at the end of a runway within which development should be restricted to control the number of people on the ground at risk of death or injury in the event of an aircraft accident on take-off or landing. These generally cover an area where the risk per year resulting from an aircraft crash to a representative individual ('individual risk') is of the order of 1 in 100,000.

NASF Guideline I, Managing the Risk in Public Safety Areas at the Ends of Runways, has recently been endorsed. The Guideline suggests two methods suitable for a planning-led approach to the assessment of the PSA:

- UK NATS Methodology
- Queensland State Planning Policy.

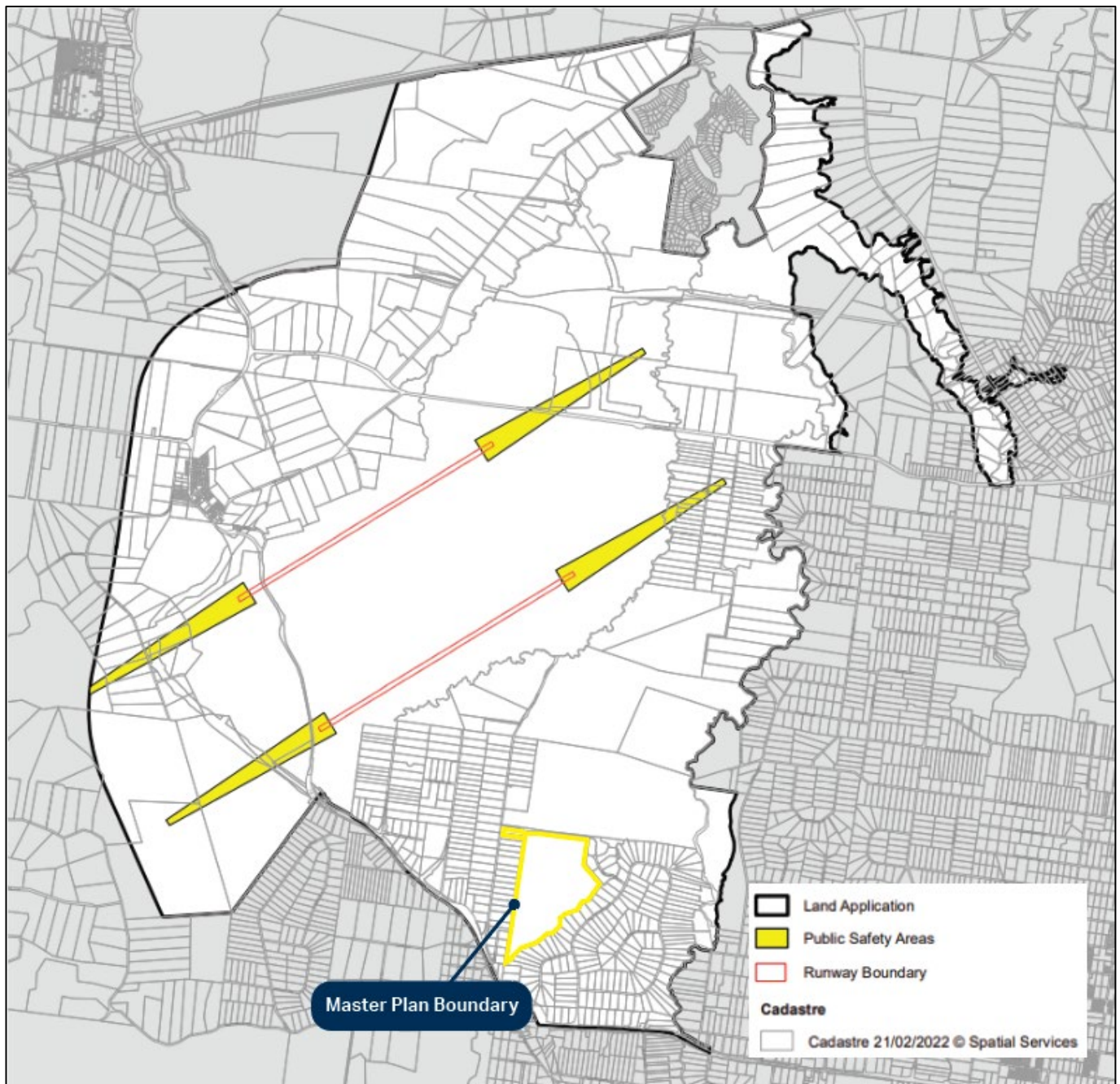
Using the Queensland State Planning Policy method, the NSW Government has identified Public Safety Areas at the end of each runway (see **Figure 15**) and SEPP (Western Sydney Aerotropolis) (Sheet PSA\_001 Public Safety Area Map).

This is one method of calculating Public Safety Areas, utilising an isosceles trapezoid for the end of each runway with the following dimensions:

- Width at the end of a runway – 350 metres
- Width at the end of a public safety area – 250 metres
- Length of a public safety area – 1,000 metres.

Detailed guidelines are contained within the SEPP (Western Sydney Aerotropolis) (Part 3 Development Controls – Airport Safeguards – 25 Public Safety).

Figure 15 Public Safety Areas



Source: Western Parkland City SEPP (PSA\_001 Public Safety Area Map) (and AECOM - Master Plan Boundary)

# 6 Key Implications for the Master Plan

The planning framework for Western Sydney Aerotropolis has addressed the long-term and effective protection and safeguarding of Western Sydney Airport and has addressed future community amenity considerations.

