2020 JURIEN BAY AIRPORT MASTERPLAN

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Prepared for the Shire of Dandaragan by

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February 2020

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Jurien Bay Airport Masterplan 2020

A. Background

The Shire of Dandaragan's vision for the Jurien Bay Airport **(the Airport)** is of a readily utilised land asset for the sub-regional centre of Jurien Bay and its broader population. The Shire believes that growth of the Airport should follow a clear, strategic and sustainable direction for efficient economic and social development.

Brief

This masterplan provides a guide to the key infrastructure within the airport site which responds to the local environment and stakeholder needs to ensure effective functionality. Development of this master plan focused on co-design with current and future airport users, and with the Shire through councillors and shire staff. The aims of the masterplan focus on providing a path for future development, and building a network of supporters and champions within the community.

Appendix 1 - p20
Jurien Bay Airport - Key documents
GO

What has changed?

The Shire of Dandaragan has a new Local Planning Strategy 2019, which states the Shire's desire to establish a regional airport facility to serve Jurien Bay, as a regional centre, and the surrounding hinterland.

Primarily there is pressure on the development of the Airport, to attract industry, commercial enterprise and special interest groups. Gaining an understanding of its potential ensures that the Shire has a facility which generates income and maintains liveability for the community.

Appendix 2- p21
Masterplan methodology
GO

The Waroona, Margaret River and Esperance fires,along with the Eastern States' devastating fire season, provide the Shire with overwhelming evidence that there is an increased threat and severity of fire events. Local and State Government departments are now focusing on airports to assist in fire fighting.

B. Findings

Appendix 3 -p22
Snapshot of the Jurien Bay Airport
GO

Existing Airport Facilities

The airport is located to the east of the Jurien townsite on a 74 hectare State Reserve. The Shire of Dandaragan operates the aerodrome under a Management Order.

The constructed standard was achieved in a major re-development program undertaken in 2005 and included a new public apron and taxiway constructed approximately 200 metres to the north of the general aviation apron and taxiway. The development works met the Civil Aviation Safety Authority's (CASA) standards. Both aprons were resealed in early 2018 and Airstrip Road, which provides access from Bashford Street/Indian Ocean Drive was sealed in late 2018. The

runway strip, designated 02/20, and its adjoining apron areas are fenced to their cleared perimeters. The northern and eastern portions of the property remain uncleared.

A mains overhead power feed is established from Bashford Street to the RFDS building area as a single-phase overhead supply terminating as a 25KVA transformer. The airfield lighting and data collection is operated from this power source. There is no power to the hangars.

Recommendation
Change runway designation from 02/20 to 03/21 to eliminate risk from approach/departure confusion. Formalise through ERSA annotations and standing NOTAMS.

Existing and emerging users

Jurien Skydive

Jurien Skydive operates over 8000 (jumps per year, catering for between 20-40 people each weekend. This is a major drawcard to the Jurien township, where parachutists contribute to the region's economy. Skydive has an office, reception and chute repacking facilities on Bashford Street in town and uses the Jurien Airport for takeoff and landings of jump aircraft.

Currently the jump drop zone is either on the beach or in a paddock owned by Ardross Estates which is a 12 minute drive from the airport. There is demand for a new, fully compliant drop zone closer to the airport for frequent jumpers.

Recommendation
Land in the south east quadrant of the Airport site is reserved and prepared for Jurien Skydive for use with experienced parachutists.

The size of a drop zone is dependent on the skill level of the jumper. A student is required to land in a cleared area where the minimum distance of at least 300 metres from the target to any landing hazard. Parachutists certified (Certificate A) to make solo jumps require a drop zone where the any landing hazard is 150 metres from the landing target. Regulations are available from CASA.

Local aviation enthusiasts

Currently there are five hangars leased to local aviators. There is considerable interest by members of the Pearce Flying Club which is keen to establish a new base in Jurien. Previously located at the RAAF Gingin Airfield, that lease arrangement became unworkable for the Pearce Flying Club. The club offers instruction to people who wish to attain a pilot's licence as well as a community for enthusiasts. With highly credentialed members, the club has potential to add economic and social value to the Jurien Bay community.

Recommendation
The Shire of Dandaragan seeks out LAMEs keen to relocate and form business case for establishing and running a business at the Airport.

Existing and potential users require toilets, shelter and seating areas. New users are keen for new hangars to be established and to be made available for lease.

Future interest

Along with the Pearce Flying Club, a Licensed Aircraft Maintenance Engineer (LAME) has expressed an interest to relocate to Jurien Bay. As aircraft owners are required to have their aircraft certified for compliance, pilots from Perth, the Wheatbelt and the Mid West will be spending time in the town while a LAME services and appraises their aircraft.

There are a range of Light Aircraft Championships, fly-ins and Ausfly-style events held throughout the country. Enthusiasts are keen to fly to new communities for day trips and overnighters. There is potential, with a few improvements to the airport infrastructure and with marketing that Jurien Bay would be a good addition to the fly in circuit.

There is a burgeoning market to cater for the recreational flyer, who may be on a day or weekend trip, or looking for a well equipped stopover. A overnight stopover contributes over $300 with 2 people per aircraft, all into the Juriend economy. Both General Aviation (GA) and Light Sports Aircraft (LSA) enthusiasts were canvassed for their recommendations for the Airport.

Together with means to get into the centre of town, a few amenities at the airfield are required. Alternative accommodation may be offered on-site with the addition of airpark accommodation; a hangar with a residential suite attached.

Emergency Services

The Royal Flying Doctor Service (RFDS) Pilatus PC-12 and PC-24 can takeoff and land on unsealed runways as short as 800 metres. The Airport is satisfactory for RFDS landings and take-offs.

