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RAVENSTHORPE AIRPORT MASTER PLAN 2024

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The Shire of Ravensthorpe acknowledges the Wudjari peoples of the Wagyl Kaip and Southern Noongar Land Estate as the traditional custodians of this land and we pay our respects to their Elders past, present and emerging.

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1. PLANNING CONTEXT

1.1. Introduction

Ravensthorpe Airport (YNRV) is a community asset owned and operated by the Shire of Ravensthorpe (SoR). As a certified aerodrome, the Shire of Ravensthorpe is required to maintain the Airport in compliance with the Civil Aviation Safety Authority (CASA) Part 139 (Aerodromes) Manual of Standards 2019 (Part 139 MOS 2019) and other relevant standards.

The Shire of Ravensthorpe is in the southern Goldfields-Esperance region of Western Australia (WA), about halfway between Albany and Esperance as shown in Figure 1 (source: OpenStreetMap). It is approximately 530 km southeast of Perth and covers an area of 12,872 km².

The region stretches from hills to sea, encompassing the Fitzgerald Biosphere, which was listed by UNESCO as a Biosphere Reserve in 1978. It was expanded and renominated in 2018. With Fitzgerald River National Park at its core, the Biosphere includes 1.5 million hectares of conservation estate, State waters, farmland, and industrial and urban areas.

The Shire has four settlements: Ravensthorpe, Hopetoun, Jerdacuttup and Munglinup.

Mining, agriculture and tourism are significant industries, which have ebbed and flowed over time. Mining, in particular, has seen dramatic fluctuations over past years.

With a population of 2,085 (2021), the Shire has one of Australia’s lowest population densities and is classified as Very Remote Australia under the Australian Bureau of Statistics Remoteness Structure. Its remoteness underpins the importance of Ravensthorpe Airport as a key community infrastructure asset providing critical access to capital city facilities in Perth.



Figure 1 Location map

Ravensthorpe Airport is located approximately 30 km south of Ravensthorpe, and 20 km north of Hopetoun and is accessed off the Hopetoun – Ravensthorpe Road as shown in Figure 2 (source: Google Earth, imagery 8/2023).

The Airport supports Fly-in / Fly-out (FIFO) closed charter jet services between Ravensthorpe and Perth for local mining operations including Allkem Mt Cattlin Lithium and FQM / MACA Ravensthorpe Nickel, and general aviation activities including Royal Flying Doctor Service and seasonal emergency aerial firefighting operations.

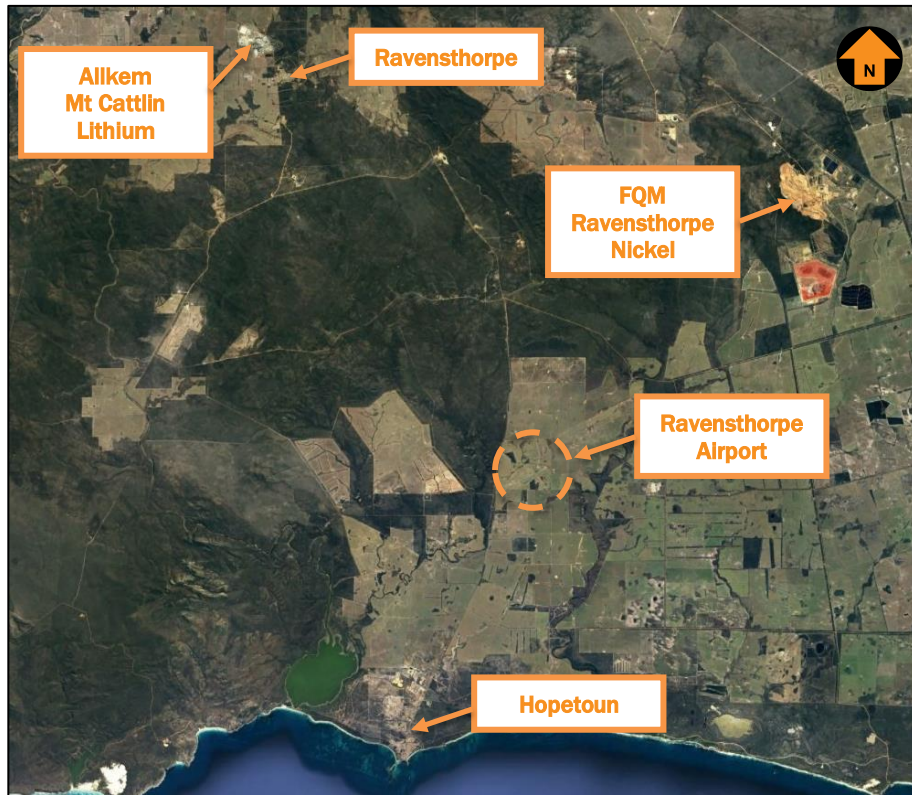


Figure 2 Ravensthorpe Airport location

1.2. Site description

Ravensthorpe Airport is a certified aerodrome with an asphalt sealed Code 3C instrument non precision approach main runway 06/24, 1680 m long x 30 m wide and a published Pavement Classification Number (PCN) of 21, meaning aircraft with an Aircraft Classification Number (ACN) of up to 21, such as the Embraer E190 and Fokker F100 (both with pavement concession) can operate.

The airport has a second unsealed gravel Code 2 non-instrument cross runway 14/32 1200 m long x 30 m wide with a PCN of 6 suitable for general aviation aircraft.

An overview of the airport is shown at Figure 3 (source: Google Earth, imagery 8/2023).



Figure 3 Site overview

1.3. Regional characteristics

Population

With a population of 2,085 (2021), the Shire has one of Australia’s lowest population densities and is classified as Very Remote Australia under the Australian Bureau of Statistics Remoteness Structure.

The Shire has four settlements: Ravensthorpe, Hopetoun, Jerdacuttup and Munglinup. The main population centres of Hopetoun and Ravensthorpe account for around 80% of the Shire’s total population.

The Shire’s population has increased by 20% since 2016, an average annual increase of 4% per annum.

Geographical remoteness, limited air travel access, lack of hospitality businesses (number and variety), attracting and retaining quality workforce (educators, health, mining and other industry professionals), digital connectivity, lack of community facilities, services and sport/recreation opportunities across all age groups, all constrain the ability to attract and retain residents.

Economy

The Ravensthorpe district has been witnessing strong economic growth generated from mining, agriculture and a growing tourism sector. Mining leads this growth with an estimated \$1.6B in mineral wealth extracted from the Ravensthorpe local government area in 2022, ranking the Shire 10th across WA’s local government authorities in terms of mineral value output (source: Shire of Ravensthorpe Economic Growth Strategy 2023 and Department of Mines, Industry Regulation and Safety (DMIRS)).

Agriculture is also performing strongly with exceptional grain production over the last two harvests. A strong local business sector flows on from these record production levels and the resulting economic spend into the local economy.

Tourism

Tourism is high on the community’s agenda and opportunities exist to leverage the region’s unique natural attractions. Set within the Fitzgerald Biosphere (one of only 738

UNESCO recognised biosphere reserves in the world) the Shire of Ravensthorpe includes some 600,000 hectares of native vegetation, including the Fitzgerald National Park. Much of this bushland is highly prized and boasts unique biodiversity values found nowhere else in the world. These natural assets, and the impact of Covid on intrastate travel, has led to strong visitor growth with an estimated 71,000 overnight visitors in 2020-21 (26.8% increase over previous period), generating 343,000 nights (36.7% increase) (source: Shire of Ravensthorpe Economic Growth Strategy 2023 and Tourism WA LGA fact sheets 2021).

Climate and meteorology

Ravensthorpe has a temperate Mediterranean climate with sunny winter days and cool summer nights.

Mean maximum temperature is 22.8°C with 49.3 days per year above 30°C. Mean annual rainfall is 427 mm, with 75 days of greater than 1 mm rainfall. Prevailing wind direction at 9 am is from the north-west, and at 3 pm from the south-east, as shown in Figure 4 (source: Australian Bureau of Meteorology).

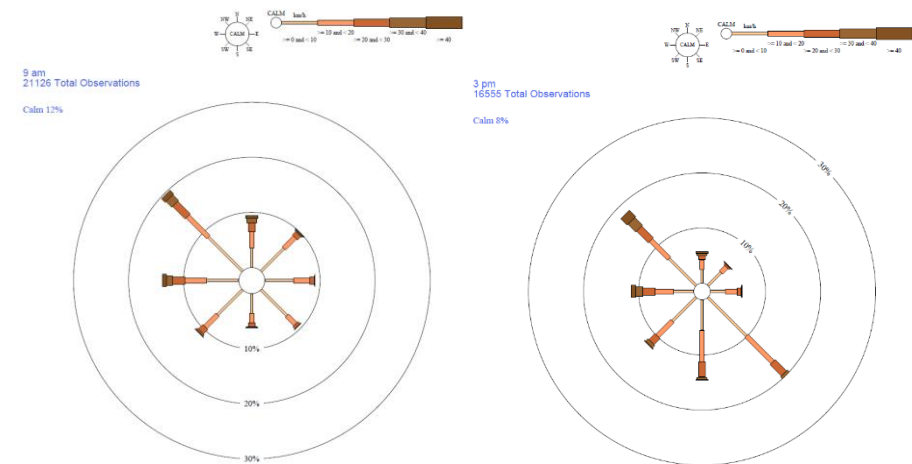


Figure 4 9 am and 3 pm wind roses

1.4. Role and history

Ravensthorpe Airport was originally constructed by BHP to service the nearby Ravensthorpe nickel mine. Ownership of the Airport was transferred to the Shire in the mid-2000s and the Shire assumed responsibility for the management and day-to-day operation of the Airport.

Airport operations have been, and continue to be, largely dependent on the operations of the local mines, and operations have fluctuated significantly over the years. From 2011 to 2015 the airport catered for a range of operations including scheduled air transport (RPT) services with security screening requirements.

Local mining organisations; Galaxy Lithium Australia, FQM Australia Nickel and MACA have recently consolidated flights between Ravensthorpe and Perth and have introduced larger jet aircraft.

Until December 2023, flights were operated by Skippers Aviation using Fokker F100 aircraft. In December 2023 National Jet Express (NJE) commenced operations using Embraer E190 aircraft.

The airport also plays an important role in supporting Royal Flying Doctor Service (RFDS) services for medical transport and seasonal emergency aerial firefighting operations.

1.5. Current operations

Current aircraft operations include:

- Fly-in / Fly-out (FIFO) closed charter services to Perth operated by National Jet Express (NJE) Embraer E190 jet aircraft (up to 6 return services per week) on behalf of local mining organisations (previously Skippers Fokker F100 aircraft as shown in Figure 5)
- Aeromedical flights operated by the RFDS – Pilatus PC-12 and PC-24 aircraft (over 80 patient retrievals in 2023)
- Seasonal emergency aerial fire-fighting services – Air Tractor AT-802

- Local / itinerant general aviation aircraft activities.

The closed charter FIFO flights are offered to local residents subject to availability. The flights cannot be accessed by non-residents, tourists or the general public, and there are no other domestic airline (RPT) flights available from the airport.



Figure 5 F100 closed charter FIFO aircraft

1.6. Regional aviation

Ravensthorpe Airport is located 241 nautical miles south-east of Perth. Its location in relation to other certified regional airports is shown in Figure 6 (source: OzRunways).

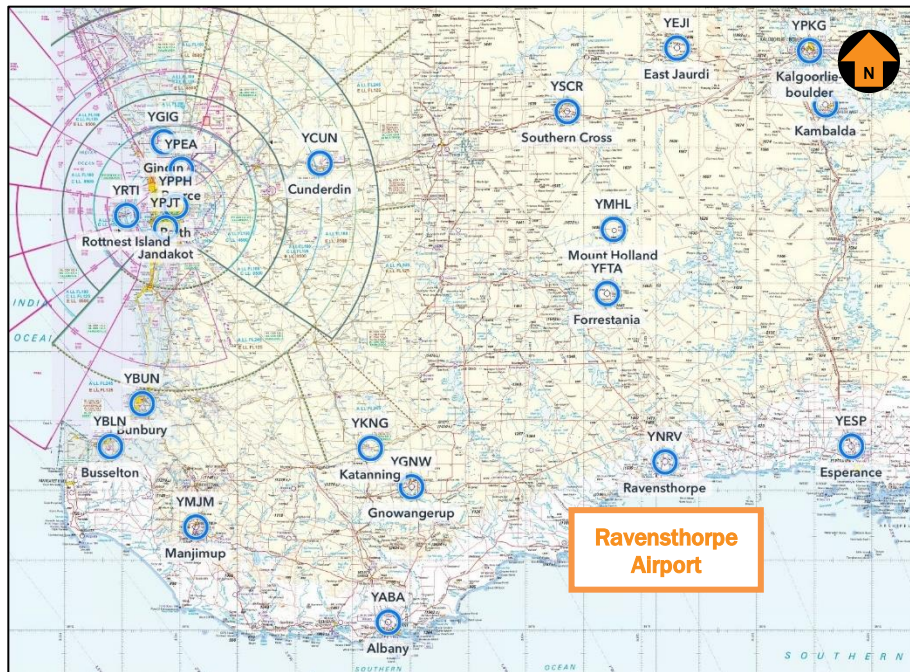


Figure 6 Ravensthorpe Airport in relation to other certified regional airports

Busselton Margaret River Airport caters for a range of Fly-in / Fly-out (FIFO) closed charter services operated by Qantas, Virgin Australia, and Alliance Airlines for resource companies such as Rio Tinto, BHP and Fortescue Metals Group.

In April 2022 Jetstar commenced direct flights between Melbourne and Busselton Margaret River operating Airbus A320 aircraft. Over 50,000 passengers have travelled on the route since its commencement. In November 2023, Jetstar announced a new

non-stop route between Sydney and Busselton Margaret River Airport, to commence in March 2024 with three return flights per week, adding another 50,000 seats per year.

In September 2022 Rex acquired National Jet Express (NJE), the Regional Services arm of Cobham Aviation, with a focus on expanding its FIFO operations in Queensland and the Northern Territory. NJE operates a fleet of Q400 and Embraer E190 jet aircraft. Rex has recently announced that it will consider options to utilise NJE aircraft to improve services on its WA regional routes.

Rex operates RPT services to Perth from both Albany and Esperance Airports using Saab 340 aircraft under a fully regulated regional air route arrangement with the WA State Government.

In January 2023, new airline Bonza commenced services on the East Coast of Australia operating Boeing 737 Max 8 aircraft. The airline's strategy has focussed on regional routes not currently served by an airline or regional routes it considers are underserved.

In May 2023, Nexus Airlines commenced operations to regional Western Australian destinations including those previously operated by Aviair using Dash 8 Q400 turbo-prop aircraft.

Skippers Aviation operates a fleet of Fokker F100 jet aircraft, and Dash 8 300, Dash 8 100, Embraer E120, Metro 23 and Cessna C441 turbo-prop aircraft across a range of WA fully regulated regional air routes. Until recently Skippers operated FIFO services at Ravensthorpe Airport.

Airmorth operates a fleet of Embraer E190 and E170 jet aircraft and E120 turbo-prop aircraft. The airline operates a lightly regulated regional air route from Broome to Kununurra.

1.7. Strategic intent

Ravensthorpe Airport is a key community infrastructure asset providing critical access to capital city facilities in Perth. In its Tourism Strategy 23 adopted on 15 August 2023, the Shire of Ravensthorpe set out the following 10-year vision:

“Sustainable RPT air services that are not reliant on the mining industry”.

The Shire is ultimately seeking to leverage current closed charter (FIFO) demand to establish scheduled air transport (RPT) services between Ravensthorpe and Perth for the benefit of the local community and to attract new visitor markets.

Future development as outlined in the Master Plan is guided by the following planning principles:

Table 1 Master planning principles

<i>Principle</i>	<i>Description</i>
Aviation safety, security & legislative compliance	Promoting a safe and secure environment for all users of the airport in compliance with applicable civil aviation safety regulations and standards.
Capacity & operational efficiency	Providing appropriate (fit for purpose) infrastructure and facilities future proofed to meet the forecast demand for future airport operations.
Customer experience & community & stakeholder relationships	Providing a high level of service / customer experience and establishing and maintaining strong partnerships with the local community and key stakeholders.
Environmental responsibility & compliance	Minimising the impact of airport development and operations on the local environment.
Financial viability & sustainability	Ensuring the viability and sustainability of the airport through the application of sound financial, asset and resource management principles.

1.8. Scope and limitations

The scope of work for the master planning study involved the following requirements:

- Situation Analysis – which assesses the airport’s current facilities, land use and operations including both aviation and non-aviation usage; trends affecting the present and future use of the aerodrome with consideration to the social, demographic, and economic opportunities; and the current regulatory requirements and their implications on future operations, land use and development
- Future Direction – working with the Shire and key stakeholders to establish the strategic vision and objectives for the airport and identify priorities to ascertain future needs
- Strategy Development – identifying critical airport planning parameters and providing clear direction on how the Shire will achieve its strategic vision and objectives
- Implementation – providing a schedule, recommended actions and plans to best achieve the desired objectives, including prioritising short, medium, and long term projects and cost estimates / ranges for each.

1.9. Methodology

The master planning study was conducted generally in accordance with the Australian Airports Association Airport Practice Note 4 – Regional Airport Master Planning Guideline and modified according to the Scope of Work.

The following key activities were conducted during the course of the study:

- Inception meeting and site orientation
- Stakeholder engagement activities including site visit
- Consolidation of stakeholder feedback
- Preparation of concept plans for client endorsement
- Preparation of draft Master Plan including drawings and plans
- Final stakeholder consultation including review of draft Master Plan
- Preparation of final Master Plan for client acceptance.

1.10. Purpose of master planning study

The purpose of the Master Plan is to establish a framework for the future planning and development of Ravensthorpe Airport to guide the Shire of Ravensthorpe in its financial planning, decision making processes and future planning with high regards to design aircraft infrastructure needs, including the runway servicing or upgrades, provision of staff office accommodation, assessment of existing facilities, current site conditions including drainage/ponding issues, taxiway/apron and landside leaseholder designs, and layout for maximum functionality between RPT, Charter and Emergency Services.

The Master Plan is intended to establish the basis for more detailed studies of design, infrastructure planning, and land use planning required to achieve the strategic direction.

The Master Plan provides an overarching vision that is expected to guide the overall development of the airport over the next 20-years; identify key issues facing the airport; and provide concepts or options for addressing these issues.

1.11. Planning horizons

The Master Plan nominally considers a planning horizon of 20 years, comprised of short, medium and longer-term timeframes.

The short term is typically defined as 0 – 5 years, medium 5 – 10 years, and longer term as 10+ years through to the end of the 20-year master planning horizon.

Delivery of any individual component within the Master Plan is dependent on the availability of funding, market demand and the undertaking of a full detailed design process, and the timing of development may be delayed or accelerated in consideration of these factors.