- Key planning documents and guidelines prepared for the Western Sydney Aerotropolis have referenced the National Airports Safeguarding Framework (NASF), addressing: Managing the impacts of aircraft noise
- Managing the risk of building generated windshear and turbulence
- Managing the risk of wildlife strikes in the vicinity of the Airport
- Managing the risk of wind turbines on aviation operations
- Managing the risk of distraction of pilots from lighting
- Managing the risk of intrusion into prescribed airspace
- Protecting aviation facilities (communication, navigation, and surveillance facilities)
- Protecting strategically important helicopter landing sites
- Restricting sensitive development within public safety zones

In relation to aircraft noise impacts, until the ANEF contour is approved for Western Sydney Airport, the ANEC contour will be used to inform land use planning.

Due to its location in the context with the Western Sydney Airport, the orientation of its proposed parallel runways and anticipated flightpaths, the Bradfield City Centre Master Plan is not likely to be directly impacted by aircraft noise, building height limitations, potential for windshear/turbulence issues, or lighting distraction to pilots. The site of the Bradfield City Centre is also well away from the ends of the proposed runways, and therefore does not impact on public safety zones.

In relation to building heights within the Bradfield City Centre, any new buildings, or structures which project above 125.5 metres AHD will require referral and consideration in relation to the impacts of aviation operations (SEPP (Western Sydney Aerotropolis) – Sheet OLS\_001 – Obstacle Limitation Surface Map).

For any future hospitals or health care facilities to be located within or in proximity of the Aerotropolis in the future, consideration will be given to the Aviation Safeguarding Guidelines and the requirements of NASF Guideline H relating to the location of strategically important helicopter landing sites.

One of the major challenges facing Western Sydney Airport is managing the risk of wildlife in the vicinity of Airport to mitigate the potential for aircraft wildlife strikes. The vision for the Western Sydney Aerotropolis includes natural area revitalisation, water retention, enhancing biodiversity, establishing an extensive blue-green grid, and increasing tree canopy coverage. As a result, mitigation options and recommendations have been developed to help land users manage wildlife hazards, wildlife buffers have been developed, and processes embedded in the planning framework to help achieve the vision of the Western Sydney Aerotropolis whilst safeguarding the airport.

# 7 Recommendations

Table 7 includes a summary of the recommendations, timeframes and responsibilities arising from the Aviation Assessment.

**Table 7 - Recommendations**

Ref	Recommendation	Timeframe	Responsible
AVIATION ASSESSMENT			
1	The final airspace design is expected to be confirmed by the Australian Government closer to the opening of the airport in 2026. Review of final airspace and flight paths (and the associated ANEF contours) on the Bradfield City Centre	Ongoing review and input prior to finalisation of airspace and flight paths in 2026	WPCA
2	Confirmation of building heights within the Bradfield City Centre, recognising that buildings or structures which project above 125.5 metres AHD will require aviation assessment and referral	Ongoing	WPCA and Relevant Consent Authority
3	Consideration of potential siting and location of any strategically important helicopter landing sites within the Bradfield City Centre (if required).	Ongoing	WPCA and Relevant Consent Authority
4	Implementation of mitigation options and recommendations associated with wildlife hazard management	Ongoing	WPCA and Relevant Consent Authority

# 8 Conclusion

The planning framework for Western Sydney Aerotropolis has addressed the long-term and effective protection and safeguarding of Western Sydney Airport and has addressed future community amenity considerations.

Aside from the implementation of mitigation options and recommendations associated with wildlife hazard management, the Bradfield City Centre Master Plan is not likely to be directly impacted by aircraft noise, building height limitations, potential for windshear/turbulence issues, or lighting distraction to pilots.

Consideration will need to be given to the potential siting and location of any strategically important helicopter landing sites within the Bradfield City Centre.

# References

Aerotropolis – Responding to the Issues, October 2021

Amendment to the Environmental Planning and Assessment Regulation 2000

Explanation of Intended Effect of amendment to Environmental Planning Instruments in relation to the Western Sydney Aerotropolis, October 2021

National Airports Safeguarding Framework

New Ministerial Direction 3.5 and 7.8 Implementation of Western Sydney Aerotropolis Plan

Western Sydney Airport – Airport Plan

Western Sydney Aerotropolis Plan

Western Sydney Aerotropolis State Environment Planning Policy

Western Parkland City State Environment Planning Policy

Western Sydney Aerotropolis Development Control Plan Phase 1

Western Sydney Aerotropolis Development Control Plan Phase 2

Western Sydney Aerotropolis Precinct Plan, March 2022, and updated May 2023

Western Sydney Aerotropolis and Surrounding Area – Aviation Safeguarding Guidelines, November 2022

Western Sydney Aerotropolis – Draft Wildlife Management Assessment Report, May 2020

## Maps

- Sheet NEC\_001      Noise Exposure Contour Map
- Sheet OLS\_001      Obstacle Limitation Surface Map
- Sheet LIW\_001      Lighting Intensity and Wind Shear Map
- Sheet WBZ\_001      Wildlife Buffer Zone Map
- Sheet TBZ\_001      Wind Turbine Buffer Zone Map
- Sheet PSA\_001      Public Safety Area Map
- Sheet BRA\_001      Building Restricted Area Map



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