Bushfire response is an emerging use for the Jurien Bay Airport. There are a number of significant sites close by, there is an identified high risk of bushfires and no suitable alternative airfields nearby. Jurien Bay Airport has been used and will continue to be an important resource in aerial fire fighting. Added to this, the Airport may be used for training and simulation exercises.

Currently the Airport is under-resourced to meet the needs for a full scale operation. Improvements required include:

- Taxiways for safety and quick turnaround
- Waterloading circuit with two 200-250 kl water tanks
- Quick access to fuel
- Access to shade and a rest area for firefighters and co-ordination team
- Helipad for Heli-Lifts and while these are located elsewhere, co-location is safer when the site is being managed in a fire event
- Storage container for fire fighting gear.

Industrial Facilities at the Airfield

Maximising industrial developments on the site provides an opportunity to increase financial return. New buildings buffer aircraft noise. An added advantage is passive surveillance on site. By relocating industry to the Airport site, land gazetted for industrial purposes close to Jurien Bay can be released for residential purposes.

Jurien Sky Dive is keen for a hangar at the Airport and the potential relocation of a Aviation Engineer (LAME) requires a hangar/workshop. There is room for extra hangars and industrial units that may be leased by the Shire.

Appendix 4 - p26
A description of the difference between General Aviation (GA) and Light Sports Aircraft (LSA) aviation.

GO

Recommendation
The Shire of Dandaragan continues to liaise with specialists to prepare the airport for bushfire response.

Recommendation
The Shire holds simulation exercises to ensure that the community is also ready for such an event.

Appendix 5 - p27
A summary of airfield requirements for a bushfire response.

GO

Recommendation
Establish a secure compound for the RFDS and emergency services, including fuelling and water charging stations and provision future infrastructure.

Recommendation
The Shire develops two sets of airpark residential lots. The first being on the western side, at the northern end of the existing runway, and the second being on the southern taxiway to the new runway south of the industrial area

Recommendation
The Shire of Dandaragan develops the southern private hangar zone, including the 'six-pack' hangars for rent that recoups development and maintenance costs.

To Certify or not to certify

The Airport is currently uncertified and not registered with the Civil Aviation Safety Authority. This accreditation is mainly used for airports operating Regular Passenger Transport (RPT) flights of more than thirty passengers. While RPT at the Airport is unlikely, certification / registration is also required for instrument flying training for General Aviation. The Shire needs to be aware that a new enterprise may require this accreditation and associated costs need to be considered. Please see Appendix 6.

Appendix 6 - p31
Details of costs and benefits of certification or registration of an Airport.
GO

Revenue

The Shire charges landing fees of $14.20 per landing, collected by Avdata. In terms of cost recovery, it is small change and vastly unpopular with recreational flyers. Landing fees are counter-productive to stopovers for refueling and air based tourism. Other cost recovery methods for frequent users should be considered.

Recommendation
The Airport Committee conducts a minor study into landing fees and cost recovery. Possible scenario from Masterplan workshop was encourage non-commercial and recreational flyers on a no-fee basis. Fees may be charged for commercial users with annual cap for frequent users.

Neighbours

Ardross Estates' developments

Ardross Estates has demonstrated a commitment to the community through a variety of roles and are very supportive of the Airport as a community asset. Their Beachridge and Drover's Retreat Estates are both located on the flight path of a southern approach to the existing runway. Any increased aircraft traffic may be met with complaints from new and existing residents as these estates are slowly settled.

Aircraft noise may emerge as a issue in the future. A memorial on land titles ensures that new landowners are notified of the potential noise.

Recommendation
New residential subdivisions require aircraft noise memorials on Land Titles.

Drones

Concerns have been expressed about drones that are flown nearby. As Jurien Bay Airport is not controlled airspace, there is no overarching restriction on use of drones nearby unless it interferes with aircraft or with any emergency operation. CASA has developed a set of rules for drone operation.

Recommendation
The Shire of Dandaragan conducts an information campaign on safe drone flying.

Wayfinding

The airport, while signposted from Bashford Street, could be accessed by vehicular traffic much more directly from the west off Nineteenth Avenue. Investigations suggest that maintaining Airstrip Road as the major ingress was cost effective, less intrusive and safer. With the introduction of industrial units onsite, extension of Coalseam Drive offers access to the site and in particular, these units.

Recommendation
The Shire of Dandaragan constructs a dual use path extension of Nineteenth Avenue to the airfield, including comprehensive wayfinding.

The pedestrian journey to town from the Airport for visitors is problematic. A direct path to connect to Nineteenth Avenue would offer a safe and quick walk to the town's main street. For special events and emergencies at the Airport, the signpost off Bashford Street is inadequate and alternative wayfinding is required.

C. Going Forward

Management of the Airport

The Shire of Dandaragan has responsibility for two airports: Jurien Bay and Cervantes Airfield, an unsealed 900m strip located 20 kilometres to the south. Records show that there is a Jurien Bay Airport Working Party, however there are few records of their deliberations or resolutions. An Airports Committee can to be established to manage the development of both airports and to ensure logical, measured and accountable development.

Recommendation
Establish an Airport Committee as per the Local Government Act 1995 and Shire of Dandaragan's Standing Orders. Along with Councillors and Shire staff representation, it is recommended that the committee co-opt members with comprehensive aviation expertise. The Committee will report formally and regularly to the full meeting of Council.

Infrastructure planning

A second runway is urgently required to ensure safe take-off and landing in frequent strong cross wind. A new east-west runway (designation 10/28), is recommended for the site, where an 875 metre runway can be established within the bounds of the site. The Shire may wish to consider the costs and benefits of bird resistant turf, rather than using gravel or sealing the new runway. Taxiways need to be defined and established for the existing runway and added to the newly established runway to manage increased traffic. The current damage to the runway caused by the C27 would not be repeated with appropriate taxiways.