1.12. Aviation legislative framework

As a certified aerodrome, the Shire of Ravensthorpe is required to maintain the Airport in compliance with the following requirements:

- Civil Aviation Safety Regulations 1998

Civil Aviation Safety Regulation 1998 (CASR) Part 139 – *Aerodromes* describes the requirements for aerodromes used in air transport operations.

- Part 139 (Aerodromes) Manual of Standards 2019

Part 139 (Aerodromes) Manual of Standards 2019 (Part 139 MOS 2019) sets out the standards and operating procedures for certified and certain other aerodromes used in air transport operations.

- Aviation Transport Security Act 2004

The Aviation Transport Security Act 2004 (amended and in force on 23 June 2021) sets out the statutory framework that safeguards Australia's essential aviation services.

- Aviation Transport Security Regulations 2005

The Aviation Transport Security Regulations 2005 put into effect the requirements set out in the Act.

- International Civil Aviation Organisation (ICAO) Annex 14 - Aerodromes, Volume 1 Aerodrome Design and Operations

This Annex contains Standards and Recommended Practices (specifications) that prescribe the physical characteristics and obstacle limitation surfaces to be provided for at aerodromes, and certain facilities and technical services normally provided at an aerodrome. It also contains specifications dealing with obstacles outside those limitation surfaces.

1.13. National Airports Safeguarding Framework (NASF)

The Australian Government has an interest in better planning and integrated development on and around airports and to lessen the adverse effects of aviation activity on the environment and communities. While not a planning authority, it provides guidance on broader issues such as noise around airports that can be used by statutory authorities to achieve the stated objectives. The National Airports Safeguarding Advisory Group (NASAG) has produced National Airports Safeguarding Framework (NASF) to advance this agenda. The Framework should also be taken into consideration when designing development on and in the vicinity of the airport.

Further detail is provided in section 11.

1.14. Strategic alignment

The following State planning documents define the strategic planning context for the Ravensthorpe Airport Master Plan.

Department of Transport – WA Aviation Strategy 2020 (Draft)

The draft WA Aviation Strategy 2020 sets out the following vision for aviation in WA:

“Western Australia has a comprehensive network of affordable air services and fit for purpose airport infrastructure that supports and promotes the State’s economic and social development”.

The Strategy has four main goals:

- A. Affordable Airfares
 - » Regional communities have access to affordable airfares, with affordability measured through community surveys and other information, as may be appropriate.
 - » Flights are a viable option for tourists and visitors to regional WA.
- B. Connected Communities
 - » More regional communities have access to air services.
 - » Air routes support WA’s diverse economy, including the resources and tourism sectors.
- C. Fit for Purpose Infrastructure
 - » Infrastructure at metropolitan and regional airports is planned and delivered in time to meet demand.
 - » Long-term plans are in place for future airports servicing Perth and regional WA.
- D. Informed and Future Ready

» Regulation, plans and decisions are data-driven.

» The appropriate skills and training are available to support the aviation industry.

Tourism WA – Corporate Plan 2021-22

The Tourism WA Corporate Plan 2021-22 sets out the following vision for the WA tourism industry:

“To position Western Australia as a destination of choice, ensuring the sustainable growth of the State’s visitor economy”.

To achieve this, Tourism WA has identified three key strategic pillars:

- Experience
 - » Tourism WA will support the development of existing and emerging tourism experiences and events including a focus on workforce to create the foundations for a meaningful traveller experience.
- Demand
 - » Tourism WA will drive consumer desire and preference for a holiday in Western Australia over any other destination in Australia.
- Access
 - » Actively seek to reinstate and grow access to all parts of Western Australia exploring new and existing opportunities for direct connectivity between Perth and other destinations.

With regard to regional aviation, the Corporate Plan identifies the following actions:

» Work to extend affordable airfare programs and grow regional aviation capacity.

» Work with aviation partners to re-establish interstate aviation capacity and secure opportunities for additional interstate air routes.

Goldfields – Esperance Development Commission – Strategic Plan 2022-24

The Goldfields – Esperance Development Commission Strategic Plan 2022-24 sets out the following vision for the region:

“The Goldfields-Esperance region is economically and culturally diverse with vibrant communities and a prosperous future”.

The vision is supported by five themes or strategic initiatives that define the GEDC’s priorities for the period of the Strategic Plan:

- Resource and Industry Development
 - » Grow existing, find and develop new, non-renewable resource and related industries
- Industry Diversification
 - » Grow existing, find and develop new, other alternative industries
- Regional Living
 - » Enhance regional living standards
- Aboriginal Economic Development
 - » Increase the economic participation of Aboriginal people
- Organisational Excellence
 - » Excellence in all that we do

The Strategic Plan also recognises the critical role played by gateway infrastructure such as airports and the importance of aviation in enhancing regional living standards.

Shire of Ravensthorpe Strategic Community Plan 2020 – 2030

The Shire of Ravensthorpe Strategic Community Plan 2020 – 2030 identifies the community’s vision as:

“A growing community, thriving and resilient, sharing our natural wonderland with the world”.

The Strategic Community Plan sets out five key outcome areas:

- Economy
 - » The population is growing, in tandem with a thriving, resilient local economy
- Community
 - » This is a safe and family-friendly community where people of all ages have access to services and facilities, and there is plenty to blow your socks off
- Built Environment
 - » The built environment is accessible, honours history and provides for the economic and social needs of residents, industry and visitors
- Natural Environment
 - » Our unique world class biosphere is valued and protected for the enjoyment of current and future generations
- Governance and Leadership
 - » The Shire of Ravensthorpe partners the community, and is an effective advocate and responsible steward

With respect to Ravensthorpe Airport, the Plan identifies the following 4-year priority:

- Develop short trip tourism through airport (Economy)

Shire of Ravensthorpe Corporate Business Plan 2020 – 2024

The Shire of Ravensthorpe Corporate Business Plan 2020 – 2024 supports the Shire’s Strategic Community Plan and identifies the Ravensthorpe Airport service as:

“Airport capable of servicing chartered flights for industry, commercial and recreational aircraft, and emergency services aircraft and related facilities”.

The Business Plan identifies a change in service level at the Airport to:

- Expand to tourism
- Improve security (including CCTV).

Shire of Ravensthorpe Economic Growth Strategy 2023

The Shire of Ravensthorpe Economic Growth Strategy 2023 identifies the importance of Ravensthorpe Airport in providing access to capital city facilities in Perth and breaking through the barrier of remoteness to improve liveability in the area.

The Economic Growth Strategy also identifies an initiative to investigate Ravensthorpe Airport for food transportation, and also the community’s desire to ensure that flights into the airport have places available for community and tourists.

Shire of Ravensthorpe Tourism Strategy 2023

The Shire’s Tourism Strategy 2023 sets out a 10-year vision for Ravensthorpe Airport as:

“Sustainable RPT air services that are not reliant on the mining industry”.

The vision recognises that providing air transport (RPT) air access would be advantageous for both tourists and local residents to improve the liveability of the area and to attract new visitor segments to the region.

The Tourism Strategy also identifies the need to investigate:

- Ravensthorpe Airport as a future trading hub
- Potentially utilise land around the airport, and tie in the ability to enable export of certain refrigerated products.

1.15. Planning requirements

Shire of Ravensthorpe Local Planning Strategy 2015 and Local Planning Scheme No. 6 Amendment No. 3

The Shire’s Local Planning Strategy in the context of providing infrastructure to support growth and development, identifies the aim:

“To provide adequate air services to meet Shire and industry needs”.

The Local Planning Scheme identifies the objectives of land zoned “Strategic Infrastructure” to set aside land required for port or airport facilities. Amendments to the Local Planning Scheme in 2023 reclassified a portion of Lot 82 on Plan 224161 relating to Ravensthorpe Airport from “Public Purposes” to “Strategic Infrastructure” as shown in Figure 7.



Figure 7 Ravensthorpe Airport land classification

1.16. Cultural heritage

A search of the Department of Planning, Lands and Heritage Aboriginal Cultural Heritage Inquiry System (ACHIS) identified no locations of interest within the airport lands.

It is noted that Aboriginal Cultural Heritage (ACH) Register Place 21378 Jerdacuttup River is located approximately 3 km to the east of the airport.

1.17. Native vegetation

An overlay showing the extent of native vegetation in the vicinity of the airport, extracted from NationalMap, is shown at Figure 8.

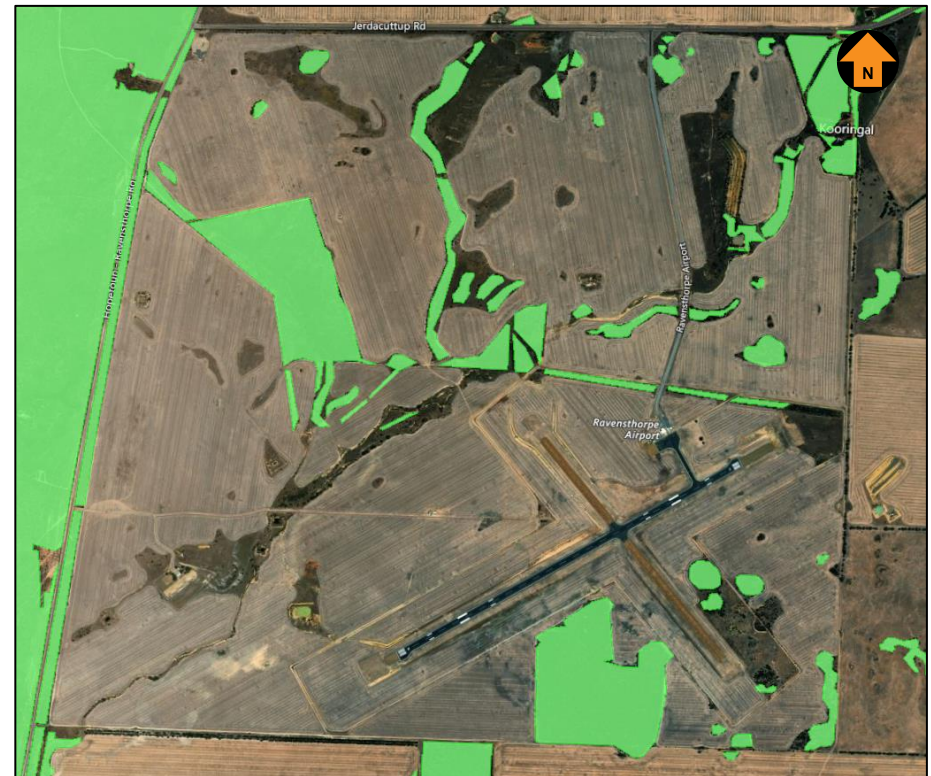


Figure 8 Native vegetation mapping

2. STAKEHOLDER CONSULTATION

A stakeholder engagement plan was developed in consultation with the Shire of Ravensthorpe to provide key stakeholders with the opportunity to provide input into the development of the Master Plan.

2.1. Stakeholder engagement program

Engagement activities conducted through November 2023 - January 2024 included face to face meetings / interviews, telephone / online interviews and email feedback.

2.2. Meeting schedule

Aviation Projects conducted face to face meetings in Ravensthorpe on 7 and 8 November 2023.

The following stakeholders were engaged either through face to face meeting, telephone interview or email correspondence:

- Shire of Ravensthorpe Councillors, Management and Airport staff
- Allkem Mt Cattlin Lithium
- Department of Biodiversity, Conservation and Attractions (DBCA)
- Department of Fire and Emergency Services (DFES)
- Department of Transport (DoT)
- First Quantum Minerals (FQM) Ravensthorpe Nickel
- Fitzgerald Business Network
- Goldfields – Esperance Development Commission (GEDC)
- Goldfields Voluntary Regional Organisation of Councils (GVROC)
- International Graphite

- Medallion Metals
- National Jet Express (NJE)
- Royal Flying Doctor Service (RFDS)
- Skippers Aviation
- State Emergency Service (SES)
- St John Ambulance WA
- Tourism WA.

2.3. Results of stakeholder engagement

Initial feedback from the stakeholder discussions identified:

- Demand for additional FIFO closed charter services
- Current services are limited to mine employees and residents – not available for non-residents, visitors
- Opportunity to develop new tourism experiences, but area has limited supply of accommodation, hospitality and general services
- Airport would require car hire / public transport services if flights opened to the general public, tourists
- Aircraft parking apron congested during busy periods (FIFO, RFDS, firefighting aircraft)
- RFDS require dedicated aircraft parking position and enhanced patient transfer facilities
- SES requested space for the provision of an additional water tank for reloading firefighting aircraft
- No fuel facilities available (other than DBCA facilities).

3. SWOT ANALYSIS

A Strengths Weaknesses Opportunities and Threats (SWOT) analysis has been used to identify significant areas for consideration in relation to Ravensthorpe Airport, as detailed in Table 2.

Table 2 Ravensthorpe Airport SWOT analysis

<i>Strengths</i>	<i>Weaknesses</i>	<i>Opportunities</i>	<i>Threats</i>
<ul style="list-style-type: none"> • Airport infrastructure capable of servicing chartered flights for industry, commercial and recreational aircraft, and emergency services aircraft and related facilities • Runway will likely serve the airport's needs into the long-term future ie up to Code 3 aircraft • Growing passenger numbers associated with FIFO / mining operations • Airport provides important aeromedical access for the area through services such as the RFDS • Likewise, the airport supports critical firefighting operations (DBCA) • Stunning local attractions – outback-to-coast, wildflowers, whale watching + heritage • Strong agriculture, mining, tourism, small business industries • Available land for development 	<ul style="list-style-type: none"> • Small resident population – 2085 (2021 census) (excl mining) • FIFO charter services with limited seats for residents only – not available for tourists / non-residents • No other RPT services • Shortage of accommodation, hospitality, general services • Location – 30km to Ravensthorpe, 20km to Hopetoun – no car rental / public transport options • No fuel facility (other than DBCA) • Apron constrained in busy periods, incl. access constraints for firefighting aircraft / operations • Limited terminal facilities • Limited car parking • Current RFDS facility / shed identified as being in need of upgrading 	<ul style="list-style-type: none"> • Leverage commercial air transport services – NJE new operator • Identified need for additional FIFO charter flights • Advocating with the Department of Transportation (Aviation) • Develop short trip tourism through airport • Unique tourism accommodation opportunities are being explored in the Hopetoun area • There is an interest in developing tourism experiences to support visitation to the Fitzgerald River NP • The Ravensthorpe Wildflower Show is a key tourism driver, however, is inhibited to grow due to limited access and accommodation options • Investigate the Ravensthorpe Airport for food transportation / future trading hub 	<ul style="list-style-type: none"> • Reliance on mining sector / FIFO (market fluctuations) and remaining lifespan • Competing air transport services at Esperance and Albany • Galaxy booking system • Legislative compliance / risks / security screening • Funding • Staff resources – airport management and operation (remote location)

4. EXISTING AERODROME FACILITIES

4.1. Aeronautical infrastructure

Ravensthorpe Airport is equipped with the aeronautical infrastructure described in this section.

Runway 06/24 Code 3C 1680 m x 30 m sealed, 150 m runway strip – instrument non precision

- RWY PCN 21/F/B/1170 (170PSI) / T Sealed

Runway 14/32 Code 2B 1200 m x 30 m sealed, 90 m runway strip – non instrument

- RWY PCN 6/F/B/790 (115PSI) / T Gravel

Note: the pavement classification number (PCN) is expressed as a five-part code, separated by forward-slashes, describing the relevant pavement.

Declared distances are provided in Table 3 (source: Airservices Australia, Runway Distance Supplement (RDS), 21 March 2024).

Table 3. Runway declared distances

Runway	TORA	TODA	ASDA	LDA
06	1680	1830 (2.89%)	1680	1680
24	1680	1740 (2.1%)	1680	1680
14	1200	1260 (3.31%)	1200	1200
32	1200	1260 (1.5%)	1200	1200

Note the acronyms used are defined as: take-off run available (TORA), take-off distance available (TODA), accelerate-stop distance available (ASDA) and landing distance available (LDA).

Figure 9 shows the Ravensthorpe Airport Aerodrome Chart (source: Airservices Australia, 16 June 2022).

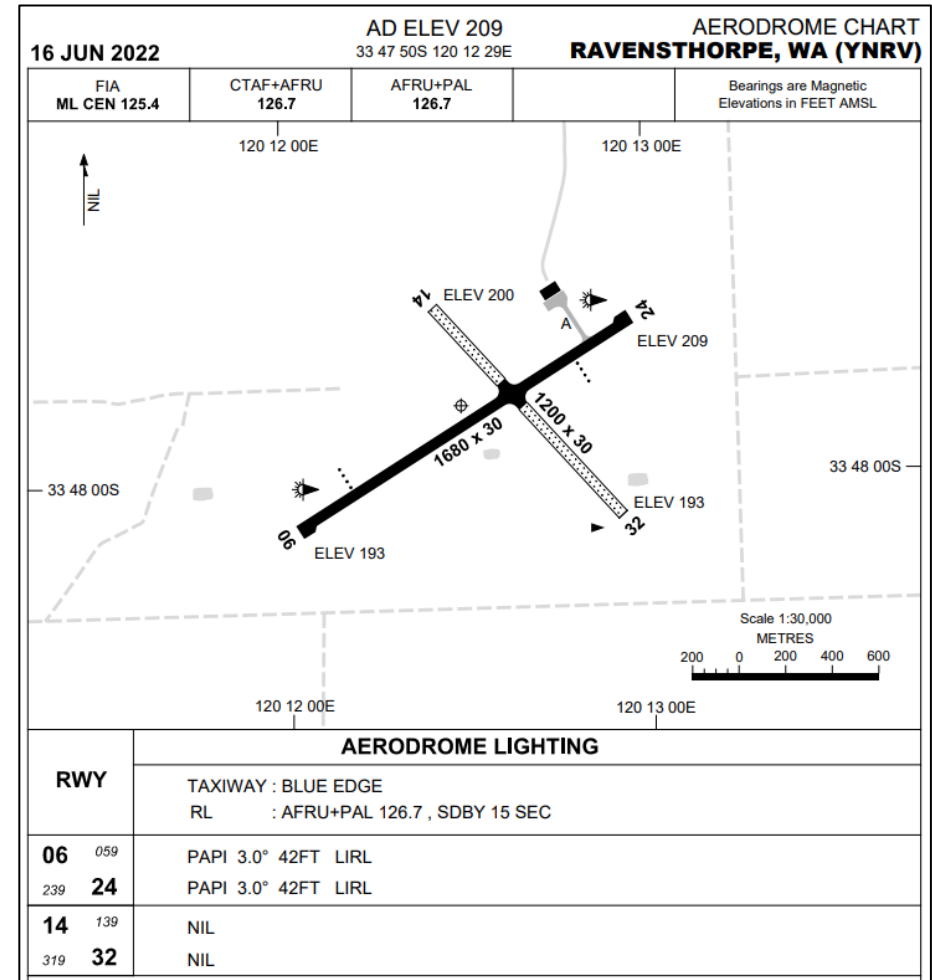


Figure 9 Ravensthorpe Airport Aerodrome Chart

An image of runway 06, looking north-east from the take-off position, is provided at Figure 10.