Recommendation
A second runway running east-west is established **as a matter of priority**, as well as taxiways for both runways. Strong easterly winds and the afternoon prevailing westerly winds make it difficult to land safely on the existing runway. Safe landing is paramount.

Throughout various consultations, the crucial needs are for an Arrival Centre with toilets and reception areas, access to potable water and tie down areas for aircraft. These could be managed by an incoming group, such as the Pearce Flying Club, which could be rebadged as the Jurien Bay Flying Club.

Recommendation
Include hardstand at runway junction but exclude industrial airside lots at this stage.

Two alternatives have been prepared for a dual use path into town so that pilots and crew can access the townsite. A bike/helmet or electric scooter self service hire station would aid quick journeys to town. It is also walkable; one kilometre or a leisurely 20 minute walk on either of the path options.

Recommendation
An Arrival Centre is constructed at the Airport and managed jointly by the Shire and the relocated Flying Club from Pearce. A condition of use is that it reverts to exclusive emergency services use as required in order to provide amenities, shelter, and a briefing room.

As part of the master planning process, airpark accommodation was suggested. While there has been little formal interest, the Shire may receive a request from aviators for such accommodation as has happened in other towns with airstrips close to town. This has been included in the masterplan drawings in two locations and with two lot sizes. Also on a needs basis, a range of hangars, accommodation and industrial sites is shown on the plan. These are located close to the secondary runway and would suit aviation based or export industries.

Recommendation
Develop the airside industrial hangar sites on the southern end of the industrial zone on the northern taxiway of new runway.

The lack of fuel stores at the airport was frequently raised as a concern is this study. While there are private supplies dotted around the Airport, there are no common use system as with other airfields.

Recommendation
The Shire plans that the site generates power and uses harvested water instead of extending existing services.

The site may be sustainable using alternative power sources and water collection to reduce costs of extending utilities to the site.

A Fuel Card swipe system is universally accepted and preferred by Government and private users. A current concern with the existing storage methods is that they may not meet the Flammable Liquids Storage guidelines as outlined in AS1940 (The storage and handling of flammable and combustible liquids.)

Recommendation
The Shire of Dandaragan facilitates the introduction of a card-based fuel supply at the Airport.

Moving the Airport to a new site

An airport close to a town site is a huge advantage. It offers better security, a broader range of functions, immediate access from town for emergency services and amenities for air tourism. The alternative sites suggested in the Turquoise Coast Regional Airport Study would not offer any of these benefits. Tourists would need to hire vehicles, instead of walking to town. Hospitality venues are happy to pick up travellers at the cost of a five minute journey, but a twenty minute return journey is inconvenient. Light and aviation industries workers like to be close to town for supplies and a sandwich for lunch. Flights in the RFDS aircraft involve less travel and jostling of patients in an ambulance and quicker turnaround for a service staffed by volunteers. There is an economic cost of developing the current and any new site, though return on a new site would require income from charters and Regular Passenger Transport (commercial flights.)

There is a very low likelihood of commercial Regular Passenger Transport flying to and from Jurien Bay Airport. This may change, if there is a marked change in population, a need to transport large numbers into or out of the area, for example FIFO workers.

The Turquoise Coast Regional Airport Master Plan Report (2014), prepared by Rehbein Airport Consulting for the Shire of Dandaragan stated:

> *"The existing airport site was assessed as part of the site selection study, and scored comparatively similar to the selected site with regard to cost/ benefit. However, the site was not selected for future airport development for a number of technical reasons, including having a maximum runway length of 1,550 metres, providing the worst-case scenario with respect to noise and limited potential for certain types of development including intensive pilot training or residential air park development."*

As the current site is suitable for current and some increased traffic. It is likely that air traffic and noise from an emergency will be borne with good grace by most residents.

Recommendation
Change flight paths for take-off and landing from the convention to reduce overflying of the townsite through annotations in ERSA and through NOTAMs.

Planning for new businesses requiring frequent take off and landings may be met with community opposition. The Shire has a role in ensuring that there is a clear understanding of the disruption, setting curfews or operating hours, so that the new enterprise and the town can function harmoniously. Take-off and landing circuits can be changed to minimise noise in the town site. Conversely, new aviation businesses to the community have a responsibility to build relationships and increase the social and economic capital of the community.

D. Prioritised Recommendations

The rank order of recommendations are listed below. These

1	Establish an Airport Committee as per the Local Government Act 1995 and Shire of Dandaragan's Standing Orders. Along with Councillors and Shire staff representation, it is recommended that the committee co-opt members with comprehensive aviation expertise. The Committee will report formally and regularly to the full meeting of Council.
2	A second runway running east-west is established **as a matter of priority**, as well as taxiways for both runways. Strong easterly winds and the afternoon prevailing westerly winds make it difficult to land safely on the existing runway. Safe landing is paramount.
	Include hardstand at runway junction but exclude industrial airside lots at the early stage.
	Change runway designation from 02/20 to 03/21 to eliminate risk from approach/departure confusion. Formalise this through ERSA annotations and standing NOTAMS.
	Change flight paths for take-off and landing from the convention to reduce overflying of the townsite through annotations in ERSA and through NOTAMs.
	New residential subdivisions require aircraft noise memorials on Land Titles.
	The Shire of Dandaragan continues to liaise with specialists to prepare the airport for bushfire response.
	The Shire holds simulation exercises to ensure that the community is also ready for such an event.
3	The Shire conducts an information campaign on safe drone flying.
	The Airport Committee conducts a minor study into landing fees and cost recovery. Possible scenario from Masterplan workshop was encourage non-commercial and recreational flyers on a no-fee basis. Fees may be charged for commercial users with annual cap for frequent users.
	Land in the south east quadrant of the Airport site is reserved and prepared for Jurien Skydive for use with experienced parachutists. NOTE: This could be included in the earthworks for taxiway and East/West runway works.

4	Establish a secure compound for the RFDS and emergency services, including fuelling and water charging stations and provision future infrastructure.
5	The Shire of Dandaragan facilitates the introduction of a card-based fuel supply at the Airport for general aviation.
6	An Arrival Centre is constructed at the Airport and managed jointly by the Shire and the relocated Flying Club from Pearce. A condition of use is that it reverts to exclusive emergency services use as required in order to provide amenities, shelter, and a briefing room.
7	The Shire of Dandaragan constructs a dual use path extension of Nineteenth Avenue to the airfield, including comprehensive wayfinding.
	Rather than extending additional services into the airfield, the Shire plans for a self-sustaining asset that makes use of its expanse of hangar-tops to generate solar power and harvest water and collect water.
	Develop the airside industrial hangar sites on the southern end of the industrial zone on the northern taxiway of new runway.
	The Shire of Dandaragan seeks out LAMEs keen to relocate and form a business case for establishing and running a business at the Airport.
8	The Shire of Dandaragan develops the southern private hangar zone, including the 'six-pack' hangars for rent that recoups development and maintenance costs.
	The Shire of Dandaragan develops airpark residential lots and industrial sites and hangars for rent to recoup development and maintenance costs.

E. Drawings

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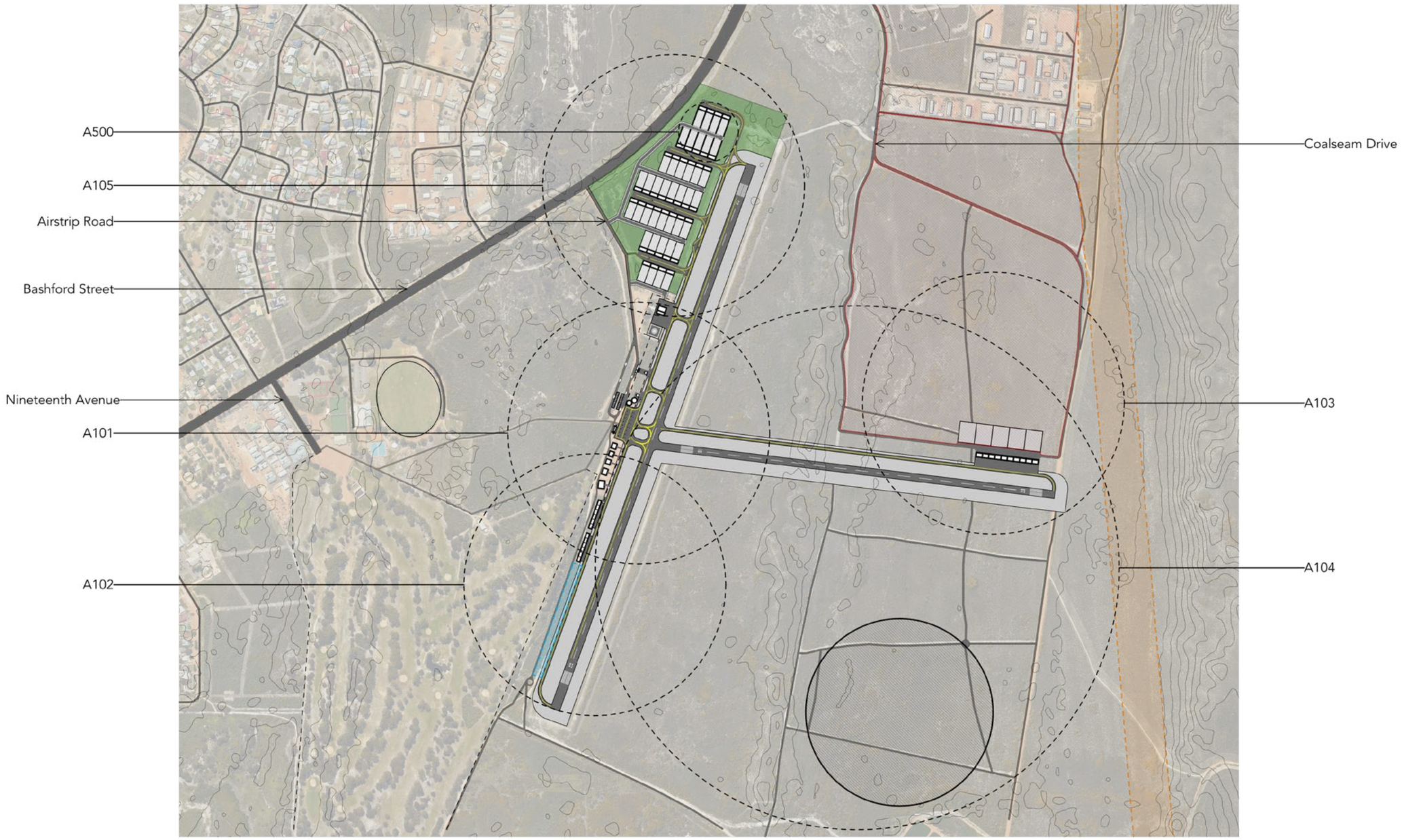