Figure 10 Runway 06

An image of runway 24, looking south-west from the take-off position, is provided at Figure 11.



Figure 11 Runway 24

The most recent aerodrome technical inspection (October 2023) noted the runway seal is in good condition with no works required.

An image of runway 14, looking south-east from the take-off position, is provided at Figure 12



Figure 12 Runway 14

An image of runway 32, looking north-west from the take-off position, is provided at Figure 13.



Figure 13 Runway 32

The most recent aerodrome technical inspection (October 2023) noted that the runway had recently been reworked to ensure good shape and ride, and that the works had been completed to a good standard.

The aircraft parking apron as shown in Figure 14 (source: Google Earth, imagery 8/2023) is located adjacent to the passenger terminal building and can accommodate up to two (2) code 3C aircraft (E190 / F100 max) on the parking positions Bay 1 and Bay 2.

Bay 1 (east) is the primary parking position, and is also used for reloading of DBCA AT-802 firefighting aircraft during bushfire events.



Figure 14 Aircraft parking apron

Bay 2 (west) is generally kept free to allow for itinerant GA aircraft and Code B RFDS aeromedical aircraft to access parking areas on the western side of the sealed apron area in front of the St John Ambulance patient transfer facility.

A gravel overflow parking apron is available to the west of the sealed apron for aircraft up to 5,700kg MTOW as shown at Figure 15.



Figure 15 Gravel overflow aircraft parking apron (west)

Gravel / grassed areas to the east of the sealed parking apron as shown in Figure 16 are used by AT-802 emergency firefighting aircraft (DBCA refuelling), with helicopter parking also permitted to the east of the sealed apron area adjacent to the primary wind indicator.



Figure 16 Gravel aircraft parking apron (east)

The apron is noted by stakeholders as being congested during busy periods when in use by FIFO closed charter, RFDS, itinerant GA and emergency firefighting aircraft.

The aircraft parking apron is connected to runway 06/24 via a Code C Taxiway Alpha (15 m wide) as shown in Figure 17.



Figure 17 Taxiway Alpha

4.2. Ground Servicing Equipment (GSE) Storage Ares

Limited ground equipment is stored along the edge of the apron outside of the apron edge markings and clear of aircraft movement areas. Tugs, tractors and baggage carts are parked in the baggage area when not in use.

4.3. Support facilities

The airport is not equipped with any Airservices Australia communication and navigation facilities (eg non-directional beacon (NDB)). There are currently no requirements or thresholds for navigation aids to be installed at a particular airport due to traffic levels or types of operations, nor have there been in some years, as aircraft operating under Instrument Flight Rules in Australia now navigate using GNSS (GPS) as the primary means of navigation.

The airport is located outside controlled airspace and has a common traffic advisory frequency (CTAF). There is no air traffic control tower service.

There is no aerodrome rescue and firefighting service (ARFFS), nor is there an expectation of a need for an ARFFS facility at the airport within the master planning period.

There are no aviation fuel facilities on site other than for facilities provided by DBCA for emergency firefighting aircraft. Stakeholder feedback has suggested that the provision of refuelling facilities including Avgas may attract smaller operators to service the area.

Ravensthorpe Airport is classified as a Tier 3 security-controlled airport under the Aviation Transport Security Act 2004 and the Aviation Transport Security Regulations 2005.

A perimeter fence encloses the airside area, and the boundary is clearly marked with signage. Airside access for Ravensthorpe Airport is via locked gates surrounding the airside and landside boundary, with access controlled by the Shire of Ravensthorpe. The perimeter fencing is considered adequate for its purpose.

4.4. Landside development

Landside facilities include:

- Passenger terminal building and annex, with car parking areas
- Royal Flying Doctor Service / St John Ambulance patient transfer shed
- DBCA water tank for reloading emergency firefighting aircraft
- Airport maintenance shed (previous GA aircraft hangar).

An image of the passenger terminal building is shown at Figure 18.



Figure 18 Passenger terminal building

The building includes a passenger check-in area and small external passenger seating area as shown in Figure 19 and Figure 20.



Figure 19 Check-in area

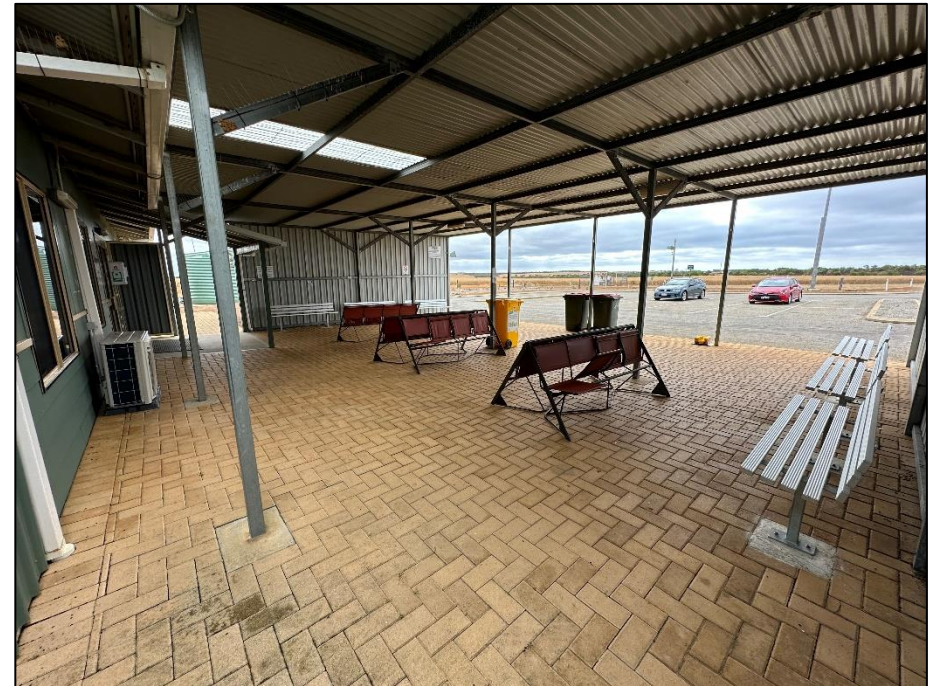


Figure 20 External seating area

Stakeholder feedback has noted that some of the outdoor seating is worn and requires replacing. Feedback has also identified that there are no food or drink options at the airport (vending machines could be considered), and that there is limited indoor seating and poor mobile telephone reception.

An image of the St John Ambulance / RFDS patient transfer facility is provided at Figure 21



Figure 21 St John Ambulance / RFDS patient transfer facility

Feedback from the RFDS has requested provision of a dedicated aircraft parking position and enhanced patient transfer facilities at the Airport.

DBCA facilities are shown at Figure 22 and include a 6 m shipping container for equipment and a 250 kl water tank.



Figure 22 DBCA emergency firefighting facilities

The SES has requested space for the provision of an additional water tank for reloading firefighting aircraft.

DBCA stakeholders also requested consideration of a separate heavy vehicle access to the apron for refuelling trucks / tankers to access the apron area away from Bay 1.

4.5. Aerodrome lighting

A Pilot Activated Lighting (PAL) System is available on runway 06/24. The system includes runway end / threshold, low intensity runway edge lights and precision approach path indicator (PAPI) available for each visual approach on runway 06/24.

Illuminated wind direction indicators are installed at the 06 and 24 runway ends.

There is no lighting on runway 14/32.

Blue taxiway edge lights are provided on taxiway Alpha.

Apron floodlighting is provided to Bays 1 and 2. As noted in Table 4 the existing apron floodlighting does not achieve current Part 139 MOS 2019 lux levels and is noted as a “grandfathered facility”. Future major works associated with the apron should seek to correct this non-compliance.

The aeronautical ground lighting facilities are satisfactory for the intended operations, but compliance is contingent upon certain grandfathered provisions (see section 4.8).

4.6. Ground transport

Ravensthorpe Airport is located approximately 30 km south of Ravensthorpe, and 20 km north of Hopetoun and is accessed off the Hopetoun – Ravensthorpe Road.

Access to the airport is via a sealed single-lane access road off the Jerdacuttup Road as shown in Figure 23. The road includes a floodway crossing associated with Kuliba Creek which has the potential to temporarily restrict access to the airport in significant rain events.



Figure 23 Ravensthorpe Airport access road

4.7. Utilities and civil infrastructure

Water

There is no reticulated water supply and potable water is carted to the Airport.

Electricity

The airport is connected to the main power grid. Emergency standby power is provided via a 44 kVA diesel powered generator on site.

Sewer

The airport is connected to an on-site septic / wastewater management system.

Communication

There is no “landline” telephone service to the Airport. Mobile telephone coverage is available within the terminal building with limited coverage in external areas.

Stormwater

Stormwater run-off is managed onsite via a series of open unlined drainage swales, predominantly on the northern side of the airport. Significant drainage issues with ponding occur to the south of the Runway 06 threshold / end and to the west of the Runway 32 threshold / end.

4.8. Grandfathered facilities

CASA allows certain airport facilities that have been previously constructed in compliance with regulatory standards that have since been amended, to be maintained in accordance with the requirements of the previous standard, even though they are not compliant with the new standard. These facilities are referred to as being “grandfathered facilities” and are noted in the aerodrome manual.

The following Ravensthorpe Airport facilities rely on grandfathered provisions.

Table 4 Ravensthorpe Airport Grandfathered provisions

<i>Existing Facility</i>	<i>Part 139 MOS 2019 Standard</i>	<i>Existing physical specification compliant with previous standard</i>
Runway Strip – overall width	CH 6.17 280m overall strip width	MOS 139 V1.15, CH 6.2.18 150m overall strip width
Obstacle Limitation Surface - Approach Inner Edge	CH 7.15 280m inner edge length	MOS 139 V1.15, CH 7.1-1 150m inner edge length
Obstacle Limitation Surface - Approach Slope	CH 7.15 2% Approach Slope	MOS 139 V1.15, CH 7.1-1 3.33% Approach Slope
Taxiway and shoulder width	MOS 6.45 (1) (d) 25m minimum blast resistant width for turbine operations. (5m shoulders)	MOS 139 V1.15, 6.3.9.1 Code C taxiway requires a 15m wide sealed taxiway
Characteristics of Apron Floodlighting	CH 12.09 New procedure for testing	MOS 139 V1.15, 9.16.4.3 Test procedure determines outcome

<i>Existing Facility</i>	<i>Part 139 MOS 2019 Standard</i>	<i>Existing physical specification compliant with previous standard</i>
Apron Floodlighting Lux	CH 9.116(3) Table showing increased Lux requirements	MOS 139 V1.14, CH 9.16 Lesser Lux
PAPI Lights	MOS 9.48 MOS 9.50 (10) Maximum of 900mm above ground level	No maximum height of PAPI within MOS 139
Commissioning paperwork for lighting system	MOS 9.17(1) MOS 9.17(8)	2004 MOS (version 1.2) section 9.1.15.6 The installation of the airfield lighting pre-dates the requirements for commissioning documentation to be retained

5. VISION

Ravensthorpe Airport is a key community infrastructure asset providing critical access to capital city facilities in Perth. In its Tourism Strategy 23 adopted on 15 August 2023, the Shire of Ravensthorpe set out the following 10-year vision:

“Sustainable RPT air services that are not reliant on the mining industry”.

The Shire is ultimately seeking to leverage current closed charter (FIFO) demand to establish scheduled air transport (RPT) services between Ravensthorpe and Perth for the benefit of the local community and to attract new visitor markets.

The Shire of Ravensthorpe Corporate Business Plan 2020 – 2024 identifies the Ravensthorpe Airport service as:

“Airport capable of servicing chartered flights for industry, commercial and recreational aircraft, and emergency services aircraft and related facilities”.

The Master Plan seeks to address the following priority objectives with respect to future infrastructure and facilities at Ravensthorpe Airport to:

- Cater for potential future air transport services
- Cater for future growth in general aviation activities
- Cater for future emergency services and aeromedical aircraft operations.

6. DEMAND

6.1. Regional population

The Shire of Ravensthorpe has a population of 2,085 (2021) and is classified as Very Remote Australia under the Australian Bureau of Statistics Remoteness Structure.

While opportunities exist to develop new tourism experiences to support visitation to the Fitzgerald River NP, current demand is largely driven by Fly-in / Fly-out (FIFO) closed charter services to Perth operated by local mining organisations; Galaxy Lithium Australia, FQM Australia Nickel and MACA.

6.2. Historical passenger movements

The data in Figure 24 (source: Shire of Ravensthorpe) shows annual air transport passenger movements for the period 2017-18 to 2023-24 (forecast).

National Jet Express (NJE) currently operates up to 6 return services per week using 104 seat Embraer E190 jet aircraft, providing 64,896 seats per annum. Current passenger numbers represent a load factor of around 60% per flight.

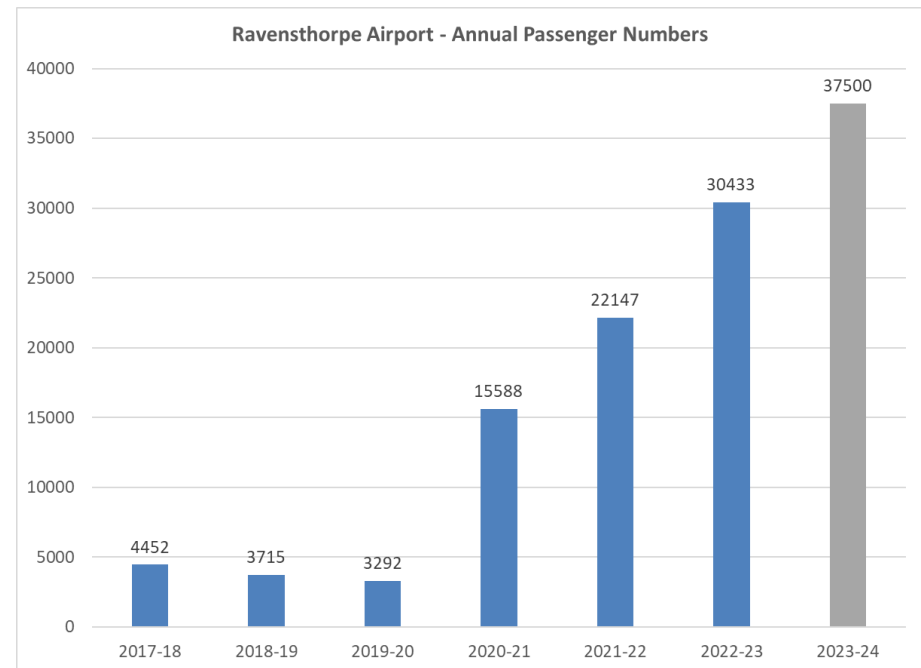


Figure 24 Historical air transport passenger movements at Ravensthorpe Airport

6.3. Historical aircraft movements

At 6 return services per week (FIFO), current annual aircraft movements are around 600 movements per annum.

The airport also caters for local / itinerant general aviation aircraft, aeromedical flights (RFDS – 80 patient retrievals in 2023) and seasonal emergency aerial firefighting aircraft operations.

For context, the capacity of a single runway configuration may exceed 195,000 aircraft movements per annum.

6.4. Forecast passenger and aircraft movement demand

Forecast passenger demand is a key determinant of future aircraft operations and infrastructure requirements.

Given the low regional population, and passenger movements associated with current Fly-in / Fly-out (FIFO) closed charter services to Perth, it is considered unlikely that there will be justified demand in the foreseeable future for aircraft greater than Code 3 to operate at Ravensthorpe Airport.

Therefore, for master planning purposes it has been assumed that Ravensthorpe Airport will remain as a Code 3C aerodrome, with capacity to cater for current aircraft operations up to E190 under pavement concession, or at maximum take-off weight subject to pavement strengthening. A Code 3C classification would also allow for future B737-700 operations subject to pavement strengthening.

Other than for aircraft parking capacity and landside facilities discussed in the following sections, the existing airside infrastructure (ie runway 06/24, taxiway A) has significant capacity to handle an increase in passenger numbers and aircraft movements to meet future demand.

6.5. Aircraft parking capacity

Stakeholder feedback has noted that the existing aircraft parking apron is congested during busy periods when in use by FIFO closed charter, RFDS, itinerant GA and emergency firefighting aircraft.

While gravel overflow apron areas are available for light aircraft during busy periods, the existing sealed apron should be expanded in the future to allow greater flexibility and efficiency in aircraft operations.

6.6. Passenger terminal capacity

Current operations of up to 104 seat E190 aircraft could see demand at peak periods of up to 100 arriving and 100 departing passengers.

The existing passenger terminal has insufficient capacity and facilities to cater for this level of demand and an expansion and upgrade of the terminal facilities should be considered in the near future. The upgrade should consider enhanced passenger facilities as well as office accommodation for Shire of Ravensthorpe airport staff.

7. DEVELOPMENT CONSTRAINTS

7.1. Planning

As outlined in section 1.15 Ravensthorpe Airport is subject to planning controls under the Shire of Ravensthorpe Local Planning Strategy 2015 and Local Planning Scheme No. 6 Amendment No. 3.

The land comprising Ravensthorpe Airport is zoned as “Strategic Infrastructure” with the objective to set aside land required for port or airport facilities.

7.2. Civil Aviation Safety Regulations

Current and future operations at Ravensthorpe Airport are regulated according to the requirements set out in the section below.

- Civil Aviation Safety Regulation 1998 (CASR) Part 139 – *Aerodromes* describes the requirements for aerodromes used in air transport operations.
- Part 139 (Aerodromes) Manual of Standards 2019 (Part 139 MOS 2019) sets out the standards and operating procedures for certified aerodromes used in air transport operations.

The current Part 139 MOS 2019 came into effect on 10 February 2024.

7.3. Aerodrome Reference Code

The standards which an aerodrome facility must meet to be suitable for use by aeroplanes within a particular range of performance and size are determined by the aerodrome reference code (ARC) chosen by the aerodrome operator.

The ARC is made up of 3 elements:

- a. a code number determined by the aeroplane reference field length (code number or runway code number); and

- b. a code letter determined by the aeroplane wingspan (code letter); and
- c. the outer main gear wheel span (OMGWS).

As the main runway 06/24 at Ravensthorpe Airport is nominated as a code 3 (runway length not less than 1200 m) and the relevant wingspan of aircraft using the airport is a code letter C (wingspan 24 m up to but not including 36 m), the airport is considered a code 3C with instrument non-precision approaches, and has a reference OMGWS of 6 m up to but not including 9 m.

7.4. Grandfathering

A key consideration regarding the planning of future infrastructure requirements is the status of facilities at the airport in respect of previous and current standards set out in Part 139 MOS 2019.

A facility that was designed to a previous standard but does not conform to the new standards can be “grandfathered” until such time as it is substantially changed or upgraded.

The definition of “grandfathered facility” in Part 139 MOS 2019 is copied for ease of reference:

A grandfathered facility means an existing aerodrome facility (the facility) and the obstacle limitation surfaces associated with an existing runway that is part of the existing aerodrome facility (the OLS) that, on and after the commencement of this MOS, do not comply with the standards in this MOS, provided that:

- (a) *the facility and the OLS complies, and continues to comply, with the standards which applied to the facility and the OLS immediately before the commencement of this MOS; and*
- (b) *the aerodrome operator’s aerodrome manual:*
 - (i) *identifies the facility and the OLS; and*
 - (ii) *sets out in detail how the facility and the OLS do not comply with this MOS.*

7.5. Design Standards Option 1 – Retain grandfathered requirements

For the duration of this master planning period, the Shire of Ravensthorpe desires an aerodrome that will conform to standards applicable to code 3C instrument non-precision requirements as specified in Part 139 MOS 2019.

A significant consideration in the spatial planning of the airport is the increase in overall runway strip width and more restrictive obstacle limitation surfaces required under the new standards in Part 139 MOS 2019.

The runway strip on runway 06/24 is published as 150 m overall but should be 280 m under the new standards. This pre-existing situation is grandfathered in the Ravensthorpe Aerodrome – Aerodrome Manual dated April 2023.

If the runway reference code was increased to Code 4, or precision instrument approaches were introduced, then the runway strip and associated obstacle limitation surfaces would need to conform to the new Part 139 MOS 2019 standards. This would significantly impact on the ability to make use of other infrastructure such as the aircraft parking apron and therefore the overall operation of the airport.

Option 1 therefore is to retain the aerodrome reference code as 3. This is the standard adopted for this Master Plan.

7.6. Design Standards Option 2 – meet new requirements

An alternative option 2 is to meet the new Part 139 MOS 2019 standards at some time in the future when demand requires either the implementation of the full Part 139 MOS 2019 standard or the upgrade of the main runway to enable the airport to accommodate aircraft of a higher aerodrome reference code (i.e. code 4).

This upgrade would necessitate demolition of significant elements of current infrastructure and removal of substantial elements of the built and natural environment to achieve the required airspace protection outcomes as shown in Figure 25.

While this option has not been adopted for the Master Plan, it is recommended that the Shire of Ravensthorpe protect (safeguard) the 280 m Code 3 runway strip width in accordance with Part 139 MOS 2019 to future proof possible future development of the Airport.

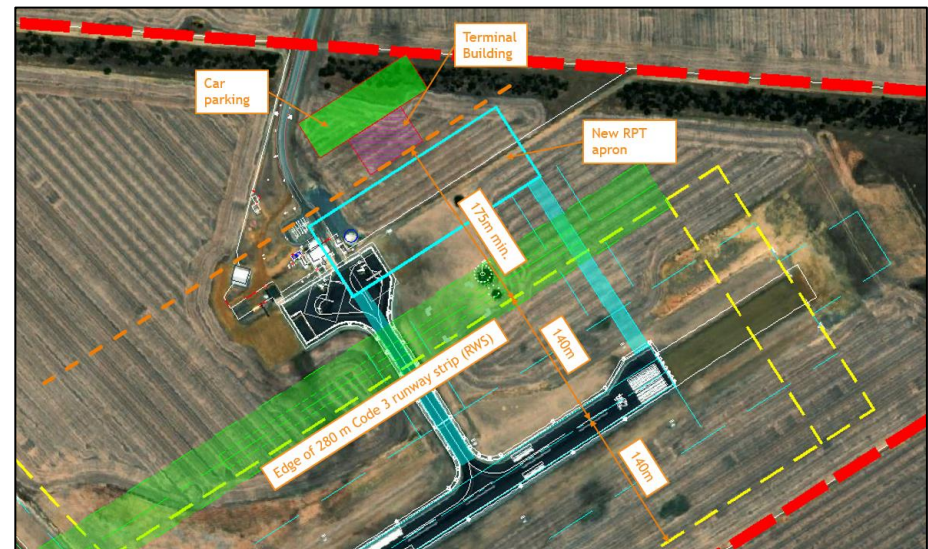


Figure 25 Impact of 280 m wide runway strip

8. DEVELOPMENT OPTIONS

8.1. Aircraft movement areas

Runway 06/24

The existing main Runway 06/24 is a Code 3C instrument non-precision runway, 1680 m long x 30 m wide, with a 150 m wide runway strip. It has a published PCN of 21/F/B/1170 (170PSI) / T Sealed.

The runway is satisfactory for the current and expected scope of aircraft operations (Code 3C) in terms of length, width, runway strip width and associated obstacle limitation surfaces, subject to grandfathering under previous requirements.

As discussed at the previous section 7.6, it is recommended that the Shire of Ravensthorpe protect (safeguard) the 280 m Code 3 runway strip width and associated obstacle limitation surfaces in accordance with Part 139 MOS 2019 to future proof possible future development of the Airport.

Should demand from future aircraft operations warrant an extension of Runway 06/24 beyond its current length of 1680 m, sufficient space is available within the current extended clearway to the north-east of the runway for an extension to 1770 m, and to a maximum of 2100 m with a further extension to the south-west within the current aerodrome boundary fence line.

The existing pavement strength at PCN 21 is satisfactory for current aircraft operations up to Embraer E190 aircraft operating under pavement concession. Future pavement strengthening may be warranted to cater for Code 3C aircraft operating at maximum take-off weight (MTOW).

Runway 14/32

The existing gravel cross Runway 14/32 is a Code 2 non-instrument runway, 1200 m long x 30 m wide, with a 90 m wide runway strip. It has a published PCN of 6/F/B/790 (115PSI) / T Gravel.

The runway is satisfactory for the current and expected scope of aircraft operations.

While the runway is currently classified as a non-instrument runway, it is recommended that the Shire of Ravensthorpe protect (safeguard) a 140 m wide runway strip and associated obstacle limitation surfaces for Runway 14/32 with runway end safety areas (RESA) in accordance with Part 139 MOS 2019 to future proof possible future provision of instrument non-precision approaches to the runway.

Taxiways

Taxiway Alpha is a Code C taxiway 15 m wide, providing access to the main aircraft parking apron. As noted at section 4.8, Taxiway Alpha has 3.5 m wide sealed shoulders which is noted as a “grandfathered facility”.

Part 139 MOS 2019 (ref: 6.45) specifies that a Code C taxiway must have a minimum width (including shoulders) of 25 m, so any future upgrade should incorporate widening of the Taxiway Alpha shoulders in accordance with this requirement.

As for Runway 06/24, the existing pavement strength at PCN 21 is satisfactory for current aircraft operations up to Embraer E190 aircraft operating under pavement concession. Future pavement strengthening may be warranted to cater for Code 3C aircraft operating at maximum take-off weight (MTOW).

For long term master planning purposes, the master plan also provides for a future Code C taxiway parallel to Runway 06/24. While the need for a parallel taxiway based on forecast aircraft movements is not envisaged within the term of this Master Plan, it is good planning practice to reserve land (ie a 52 m wide Code C taxiway strip) for this potential infrastructure so as not to constrain potential development in the future. The taxiway is proposed to be planned / reserved at a 158 m Code C taxiway offset from Runway 06/24.

As an initial / interim development strategy to support the efficiency of seasonal emergency firefighting aircraft movements and the operation of the main aircraft parking apron, a new 10.5 m wide Code B (OMGWS 4.5 m up to but not including 6 m) taxiway is proposed from the gravel / grassed area to the east of the sealed parking apron (used by AT-802 emergency firefighting aircraft (DBCA refuelling)) to the Runway 24 threshold / end.

Longer term development options provide for this taxiway to be upgraded to Code C standard in conjunction with an expanded apron area to effectively duplicate Taxiway Alpha and improve the operational efficiency of aircraft movements subject to demand.

Aircraft aprons

The aircraft parking apron is located adjacent to the passenger terminal building and can accommodate up to 2 code 3C aircraft (E190 / F100 max) on the parking positions Bay 1 and Bay 2.

Bay 1 (east) is the primary parking position, and is also used for reloading of DBCA firefighting aircraft during bushfire events.

Bay 2 (west) is generally kept free to allow for itinerant GA aircraft and Code B RFDS aeromedical aircraft to access parking areas on the western side of the sealed apron area in front of the St John Ambulance patient transfer facility.

The apron is congested during busy periods when in use by FIFO closed charter, RFDS, itinerant GA and emergency firefighting aircraft, and the existing sealed apron should be expanded in the future to allow greater flexibility and efficiency in aircraft operations.

In the short term, the master plan proposes an expansion of the apron to the south (away from the terminal building) to incorporate a Code B taxiway to allow Code B aircraft movements behind and clear of Code C aircraft parked on Bays 1 and 2.

In the longer term, the Master Plan provides for an expansion of the parking apron to align with the future Code C parallel taxiway, and future staged expansion to the north-east to provide for future Code C aircraft parking bays as necessary to meet demand.

As for Runway 06/24 and Taxiway Alpha, the existing pavement strength at PCN 21 is satisfactory for current aircraft operations up to Embraer E190 aircraft operating under pavement concession. Future pavement strengthening may be warranted to cater for Code 3C aircraft operating at maximum take-off weight (MTOW).

Section 4.8 also identifies the apron flood lighting as a “grandfathered facility” and future major works associated with the apron should seek to correct this non-compliance.

Future upgrades of the apron and adjacent airside areas should also provide for suitable storage areas for ground servicing equipment to suit operating aircraft.

General aviation precinct

A gravel overflow parking apron is currently available to the west of the sealed apron for general aviation aircraft up to 5,700kg MTOW. This area is connected via an informal gravel taxiway leading to a single previous GA aircraft hangar (now utilised as an airport maintenance shed).

The Master Plan provides for the establishment of a formal GA precinct subject to demand, for up to Code B aircraft to the west of the sealed apron and terminal building precinct.

The GA apron allows for itinerant GA aircraft parking and staged development of hangar sites (nominally 25 m x 25 m) subject to demand. The precinct also allows for the potential future establishment of a Fuel Facility (Jet A1 and Avgas as required) at the Airport.

Combined with the existing sealed apron, the expanded apron area also allows for a dedicated marked parking position for RFDS aircraft in front of the existing patient transfer facility.

Emergency services precinct

Gravel / grassed areas to the east of the sealed parking apron are used by AT-802 emergency firefighting aircraft (DBCA refuelling), with helicopter parking also permitted to the east of the sealed apron area adjacent to the primary wind indicator.

The Master Plan provides for the establishment of a formal emergency services precinct for up to Code B AT-802 aircraft to the east of the sealed apron.

The emergency services apron area allows for AT-802 aircraft parking, reloading (water) and refuelling adjacent to the DBCA facilities. Space is available landside of the apron for an additional water tank as requested during stakeholder engagement with the SES, and an alternative site for the potential future establishment of a Fuel Facility (Jet A1 and Avgas as required) at the Airport.

The proposed apron area is connected to the Runway 24 threshold / end via a proposed Code B taxiway to improve the operational efficiency of emergency firefighting aircraft movements and alleviate congestion on the sealed apron at Bay 1.

Helicopter facilities

Itinerant helicopter parking is currently available adjacent to the primary wind indicator. No change to this arrangement is proposed in the short term, but subject to future apron expansion, a new helicopter parking area has been identified to the north-east of the airport site and proposed apron areas, adjacent to the Runway 24 threshold / end.

Aerodrome ground lighting and visual aids

The aeronautical ground lighting facilities are satisfactory for the intended operations, but compliance is contingent upon certain grandfathered provisions (see section 4.8).

Apron floodlighting is provided to Bays 1 and 2. As noted in Table 4 the existing apron floodlighting does not achieve current Part 139 MOS 2019 lux levels and is noted as a “grandfathered facility”. Future major works associated with the apron should seek to correct this non-compliance.

Illuminated wind direction indicators are installed at the 06 and 24 runway ends. An unlit wind direction indicator is provided at Runway 32. Subject to future development as indicated in this Master Plan, the illuminated wind direction indicators at the 06 and 24 runway ends may need to be relocated to suit.

The Master Plan also allows for Runway 14/32 to become an instrument non-precision runway in the future subject to demand, and if this eventuates, another unlit wind direction indicator will be required at the Runway 14 end.

8.2. Aviation support facilities

Fuel facilities

There are no aviation fuel facilities on site other than for facilities provided by DBCA for emergency firefighting aircraft. Stakeholder feedback has suggested that the provision of refuelling facilities including Avgas may attract smaller operators to service the area.

The Master Plan provides two possible locations for a future fuel facility, one in the proposed general aviation precinct, with an alternative location identified adjacent to the emergency services precinct.

Further investigation should be undertaken in conjunction with potential new refuelling operators and existing aircraft operators / stakeholders to identify the preferred site for a new refuelling facility.

8.3. Passenger facilities

Passenger terminal building

The existing terminal building provides limited facilities including a passenger check-in area and small external passenger seating area. Stakeholder feedback has noted that some of the outdoor seating is worn and requires replacing. Feedback has also identified that there are no food or drink options at the airport (vending machines could be considered), and that there is limited indoor seating and poor mobile telephone reception.

Current operations of up to 104 seat E190 aircraft could see demand at peak periods of up to 100 arriving and 100 departing passengers.

The existing passenger terminal has insufficient capacity and facilities to cater for this level of demand and an expansion and upgrade of the terminal facilities should be considered in the near future. The upgrade should consider enhanced passenger facilities as well as office accommodation for Shire of Ravensthorpe airport staff.

It is noted that the introduction of RPT / open charter / hybrid air transport services at Ravensthorpe Airport using aircraft with 40 or more seats, and annual departing passenger numbers greater than 30,000, will require the introduction of passenger and

checked baggage security screening facilities including sterile departure lounge facilities in accordance with Australian Government aviation transport security legislation.

The Master Plan identifies an area for the staged expansion of the passenger terminal building as required to cater for demand subject to detailed functional / level-of-service planning and design.

Car parking

The Master Plan provides for an expansion of the existing car parking facilities adjacent to the passenger terminal building to cater for future demand and growth in passenger numbers.

Alternative apron / terminal precinct

While the Master Plan provides for incremental upgrades of the existing apron, passenger terminal building and car parking facilities over time to meet demand, the long term development strategy also reserves an area of the airport to the north-east of the current terminal precinct to be set aside for potential future development of an expanded apron, and new terminal building and car parking precinct if required.

8.4. Commercial land use development

Potential development area

The Master Plan identifies an area of land to the north of the existing terminal building precinct and adjacent to the Airport access road for potential future commercial development subject to demand.

8.5. Ground transport

Ravensthorpe Airport is located approximately 30 km south of Ravensthorpe, and 20 km north of Hopetoun and is accessed off the Hopetoun – Ravensthorpe Road.

Access to the airport is via a sealed single-lane access road off the Jerdacuttup Road. The road includes a floodway crossing associated with Kuliba Creek which has the potential to temporarily restrict access to the airport in significant rain events.

Notwithstanding potential disruption due to the floodway crossing, the external road network is generally considered adequate for the master planning horizon.

The internal road network will need to be upgraded over time to provide access to new facilities and development areas. Consideration should also be given to the provision of a separate heavy vehicle access to the apron for DBCA refuelling trucks / tankers to access the apron area away from Bay 1.

There are no car hire facilities or public transport (bus, taxi) services servicing the Airport and given the Airport's location, the provision of these services aligned with passenger demand and the desire to increase visitor numbers to the region should be considered.

8.6. Utilities and civil infrastructure

Details of existing utilities / services at the Airport are provided at section 4.7. Due to the Airport's location, there are some significant service constraints that will present planning challenges for the future development of the Airport. Most significantly water supply and sewerage facilities will need to be improved over time to cater for future demand.

Improvements to the existing mobile telephone coverage / reception will also need to be investigated.

Further investigation is also recommended to address stormwater drainage and ponding issues present to the south of the Runway 06 threshold / end and to the west of the Runway 32 threshold / end.

9. MASTER PLAN

This section sets out the progressive development of Ravensthorpe Airport over a nominal planning horizon of 20 years, comprised of short, medium and longer-term timeframes.

The short term is typically defined as 0 - 5 years, medium 5 – 10 years, and longer term as 10+ years through to the end of the 20-year master planning horizon. Overall master plan stage drawings are provided in **Annexure 1**. In this section individual elements are described for each development scenario.

Delivery of any individual component within the Master Plan is dependent on the availability of funding, market demand and the undertaking of a full detailed design process, and the timing of development may be delayed or accelerated in consideration of these factors.

The Master Plan identifies three (3) principal development stages / scenarios:

- Short term 0 – 5 years
- Medium term 5 – 10 years
- Long term 10 – 20 years.

A longer term 20+ year development scenario has also been prepared to allow for future aerodrome safeguarding considerations.

These scenarios show a logical progression in development that could take place for planning purposes. Actual development and time frame is dependent on demand and the policies the Shire of Ravensthorpe adopts to promote airport growth.

Noting the Shire of Ravensthorpe’s 10-year vision to establish “*Sustainable RPT air services that are not reliant on the mining industry*” and to attract new visitor markets, it is recommended that the Shire actively engage with the Department of Transport, airlines, and local mining organisations to develop a strategy to establish open air transport services for local residents and business and tourism travellers at Ravensthorpe Airport. This strategy should be implemented in conjunction with complementary tourism strategies to develop new tourism / visitor experiences supported by an expanded range of accommodation, hospitality and general services.

9.1. Short term 0 – 5 years

The short term development strategy retains the airport as a Code 3 aerodrome catering for air transport services up to 104 seat E190 aircraft. Short term development focusses on addressing current capacity constraints and congestion during busy periods on the sealed aircraft parking apron, and facility improvements as identified by stakeholders through the engagement period.

The scenario involves:

- Provision of a new 10.5 m wide Code B (OMGWS 4.5 m up to but not including 6 m) taxiway for AT-802 emergency firefighting aircraft from the gravel / grassed area to the east of the sealed parking apron to the Runway 24 threshold / end – to improve the efficiency of seasonal emergency firefighting aircraft movements and the operation of the main aircraft parking apron and congestion on Bay 1 during bushfire events.
- Subject to Government grant funding support, formalise / establish a Code B emergency services precinct (apron) to the east of the existing sealed apron, to enhance the provision of emergency aerial firefighting services during bushfire events.
- Expansion of the sealed parking apron to the south (away from the terminal building) to incorporate a Code B taxiway to allow Code B aircraft movements behind and clear of Code C aircraft parked on Bays 1 and 2 – to improve the efficiency and flexibility of aircraft movements on the sealed parking apron.
- Provision of incremental improvements to the passenger terminal building and facilities, to improve the function / level of service / customer experience for passengers, including improvements to indoor and outdoor seating, consideration of food and beverage options (ie vending machine), improvements to mobile telephone / internet reception, and office accommodation facilities for Shire of Ravensthorpe airport staff.
- Allocation of additional space to accommodate a second DBCA water tank for reloading of emergency firefighting aircraft during bushfire events.