Airport Site Plan
Scale 1:10000

ISSUE	DATE	REVISION

Project
Jurien Bay Airport Masterplan

Address
Airstrip Road Jurien Bay

This Sheet
Location Plan

Plot Date **24/2/20**

Scale @ A1 **1:10,000** | Rev

Project No **19058**

Drawing No **A100**

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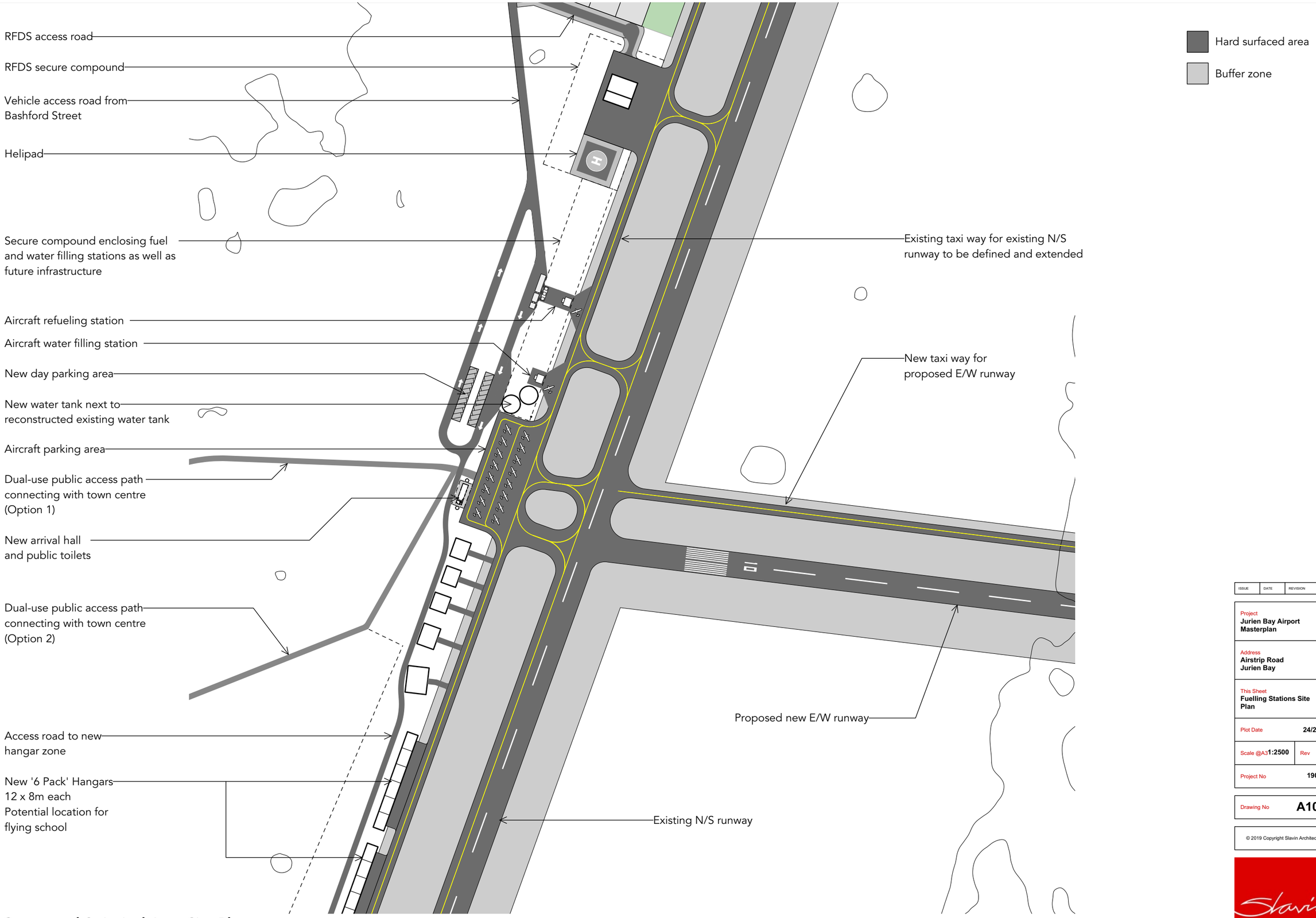