- Provision of a new separate heavy vehicle access to the apron for DBCA refuelling trucks / tankers to access the apron area away from Bay 1.
- Subject to Government grant funding support, and in conjunction with the RFDS / St John Ambulance service, upgrade the existing patient transfer facility commensurate with other regional airport facilities and investigate the provision of a dedicated aircraft parking position for RFDS aircraft.
- Undertake further investigation in conjunction with potential new refuelling operators and existing aircraft operators / stakeholders to identify the preferred site for a new refuelling facility (Jet A1 and Avgas as required) – either within the proposed general aviation precinct or alternatively within the proposed emergency services precinct – subject to internal landside road access requirements.

9.2. Medium term 5 – 10 years

The medium term development scenario involves:

- Further incremental expansion / improvements to the passenger terminal building and car parking facilities as necessary to meet demand, including the possible future requirement to introduce passenger and checked baggage security screening facilities.
- Introduction of car hire and public transport (bus, taxi) options for passengers and visitors to the region.
- Subject to demand and business case, commence the staged development of a new general aviation hangar precinct for up to Code B 5,700 kg max. aircraft to the west of the existing sealed apron, incorporating up to 5 hangar lease sites, associated apron and taxiway / taxilane infrastructure and providing parking for itinerant general aviation aircraft clear of the existing sealed apron area.
- Upgrade of utilities / services at the Airport, including water, sewerage and telecommunication services as required to cater for demand.

9.3. Long term 10 – 20 years

The long term development scenario involves:

- Further incremental expansion / improvements to the existing passenger terminal building and car parking facilities (or construction of new facilities) as necessary to meet demand, including the possible future requirement to introduce passenger and checked baggage security screening facilities.
- Expansion of the main aircraft parking area to accommodate a third Code C aircraft parking bay (Bay 3) and a Code C taxilane to facilitate aircraft movements behind and clear of Code C aircraft parked on Bays 1 and 2 – Bay 3 to remain available for emergency firefighting aircraft during bushfire events.
- Relocation of the existing helicopter parking area to the north-east of the airport site and proposed apron areas, adjacent to the Runway 24 threshold / end.
- Subject to demand, continue the staged development of the general aviation hangar precinct for up to Code B 5,700 kg max. aircraft to the west of the existing sealed apron.
- Subject to demand, undertake land use planning for a potential future commercial development area located to the north of the existing terminal building precinct and adjacent to the Airport access road.

9.4. Longer term 20+ years development considerations

Longer term development considerations described in this Master Plan include:

- Progressively address “grandfathered facilities” including apron flood lighting and Taxiway Alpha.
- Runway 06/24
 - Protection of the 280 m Code 3 runway strip width and associated obstacle limitation surfaces in accordance with Part 139 MOS 2019
 - Possible future extension to 1770 m / 2100 m max. subject to demand / operational need
 - Pavement strengthening to cater for Code 3 aircraft at maximum take-off weight (MTOW) subject to demand / operational need (including associated taxiway and apron pavements)
- Runway 14/32
 - Protection of a 140 m wide runway strip and associated obstacle limitation surfaces with runway end safety areas (RESA) in accordance with Part 139 MOS 2019 to future proof possible future provision of instrument non-precision approaches to the runway
- Expansion of the Code C aircraft parking apron and duplication of Taxiway Alpha with a new Code C taxiway connecting to the Runway 24 threshold / end.
- Protection of a full length Code C taxiway strip parallel to Runway 06/24 – a 52 m wide Code C taxiway strip located at a 158 m Code C taxiway offset from Runway 06/24.
- Relocation and/or provision of additional wind direction indicators as necessary in accordance with Part 139 MOS 2019.

10. FUNDING STRATEGY

Funding for major capital works at Ravensthorpe Airport is sourced through a combination of:

- the Ravensthorpe Airport Reserve and/or funding from the Shire of Ravensthorpe
- aeronautical revenue (from ongoing airport operations)
- external financing (such as loan borrowings and Government grants).

Planning and financial modelling for major airport works is undertaken in accordance with the WA Department of Transport Strategic Airport Asset and Financial Management Framework and Business Case process.

Indicative cost estimates in 2024 \$ excluding GST for the principal airside infrastructure works outlined in the Master Plan are shown in Table 5. Costs are indicative only and subject to further detail design and technical investigations in order to adequately scope and specify the work required to deliver the various aspects of the overall plan.

Estimates exclude associated landside upgrades including passenger terminal and car park improvements.

Table 5 Indicative Master Plan Cost Estimates (Airside Infrastructure)

<i>Item</i>	<i>Cost (2024 \$ excl GST)</i>
<u>Short term 0 – 5 years</u>	
Provision of a new 10.5 m wide Code B taxiway for AT-802 emergency firefighting aircraft from the gravel / grassed area to the east of the sealed parking apron to the Runway 24 threshold / end	\$0.75 million

<i>Item</i>	<i>Cost (2024 \$ excl GST)</i>
<u>Short term 0 – 5 years</u>	
Establish a Code B emergency services apron to the east of the existing sealed apron, including expansion of the sealed parking apron to the south (away from the terminal building) to incorporate a Code B apron taxilane	\$2.0 million
<u>Medium term 5 – 10 years</u>	
Staged development of a new general aviation hangar precinct for up to Code B 5,700 kg max. aircraft to the west of the existing sealed apron, incorporating associated apron, taxiway / taxilane infrastructure and landside road	\$2.5 million (\$3.0 million with sealed apron in front of hangars)
<u>Long term 10 – 20 years</u>	
Expansion of the main aircraft parking area to accommodate a third Code C aircraft parking bay (Bay 3) and a Code C apron taxilane (PCN 21 as existing)	\$4.5 million
<u>Long term 10 – 20 years</u>	
Continue the staged development of the general aviation hangar precinct for up to Code B 5,700 kg max. aircraft	\$1.85 million (\$3.25 million with sealed apron in front of hangars)
<u>Longer term 20+ years</u>	
Address “grandfathered facility” – Taxiway Alpha shoulder widening	\$0.5 million

11. AERODROME SAFEGUARDING

In addition to state requirements, the Australian Government has an interest in better planning and integrated development on and around airports and to lessen the adverse effects of aviation activity on the environment and communities. While not a planning authority, it provides guidance on broader issues such as noise around airports that can be used by statutory authorities to achieve the stated objectives. The National Airports Safeguarding Advisory Group (NASAG) has produced the National Airports Safeguarding Framework (NASF) to advance this agenda. The Framework should also be taken into consideration when designing development on and in the vicinity of the airport.

11.1. Aircraft noise

Aircraft noise can affect the allocation of appropriate uses on and external to the airport site.

Australian Noise Exposure Forecast (ANEF) contours provide a scientific measure of the aircraft noise exposure levels around airports taking into account the frequency, intensity, time and duration of aircraft operations. Standard methodology for evaluating the noise climate around airports is defined in AS 2021-2015 Acoustics – Aircraft Noise Intrusion – Building Siting and Construction, which recognises the ANEF contour charts as the primary method for long-term noise impact assessment.

Further information can be found in NASF Guideline A: *Measures for Managing Impacts of Aircraft Noise*.

11.2. Building generated windshear and turbulence

Building generated windshear / turbulence becomes safety critical when a significant obstacle, such as a building, is located in the path of a crosswind to an operational runway. The wind flow will be diverted around and over the buildings causing the crosswind speed to vary along the runway.

NASF Guideline B sets out an assessment methodology to follow in assessing this risk.

Further information can be found in NASF Guideline B: *Managing the Risk of Building Generated Windshear and Turbulence at Airports*.

11.3. Wildlife hazard buffer zone

All wildlife on or around an airport should be regarded as a potential hazard to aircraft safety. Most wildlife strikes occur on and in the vicinity of airports, where aircraft fly at lower elevations. Flying vertebrates (e.g., birds or bats) mainly use airspace within 300 metres of the ground so are likely to conflict with aircraft when they are at their most vulnerable, i.e., immediately after take-off and during landing approaches or other low flying manoeuvres. Development should seek to avoid creating wildlife attracting land uses both on and within the vicinity of the airport.

Further information can be found in NASF Guideline C: *Managing the Risk of Wildlife Strikes in the Vicinity of Airports*.

11.4. Lighting restriction zone

Manual of Standards Part 139 - Aerodromes establishes a restriction to lighting within the vicinity of an airport which, by reason of its intensity, configuration or colour, might endanger the safety of an aircraft. The vicinity of the airport can be taken to be within a 6km radius of the airport.

Further information can be found in NASF Guideline E: *Managing the Risk of Distractions to Pilots from Lighting in the Vicinity of Airports*.

11.5. Operational airspace

Obstacle limitation surfaces

An airport's obstacle limitation surfaces (OLS) define the operational airspace that should be kept free of obstacles for aircraft operations being conducted under the visual flight rules. Both current and future OLS should be considered in the design of developments on and within the vicinity of the airport.

Manual of Standards Part 139 Chapter 7 provides relevant parameters for the design of the OLS.

PANS-OPS surfaces

PANS-OPS surfaces define the operational airspace a pilot is required to use when flying an aircraft under the instrument flight rules—that is, when relying on instruments for navigation. Development should seek to avoid any permanent encroachments into current and future PANS-OPS airspace.

Detailed information about the PANS-OPS surfaces is provided by Airservices Australia in documentation held by the Airport Manager.

Further information can be found in NASF Guideline F: *Managing the Risk of Intrusions into the Protected Airspace of Airports*.

11.6. Building restricted areas for aviation facilities

The Building Restricted Area (BRA) is defined as a volume where buildings and other objects have the potential to cause unacceptable interference to the signal-in-space transmitted by the radio navigation facility. All radio navigation facilities have a BRA defined which may extend to a significant distance from the facility. The purpose of the Building Restricted Area is not intended to prohibit development but rather to trigger an assessment of a proposed building or development for its impact on the radio navigation facility. The BRA is primarily intended to be used by Aerodrome Operators and Local Planning Authorities but is also required to be used by the systems engineer when selecting a new site for a radio navigation facility. All development applications near a radio navigation facility shall be assessed to determine if the facility BRA is infringed. If

there is no infringement the assessment process may be terminated, and the application approved.

Further information can be found in NASF Guideline G: *Protecting Aviation Facilities — Communications, Navigation and Surveillance (CNS)*.

11.7. Public safety areas

A public safety area (PSA) is a defined area at the end of an airport's runway where there is potentially an increased risk of an aircraft accident occurring.

When imposed by a planning instrument, the public safety area defines the area in which specified development is restricted in order to protect the safety of both aircraft passengers, property and people on the ground in the event of an aircraft accident during landing or take-off.

NASF Guideline I: *Managing the Risk in Public Safety Areas at the Ends of Runways* provides guidance to states and local governments 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.

There is no consistent approach to the implementation of public safety areas within Australia, and Western Australia does not currently have any planning controls in place regarding public safety areas at airports or aerodromes within the state.

The International Civil Aviation Organization (ICAO) has not developed standards and recommended practices regarding PSAs, and CASA's aviation safety regulations and standards do not provide for their establishment.

Since there is no formal requirement to implement public safety zones, and because of the uncertainty about specific design parameters, this concept has not been incorporated in the Master Plan.

Further information can be found in NASF Guideline I: *Managing the Risk in Public Safety Areas at the Ends of Runways*.

12. GLOSSARY

AAGR	average annual growth rate	GSE	ground support equipment
AIP	Aeronautical Information Package	HLS	helicopter landing site
AMSL	above mean sea level	ICAO	International Civil Aviation Organization
ANEF	Australian Noise Exposure Forecast	INP	instrument non-precision
ARFFS	aerodrome rescue and firefighting service	IWDI	illuminated wind direction indicator
AsA	Airservices Australia	LDA	landing distance available
ASDA	accelerate-stop distance available	LGA	local government authority
ATC	air traffic control	LIRL	low intensity runway lights
BRA	building restricted area	MOS	Manual of Standards
CAAP	Civil Aviation Advisory Publication	MTOW	maximum take-off weight
CAR	Civil Aviation Regulation 1988	NASF	National Airports Safeguarding Framework
CASA	Civil Aviation Safety Authority	NDB	Non-Directional Beacon
CASR	Civil Aviation Safety Regulation 1998	OLS	obstacle limitation surfaces
CTAF	Common Traffic Advisory Frequency	PANS-OPS	Procedures for Air Navigation Services – Aircraft Operations
DME	Distance Measuring Equipment	PAL	pilot activated lighting
ERSA	En Route Supplement Australia	PAPI	Precision Approach Path Indicator
FIFO	fly-in / fly-out	RFDS	Royal Flying Doctor Service
GA	general aviation	RNAV-GNSS	Area Navigation – Global Navigation Satellite System
GNSS	Global Navigation Satellite System	RPT	regular public transport
GPS	Global Positioning System	TODA	take-off distance available
		TORA	take-off run available

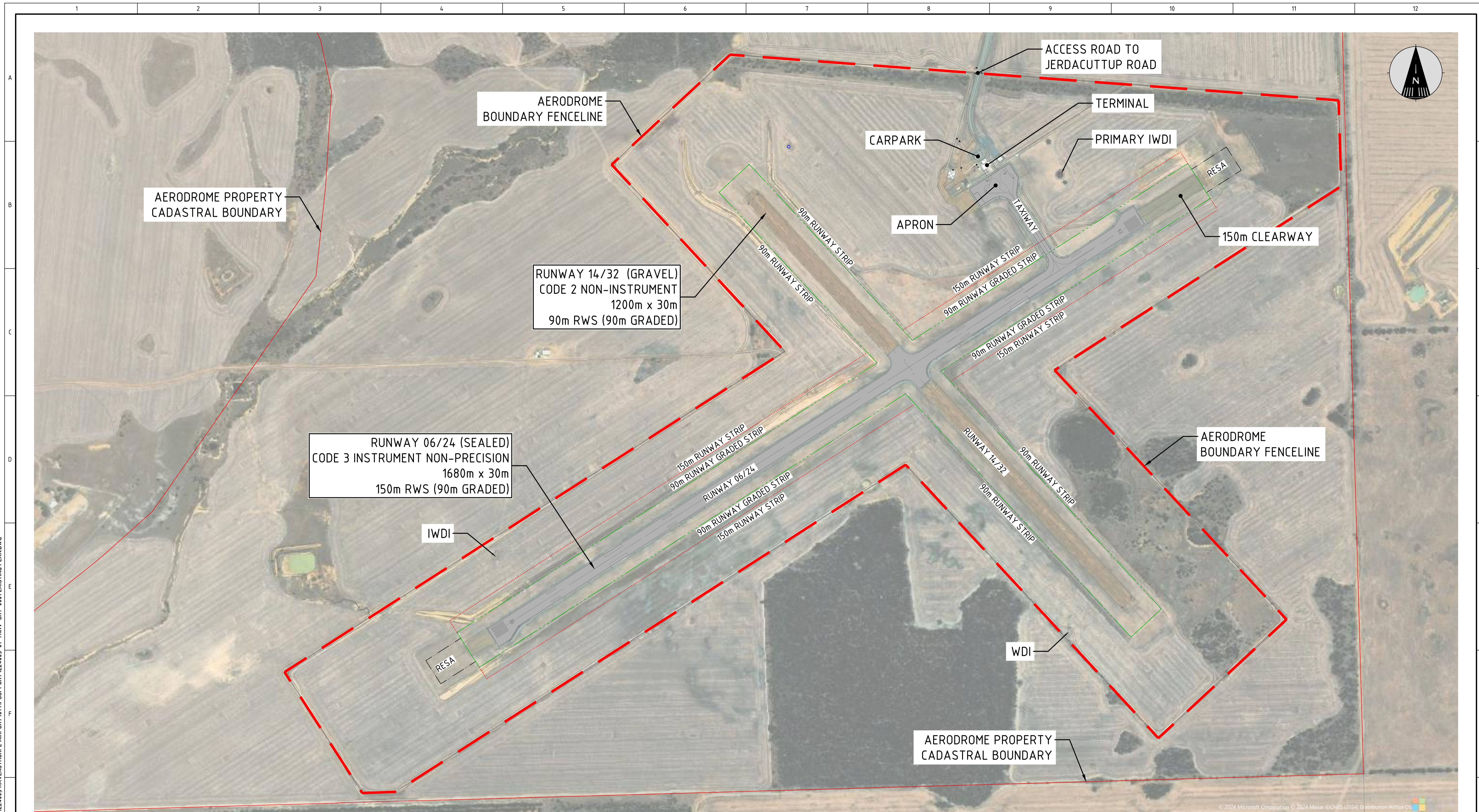
13. REFERENCES

- Airservices Australia, Aeronautical Information Package; including En Route Supplement Australia (ERSA, RDS, DAP) effective 21 March 2024
- Australian Airports Association, Regional Airport Master Planning Guideline, Airport Practice Note 4
- Australian Standard AS 2021:2015 *Acoustics – Aircraft Noise Intrusion – Building Siting and Construction*, dated March 2015
- Civil Aviation Safety Authority, Civil Aviation Safety Regulations 1998
- Civil Aviation Safety Authority, *Part 139 (Aerodromes) Manual of Standards 2019*, dated 10 February 2024
- International Civil Aviation Organization, International Standards and Recommended Practices (SARPS) Annex 14 Aerodromes, Volume 1 *Aerodrome Design and Operations* and Volume II *Heliports*
- National Airports Safeguarding Framework, Guideline A: *Measures for Managing Impacts of Aircraft Noise*, version 1.2, dated November 2016
- National Airports Safeguarding Framework, Guideline B: *Managing the Risk of Building Generated Windshear and Turbulence at Airports*, version 2.2.5, dated May 2018
- National Airports Safeguarding Framework, Guideline C: *Managing the Risk of Wildlife Strikes in the Vicinity of Airports*, version 4.0, dated November 2023
- National Airports Safeguarding Framework, Guideline E: *Managing the Risk of Distractions to Pilots from Lighting in the Vicinity of Airports*, version 5.1.4, dated October 2014
- National Airports Safeguarding Framework, Guideline F: *Managing the Risk of Intrusions into the Protected Airspace of Airports*, version 5.1.3, dated July 2012
- National Airports Safeguarding Framework, Guideline G: *Protecting Aviation Facilities - Communications, Navigation and Surveillance (CNS)*, version 1, dated November 2016
- National Airports Safeguarding Framework, Guideline I: *Managing the Risk in Public Safety Areas at the Ends of Runways*, version 1, dated November 2018.

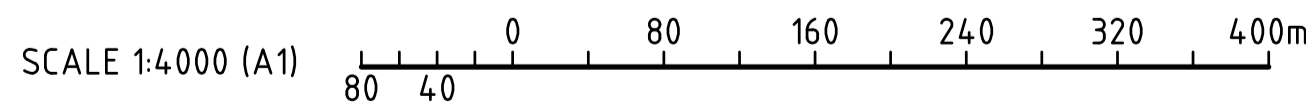
ANNEXURES

Annexures contain the following Ravensthorpe Airport Master Plan Drawings:

1. Existing Airport Layout Plan [YNRV-SKT-0001 A]
2. Existing Terminal Precinct Plan [YNRV-SKT-0002 A]
3. Short Term (0 – 5 Year) Development Strategy [YNRV-SKT-0003 A]
4. Medium Term (5 – 10 Year) Development Strategy [YNRV-SKT-0004 A]
5. Long Term (10 – 20 Year) Development Strategy [YNRV-SKT-0005 A]
6. Longer Term (20+ Year) Development Strategy [YNRV-SKT-0006 A]
7. Airport Safeguarding – Windshear Protection Runway 06/24 [YNRV-SKT-0007 A]
8. Airport Safeguarding – Windshear Protection Runway 14/32 [YNRV-SKT-0008 A]
9. Airport Safeguarding – Wildlife Hazard Zones [YNRV-SKT-0009 A]
10. Airport Safeguarding – Lighting in the Vicinity of Aerodrome [YNRV-SKT-0010 A]
11. Airport Safeguarding – Proposed Obstacle Limitation Surfaces – Regional Plan [YNRV-SKT-0011 A]
12. Airport Safeguarding – Proposed Obstacle Limitation Surfaces – Airport Surrounds [YNRV-SKT-0012 A]



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Shire of Ravensthorpe

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SHIRE OF RAVENSTHORPE
PROJECT
RAVENSTHORPE AIRPORT MASTER PLAN
JERDACUTTUP ROAD, HOPETOUN WA 6348



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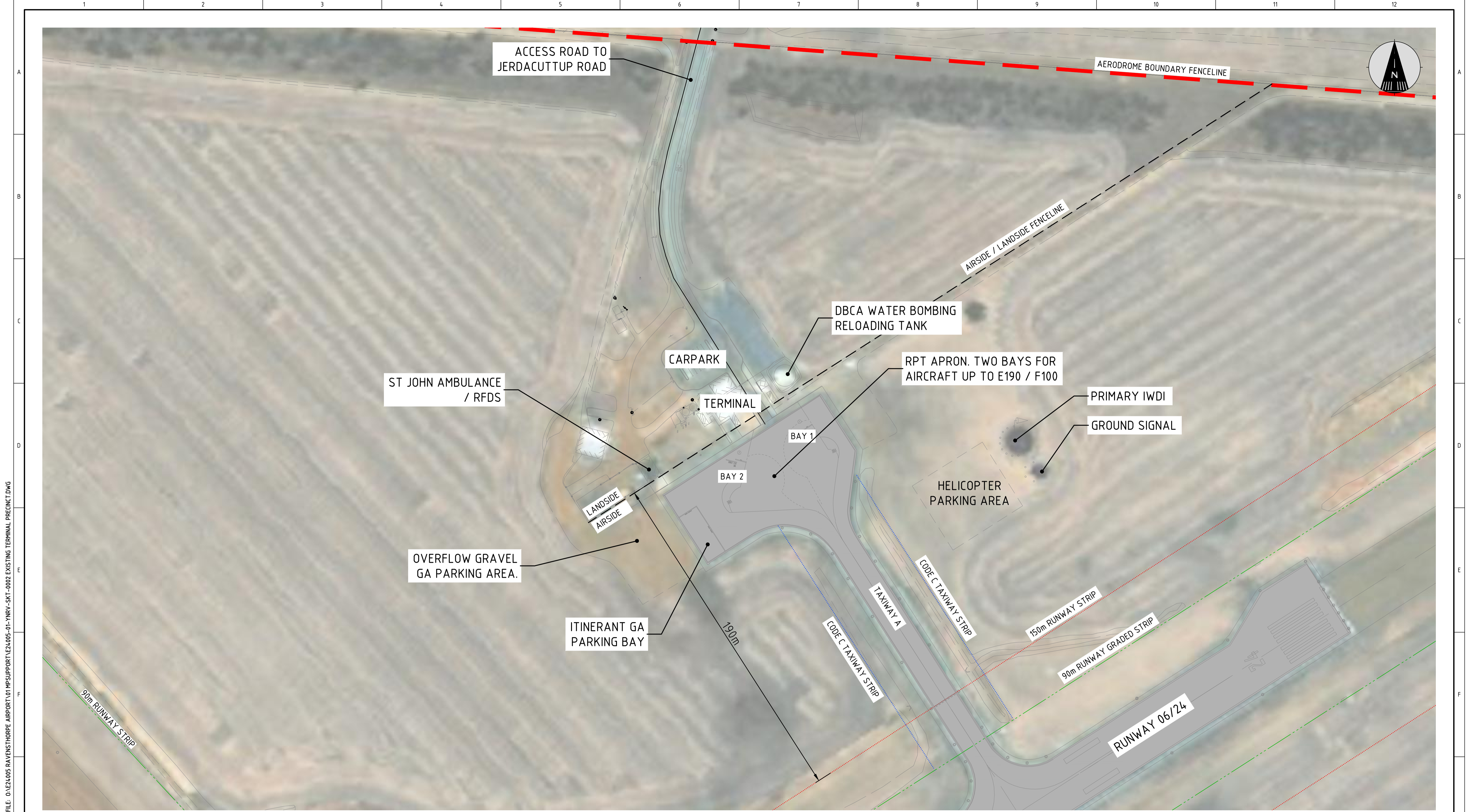


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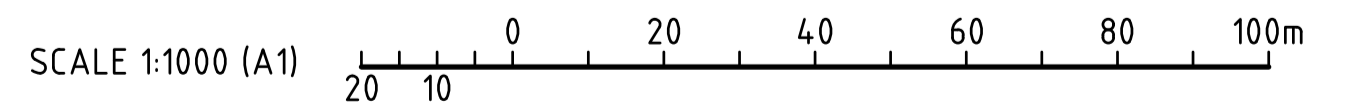
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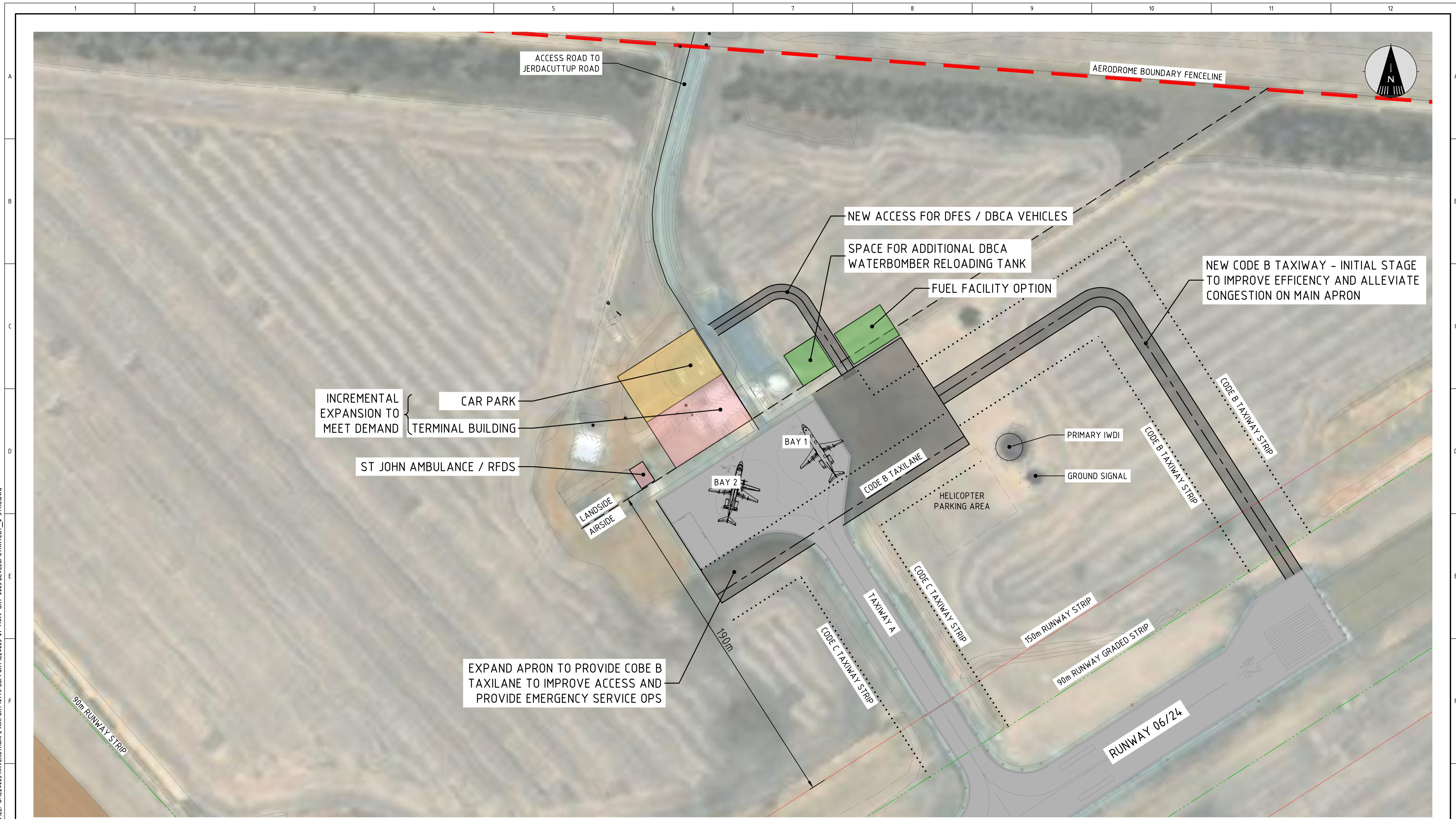
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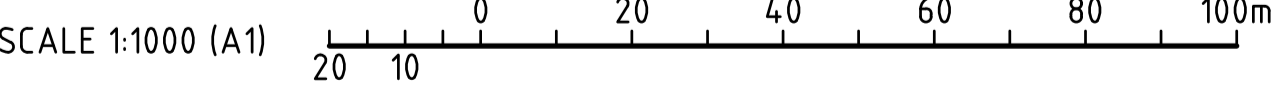
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JERDACUTTUP ROAD, HOPETOUN WA 6348



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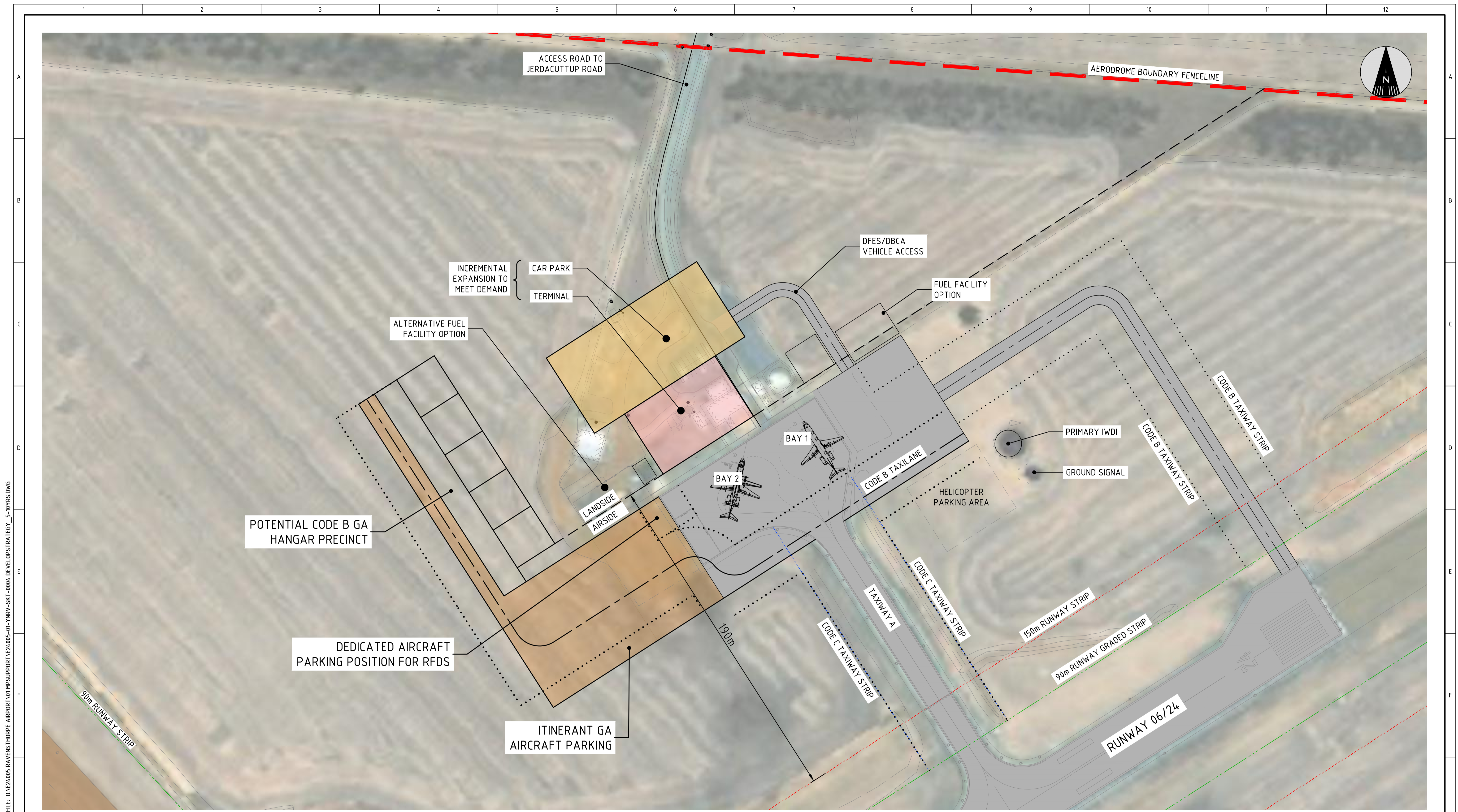
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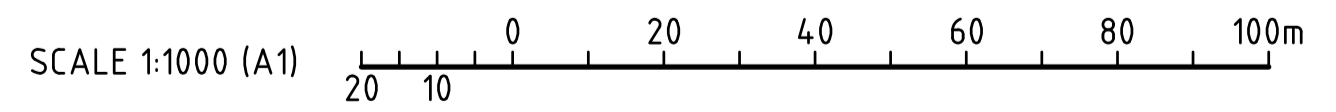
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JERDACUTTUP ROAD, HOPETOUN WA 6348



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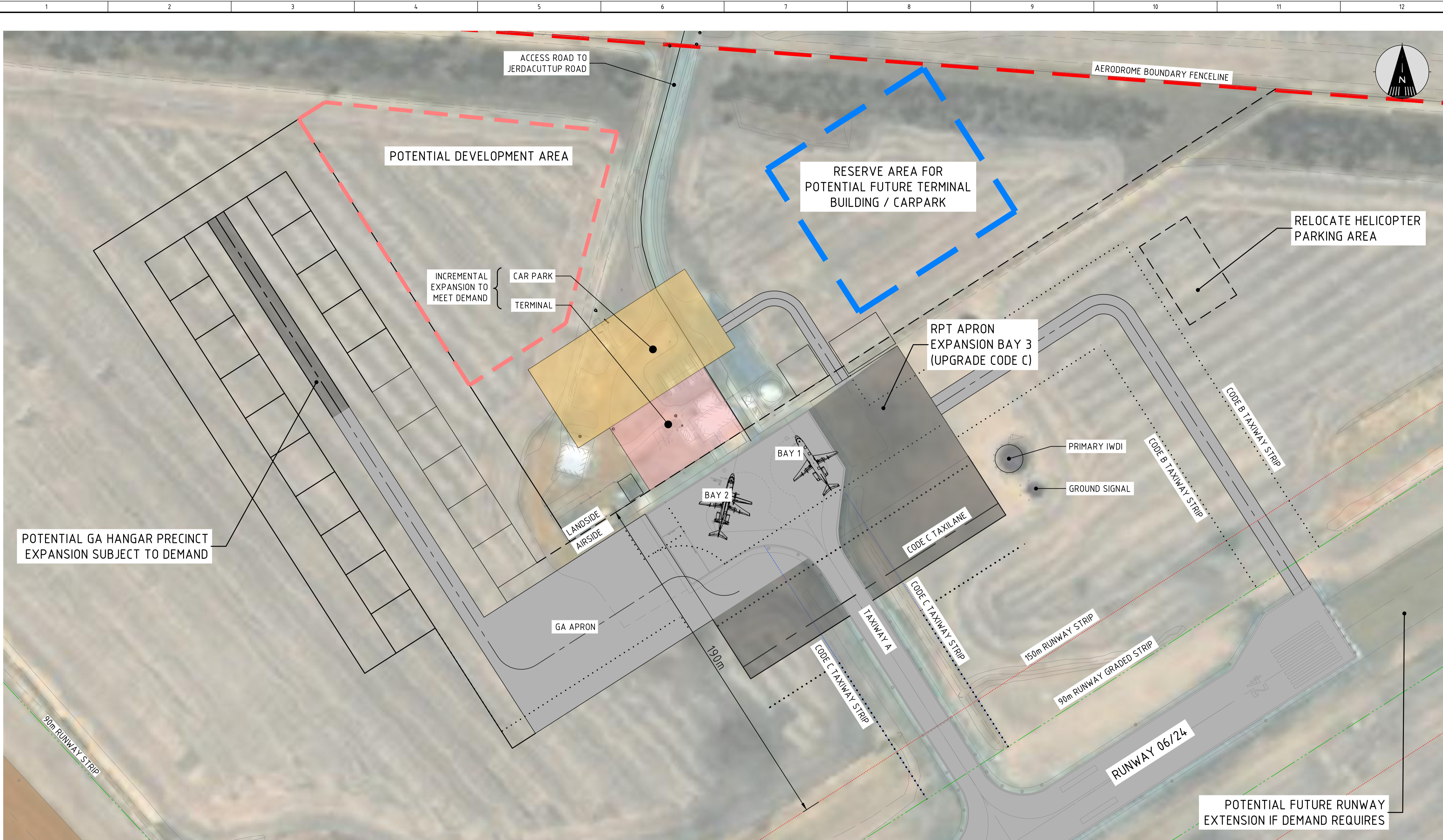