Fueling Compound & Arrival Area Site Plan
Scale 1:2500

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Fuelling Stations Site Plan

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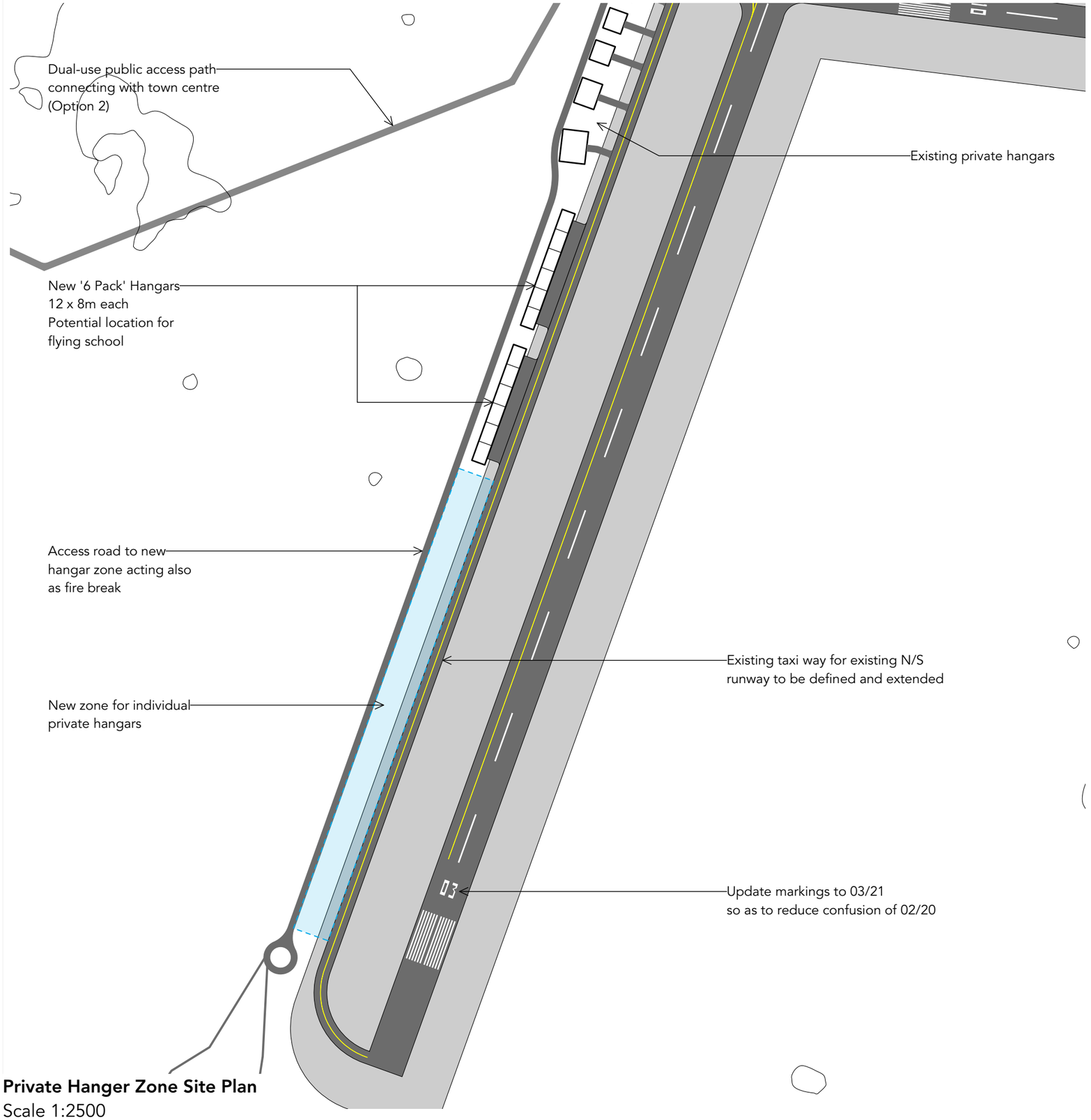

Private Hanger Zone Site Plan
Scale 1:2500

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Hangar Zone Site Plan

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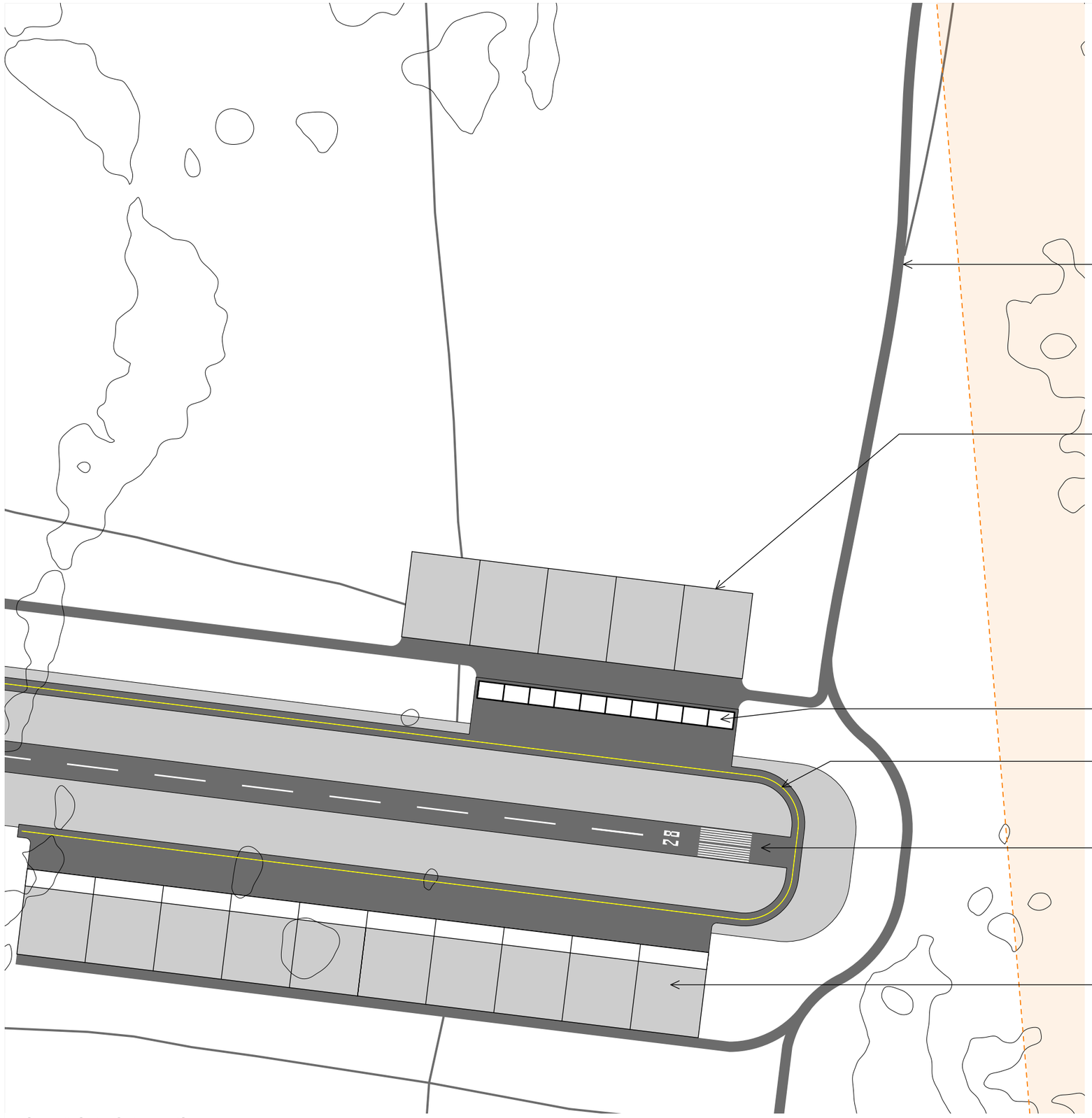