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VERIFIED	PJO	28.02.2024
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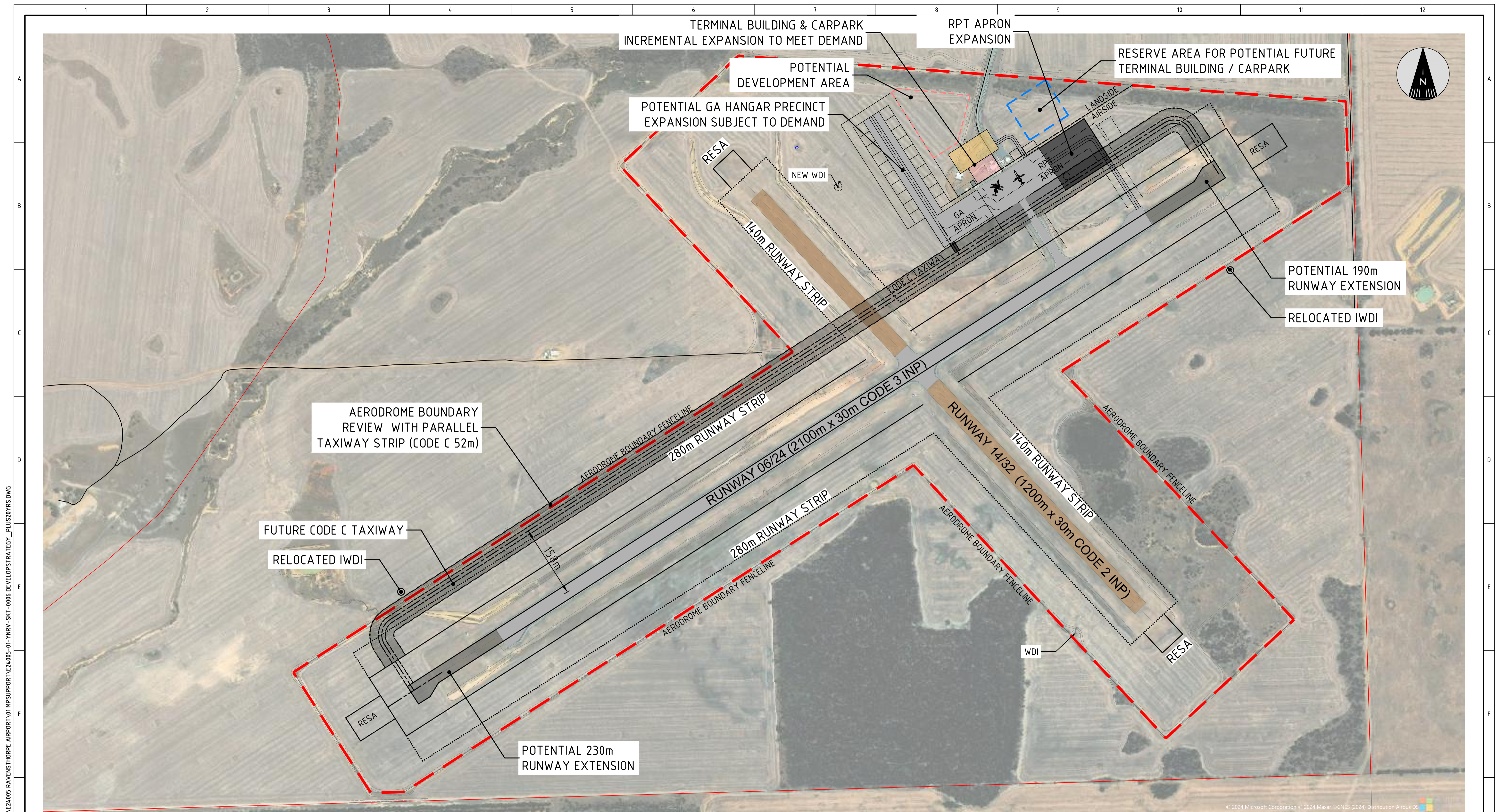
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1:1000	MGA-51 DATUM AHD	A1

STATUS
FOR INFORMATION
AIRPORT MASTER PLAN
LONG TERM (10-20 YEARS) DEVELOPMENT STRATEGY

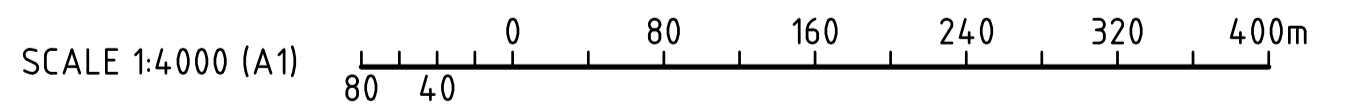
DRAWING No. E24005-01-YNRV-SKT-0005

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DATE: Wednesday, 13 April 2022 9:05:00 AM BY: AARON COGHILL FILE: G:\E24005 RAVENSTHORPE AIRPORT\01 MPS\SUPPORT\E24005-01-YNRV-SKT-0005 DEVELOP\STRATEGY_10-20YRS.DWG



PLAN
SCALE 1:4,000



DATE: Wednesday, 13 April 2022 9:05:00 AM BY: AARON COGHILL FILE: G:\E24005 RAVENSTHORPE AIRPORT\01 MPS\01 SUPPORT\01 E24005-01-YNRV-SKT-0006 DEVELOPSTRATEGY_PLUS20YRS.DWG

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A	ORIGINAL ISSUE	28.02.2024	APC	PJO	



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PROJECT
RAVENSTHORPE AIRPORT MASTER PLAN
JERDACCUTTUP ROAD, HOPETOUN WA 6348

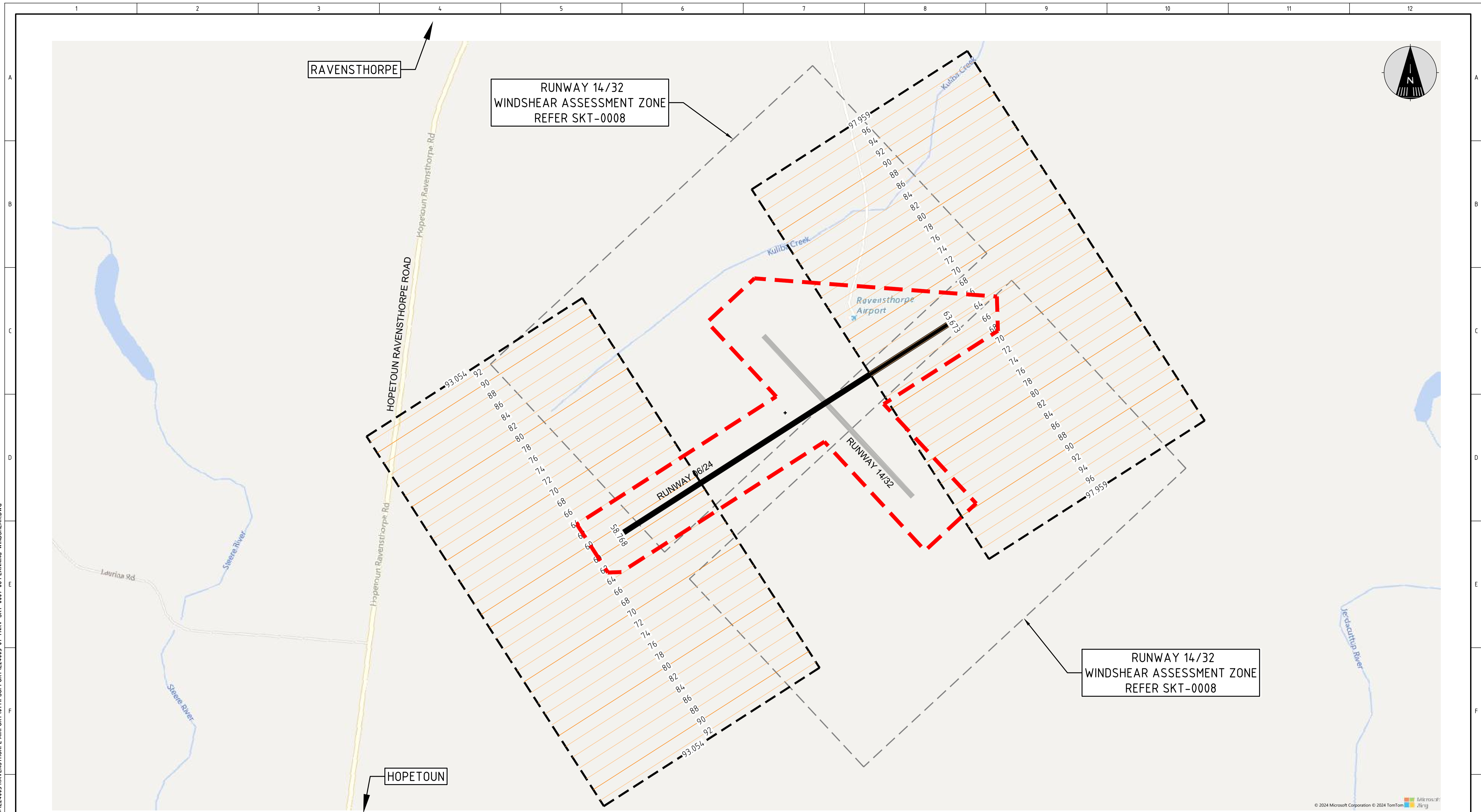


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DRAFTING CHECK	PJO	28.02.2024
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DESIGN CHECK	PJO	28.02.2024
VERIFIED	PJO	28.02.2024



STATUS
FOR INFORMATION
AIRPORT MASTER PLAN
LONGER TERM (20+ YEARS) DEVELOPMENT STRATEGY

APPROVED	DRAWING SCALE 1:4,000	GRID MGA-51 DATUM AHD	ORIG. SIZE A1	DRAWING No. E24005-01-YNRV-SKT-0006	REVISION A
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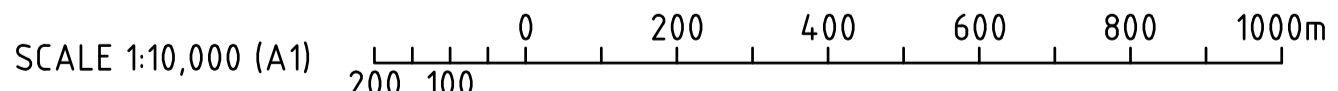


PLAN
SCALE 1:10,000

LEGEND

- DESIGN 2m CONTOUR
- DESIGN 10m CONTOUR

FOR MORE INFORMATION, REFER TO:
 • NATIONAL AIRPORTS SAFEGUARDING FRAMEWORK GUIDELINE B



REV	DESCRIPTION	DATE	DESIGN	VERIFIED	APPROVED
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DESIGN CHECK	PJO	28.02.2024
VERIFIED	PJO	28.02.2024



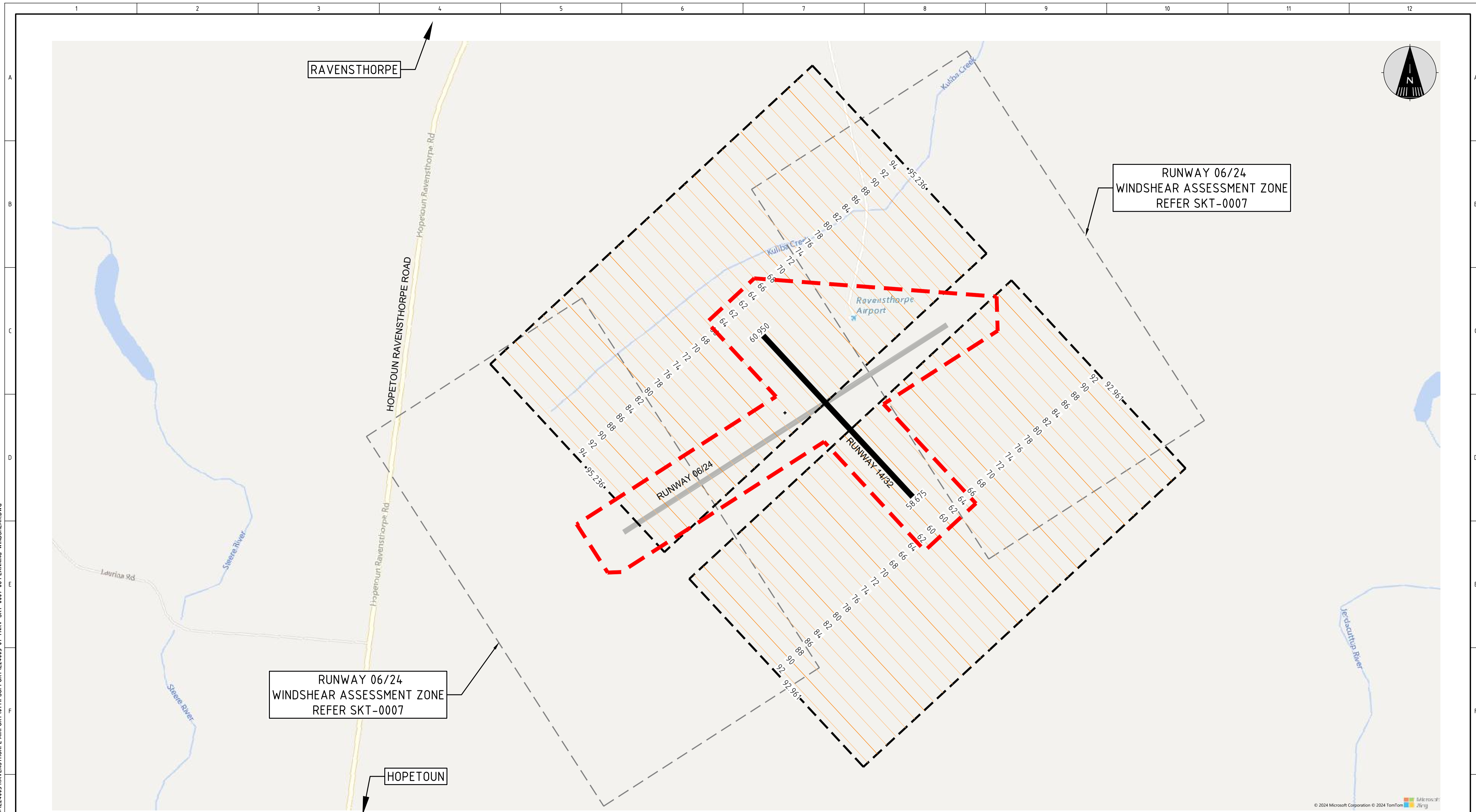
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STATUS
FOR INFORMATION
 AIRPORT MASTER PLAN
 AIRPORT SAFEGUARDING
 WINDSHEAR PROTECTION RUNWAY 06/24

DRAWING No. E24005-01-YNRV-SKT-0007	REVISION A
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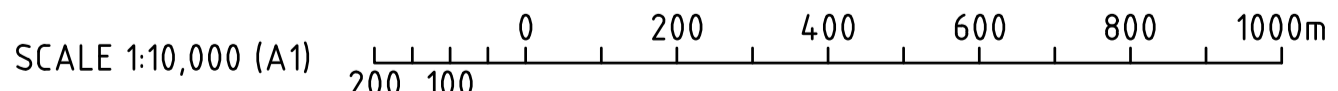


PLAN
SCALE 1:10,000

LEGEND

- DESIGN 2m CONTOUR
- DESIGN 10m CONTOUR

FOR MORE INFORMATION, REFER TO:
 • NATIONAL AIRPORTS SAFEGUARDING FRAMEWORK GUIDELINE B



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RAVENSTHORPE AIRPORT MASTER PLAN
 JERDACUTTUP ROAD, HOPETOUN WA 6348



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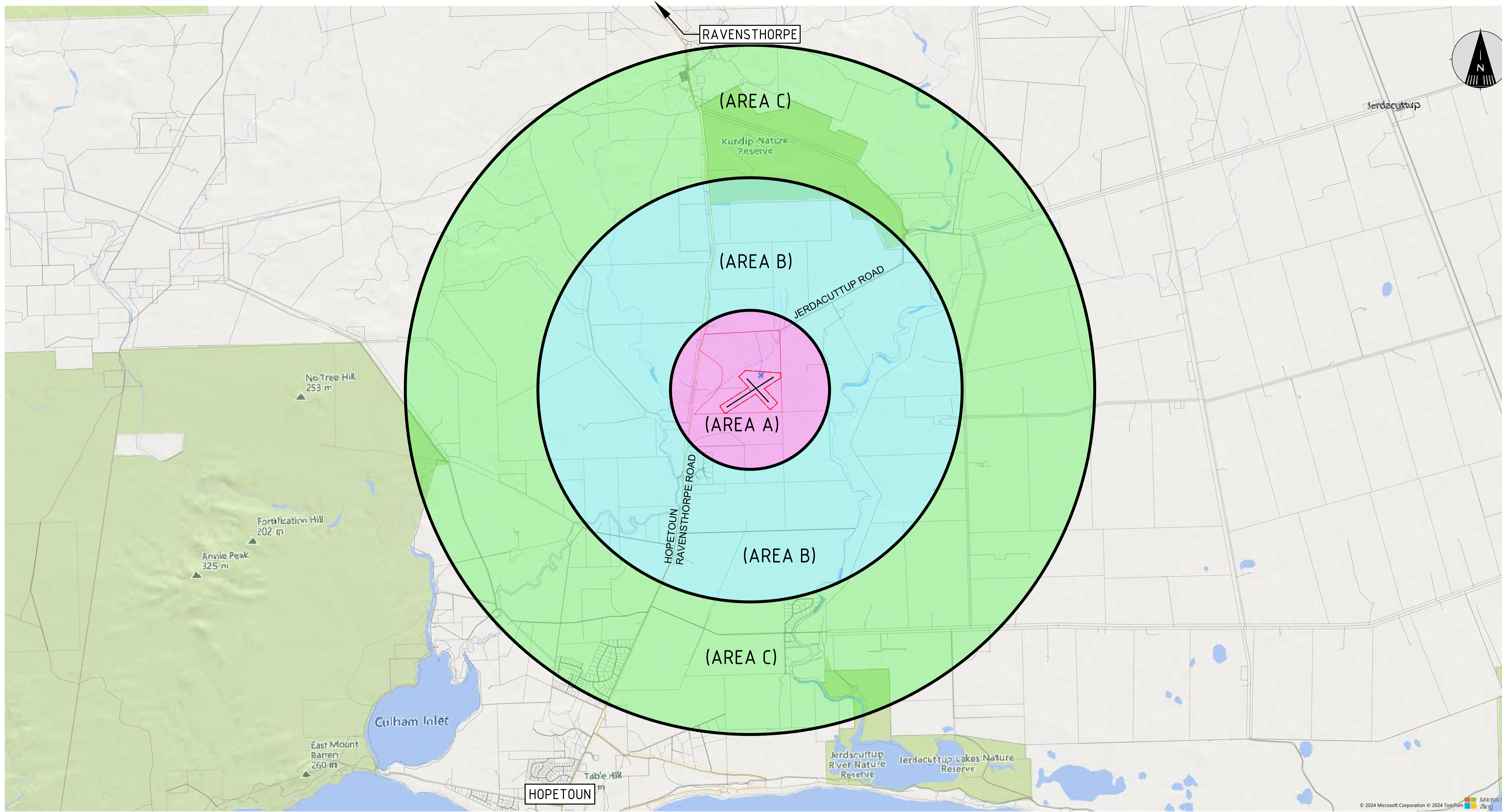