Industrial Park Site Plan
Scale 1:2500

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Industrial Zone Site Plan

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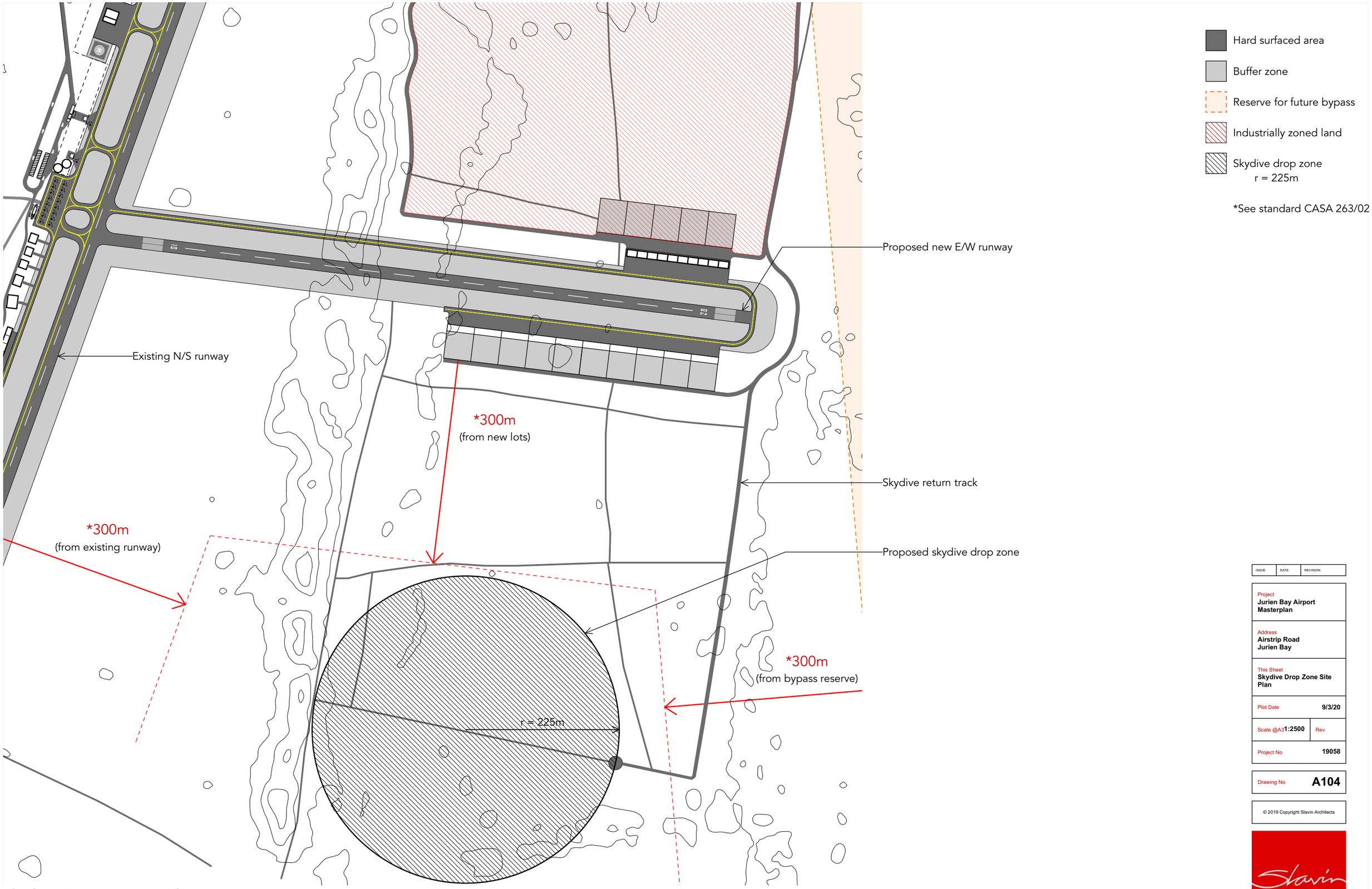