DRAWING SCALE
1:10,000

STATUS
FOR INFORMATION
AIRPORT MASTER PLAN
AIRPORT SAFEGUARDING
WINDSHEAR PROTECTION RUNWAY 14/32

DRAWING No.
E24005-01-YNRV-SKT-0008

REVISION
A



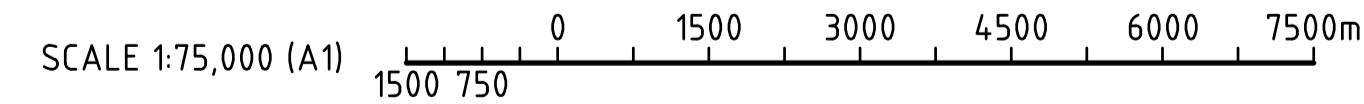
WILDLIFE HAZARD ZONES

- 3km ZONE (AREA A)
- 8km ZONE (AREA B)
- 13km ZONE (AREA C)

WILDLIFE HAZARD ZONES CENTRE BASED ON AIRPORT ARP.
 FOR MORE INFORMATION, REFER TO:
 • PART 139 MANUAL OF STANDARDS, CHAPTER 17
 • NATIONAL AIRPORTS SAFEGUARDING FRAMEWORK GUIDELINE C

PLAN

SCALE 1:75,000



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 RAVENSTHORPE AIRPORT MASTER PLAN
 JERDACUTTUP ROAD, HOPETOUN WA 6348



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DESIGN CHECK	PJO	28.02.2024
VERIFIED	PJO	28.02.2024
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DRAWING SCALE	GRID	ORIG. SIZE
1:75,000	MGA-51	A1
	DATUM	AHD

STATUS
 FOR INFORMATION
 AIRPORT MASTER PLAN
 AIRPORT SAFEGUARDING
 WILDLIFE HAZARD ZONES

DRAWING No.
 E24005-01-YNRV-SKT-0009

REVISION
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LEGEND DESCRIPTION
 MAXIMUM INTENSITY OF LIGHT SOURCES
 MEASURED AT 3° ABOVE THE HORIZONTAL

	ZONE A	600m WIDE 0 cd	1000m FROM RUNWAY END
	ZONE B	900m WIDE 50 cd	2000m FROM RUNWAY END
	ZONE C	1200m WIDE 150 cd	3000m FROM RUNWAY END
	ZONE D	1500m WIDE 450 cd	4500m FROM RUNWAY END

--- GENERAL LIGHT CONTROL ZONE
 (6000m RADIUS)

FOR MORE INFORMATION, REFER TO:

- PART 139 MANUAL OF STANDARDS, CHAPTER 9
- NATIONAL AIRPORTS SAFEGUARDING FRAMEWORK GUIDELINE E

PLAN
 SCALE 1:30,000

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 JERDACUTTUP ROAD, HOPETOUN WA 6348



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DESIGNED	APC	28.02.2024
DESIGN CHECK	PJO	28.02.2024
VERIFIED	PJO	28.02.2024

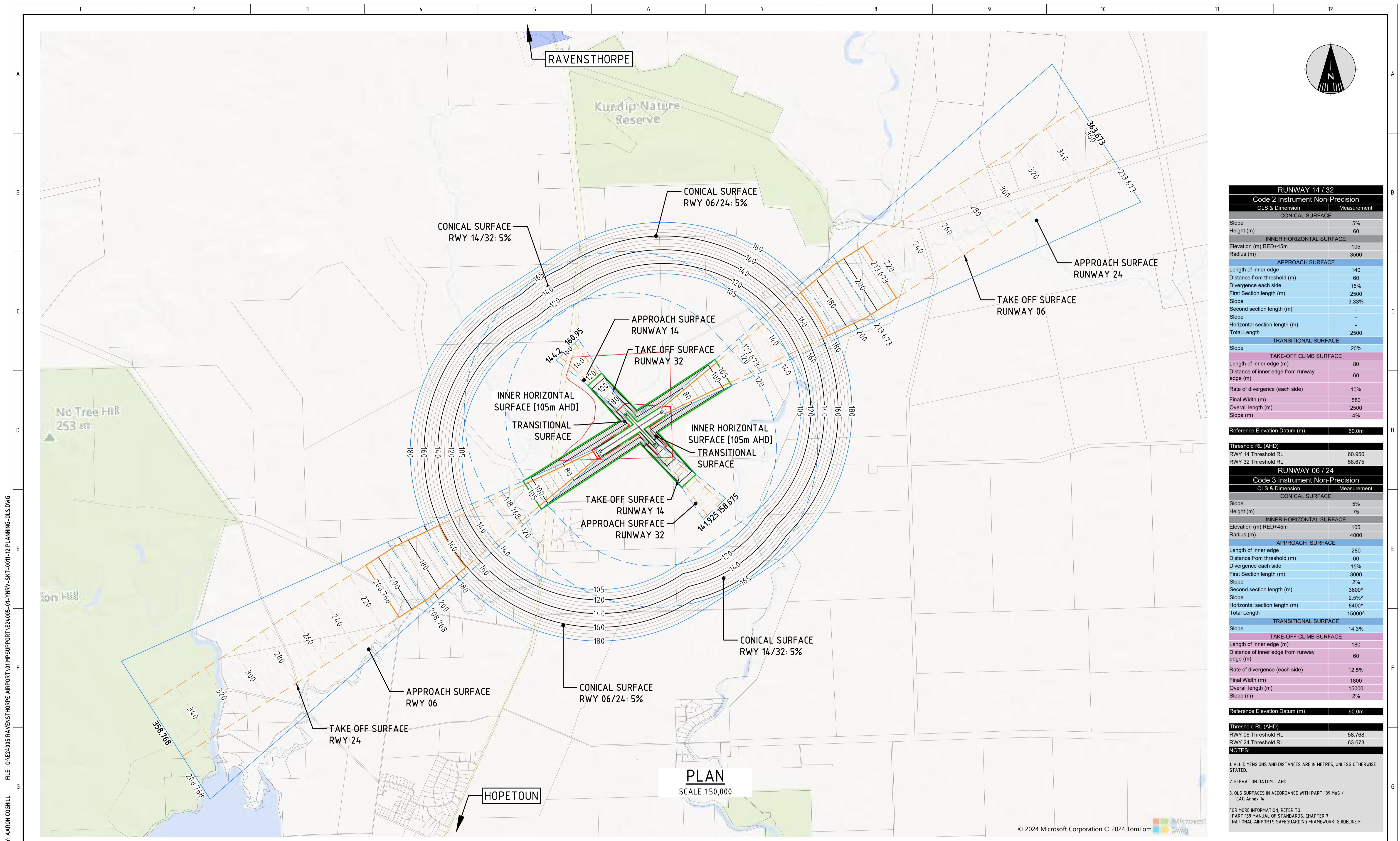


DRAWING SCALE
 1:30,000

STATUS
 FOR INFORMATION
AIRPORT MASTER PLAN
AIRPORT SAFEGUARDING
LIGHTING IN THE VICINITY OF AERODROME

DRAWING No.
E24005-01-YNRV-SKT-0010

REVISION
A



RUNWAY 14 / 32	
Code 2 Instrument Non-Precision	
OLS & Dimension	Measurement
CONICAL SURFACE	
Slope	5%
Height (m)	60
INNER HORIZONTAL SURFACE	
Elevation (m) RED+45m	105
Radius (m)	3500
APPROACH SURFACE	
Length of inner edge	140
Distance from threshold (m)	60
Divergence each side	15%
First Section length (m)	2500
Slope	3.33%
Second section length (m)	-
Slope	-
Horizontal section length (m)	-
Total Length	2500
TRANSITIONAL SURFACE	
Slope	20%
TAKE-OFF CLIMB SURFACE	
Length of inner edge (m)	80
Distance of inner edge from runway edge (m)	60
Rate of divergence (each side)	10%
Final Width (m)	580
Overall length (m)	2500
Slope (m)	4%

Reference Elevation Datum (m)	60.0m
Threshold RL (AHD)	
RWY 14 Threshold RL	60.950
RWY 32 Threshold RL	58.675

RUNWAY 06 / 24	
Code 3 Instrument Non-Precision	
OLS & Dimension	Measurement
CONICAL SURFACE	
Slope	5%
Height (m)	75
INNER HORIZONTAL SURFACE	
Elevation (m) RED+45m	105
Radius (m)	4000
APPROACH SURFACE	
Length of inner edge	280
Distance from threshold (m)	60
Divergence each side	15%
First Section length (m)	3000
Slope	2%
Second section length (m)	3600*
Slope	2.5%*
Horizontal section length (m)	8400*
Total Length	15000*
TRANSITIONAL SURFACE	
Slope	14.3%
TAKE-OFF CLIMB SURFACE	
Length of inner edge (m)	180
Distance of inner edge from runway edge (m)	60
Rate of divergence (each side)	12.5%
Final Width (m)	1800
Overall length (m)	15000
Slope (m)	2%

Reference Elevation Datum (m)	60.0m
Threshold RL (AHD)	
RWY 06 Threshold RL	58.768
RWY 24 Threshold RL	63.673

NOTES:

- ALL DIMENSIONS AND DISTANCES ARE IN METRES, UNLESS OTHERWISE STATED.
- ELEVATION DATUM - AHD.
- OLS SURFACES IN ACCORDANCE WITH PART 139 MGS / ICAO Annex 14.

FOR MORE INFORMATION, REFER TO:
PART 139 MANUAL OF STANDARDS, CHAPTER 7
NATIONAL AIRPORTS SAFEGUARDING FRAMEWORK: GUIDELINE F

PLAN
SCALE 1:50,000

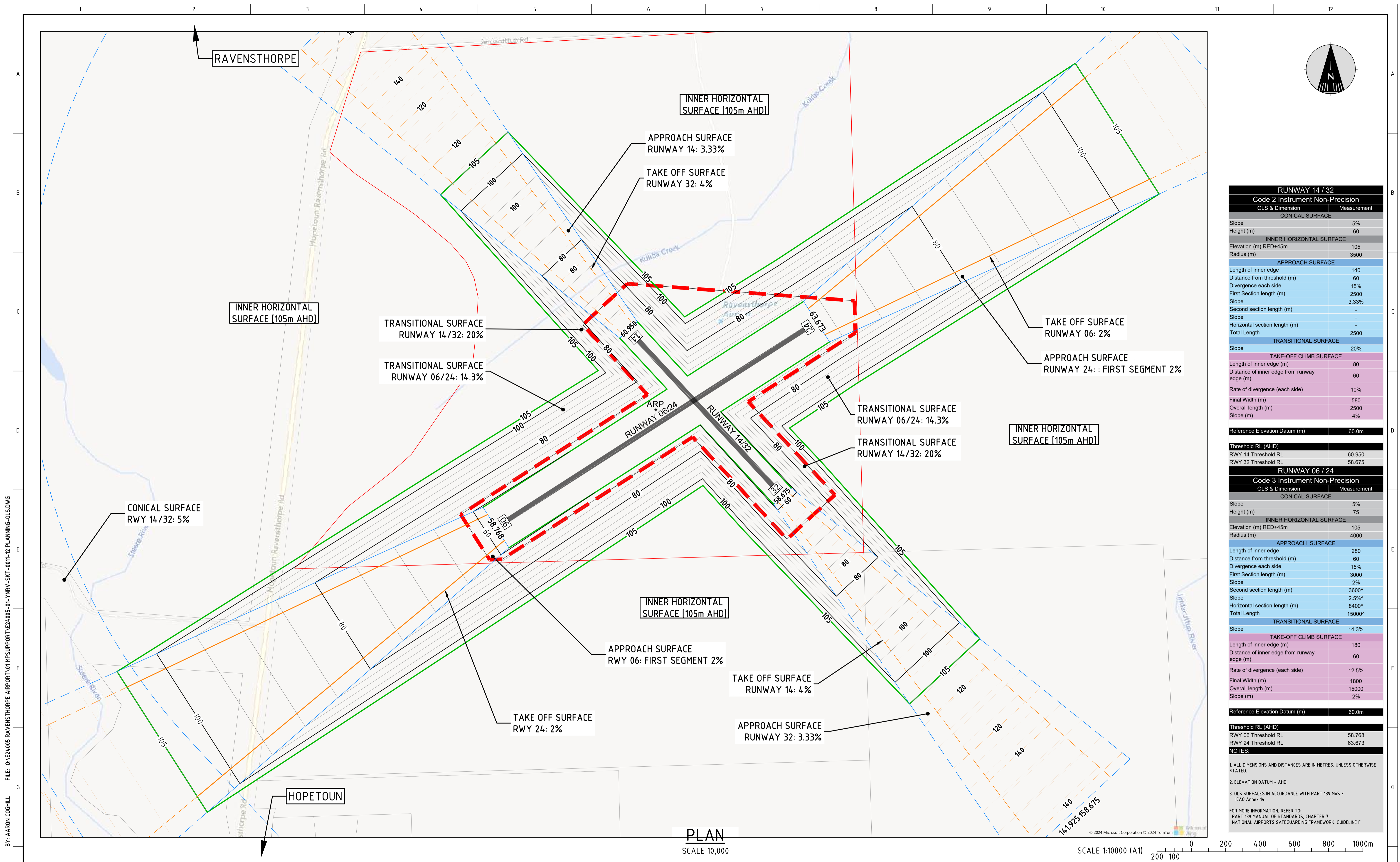
REV	DESCRIPTION	DATE	DESIGN	VERIFIED	APPROVED
A	ORIGINAL ISSUE	28.02.2024	APC	PJO	

<p>Shire of Ravensthorpe</p>	<p>CLIENT SHIRE OF RAVENSTHORPE</p> <p>PROJECT RAVENSTHORPE AIRPORT MASTER PLAN</p> <p>JERDACCUTTUP ROAD, HOPETOUN WA 6348</p>	<p>DRAWN APC 28.02.2024</p> <p>DRAFTING CHECK PJO 28.02.2024</p> <p>DESIGNED APC 28.02.2024</p> <p>DESIGN CHECK PJO 28.02.2024</p> <p>VERIFIED PJO 28.02.2024</p>	<p>www.acgaustralia.com.au</p>
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<p>STATUS FOR INFORMATION</p> <p>AIRPORT MASTER PLAN</p> <p>AIRPORT SAFEGUARDING</p> <p>PROPOSED OBSTACLE LIMITATION SURFACES - REGIONAL PLAN</p>	<p>DRAWING No. E24005-01-YNRV-SKT-0011</p>	<p>REVISION A</p>
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DATE: Wednesday, 13 April 2022 9:05:00 AM
BY: AARON COGHILL
FILE: G:\E24005 RAVENSTHORPE AIRPORT\01 MGSUPPORT\E24005-01-YNRV-SKT-0011-12 PLANNING-OLS.DWG

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RUNWAY 14 / 32	
Code 2 Instrument Non-Precision	
OLS & Dimension	Measurement
CONICAL SURFACE	
Slope	5%
Height (m)	60
INNER HORIZONTAL SURFACE	
Elevation (m) RED+45m	105
Radius (m)	3500
APPROACH SURFACE	
Length of inner edge	140
Distance from threshold (m)	60
Divergence each side	15%
First Section length (m)	2500
Slope	3.33%
Second section length (m)	-
Slope	-
Horizontal section length (m)	-
Total Length	2500
TRANSITIONAL SURFACE	
Slope	20%
TAKE-OFF CLIMB SURFACE	
Length of inner edge (m)	80
Distance of inner edge from runway edge (m)	60
Rate of divergence (each side)	10%
Final Width (m)	580
Overall length (m)	2500
Slope (m)	4%

Reference Elevation Datum (m)	60.0m
Threshold RL (AHD)	
RWY 14 Threshold RL	60.950
RWY 32 Threshold RL	58.675

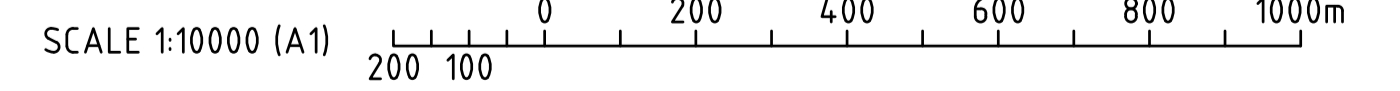
RUNWAY 06 / 24	
Code 3 Instrument Non-Precision	
OLS & Dimension	Measurement
CONICAL SURFACE	
Slope	5%
Height (m)	75
INNER HORIZONTAL SURFACE	
Elevation (m) RED+45m	105
Radius (m)	4000
APPROACH SURFACE	
Length of inner edge	280
Distance from threshold (m)	60
Divergence each side	15%
First Section length (m)	3000
Slope	2%
Second section length (m)	3600*
Slope	2.5%*
Horizontal section length (m)	8400*
Total Length	15000*
TRANSITIONAL SURFACE	
Slope	14.3%
TAKE-OFF CLIMB SURFACE	
Length of inner edge (m)	180
Distance of inner edge from runway edge (m)	60
Rate of divergence (each side)	12.5%
Final Width (m)	1800
Overall length (m)	15000
Slope (m)	2%

Reference Elevation Datum (m)	60.0m
Threshold RL (AHD)	
RWY 06 Threshold RL	58.768
RWY 24 Threshold RL	63.673

NOTES:
 1. ALL DIMENSIONS AND DISTANCES ARE IN METRES, UNLESS OTHERWISE STATED.
 2. ELEVATION DATUM - AHD.
 3. OLS SURFACES IN ACCORDANCE WITH PART 139 MGS / ICAO Annex 14.
 FOR MORE INFORMATION, REFER TO:
 PART 139 MANUAL OF STANDARDS, CHAPTER 7
 NATIONAL AIRPORTS SAFEGUARDING FRAMEWORK: GUIDELINE F

PLAN

SCALE 10,000



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 RAVENSTHORPE AIRPORT MASTER PLAN
 JERDACUTTUP ROAD, HOPETOUN WA 6348



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AIRPORT MASTER PLAN AIRPORT SAFEGUARDING PROPOSED OBSTACLE LIMITATION SURFACES - AIRPORT SURROUNDS	
DRAWING No. E24005-01-YNRV-SKT-0012	

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AVIATION PROJECTS



AIRPORT PLANNING AND DESIGN



AVIATION SAFETY



OPERATIONS



DRONES



EXPERT WITNESS



WIND FARMS

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