Skydive Drop Zone Site Plan
Scale 1:5000

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Skydive Drop Zone Site Plan

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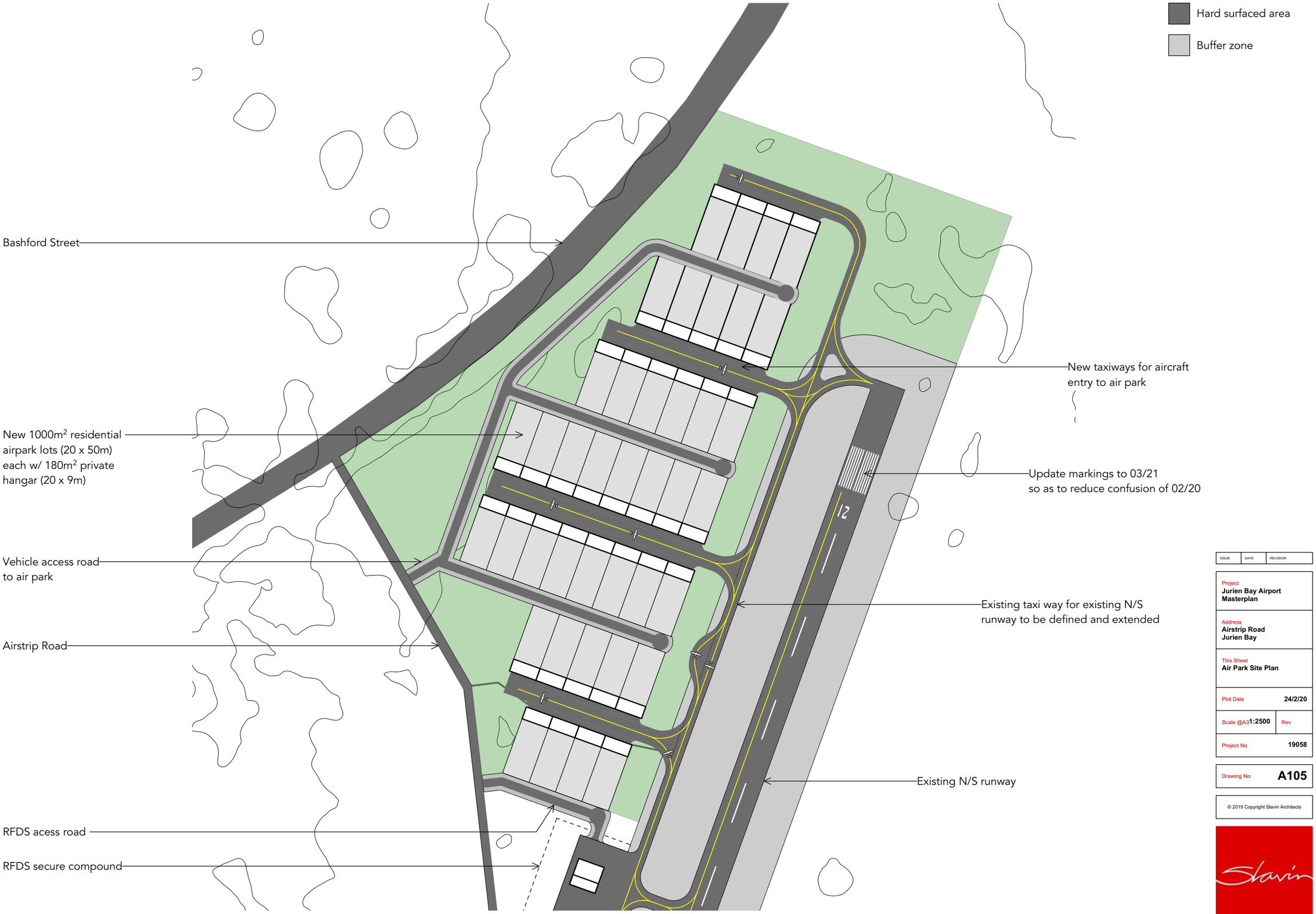

Air Park Site Plan
Scale 1:2500

ISSUE	DATE	REVISION

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Jurien Bay Airport Masterplan

Address
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Air Park Site Plan

Plot Date **24/2/20**

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Aircraft Access Taxiway

New 180m^2 Hangars
20 x 9m

New 1000m^2 Residential Lots
20 x 50m

Vehicle Access Road

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Project
Jurien Bay Airport Masterplan

Address
Airstrip Road
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This Sheet
Airpark Residential Lot Example Layouts

Plot Date **12/2/20**

Scale @ A3 **as shown** | Rev

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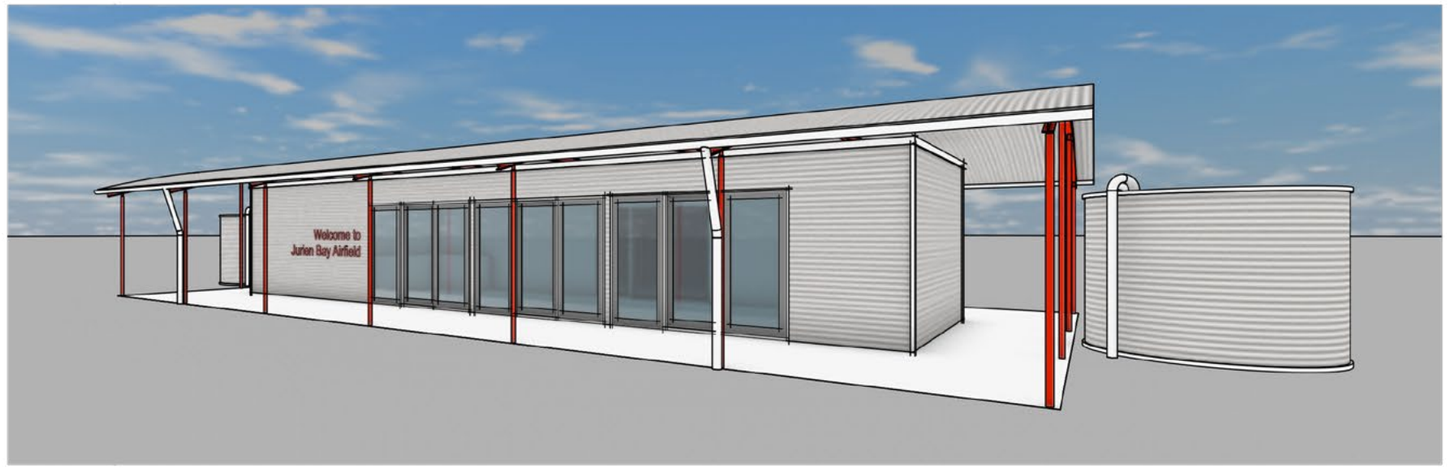
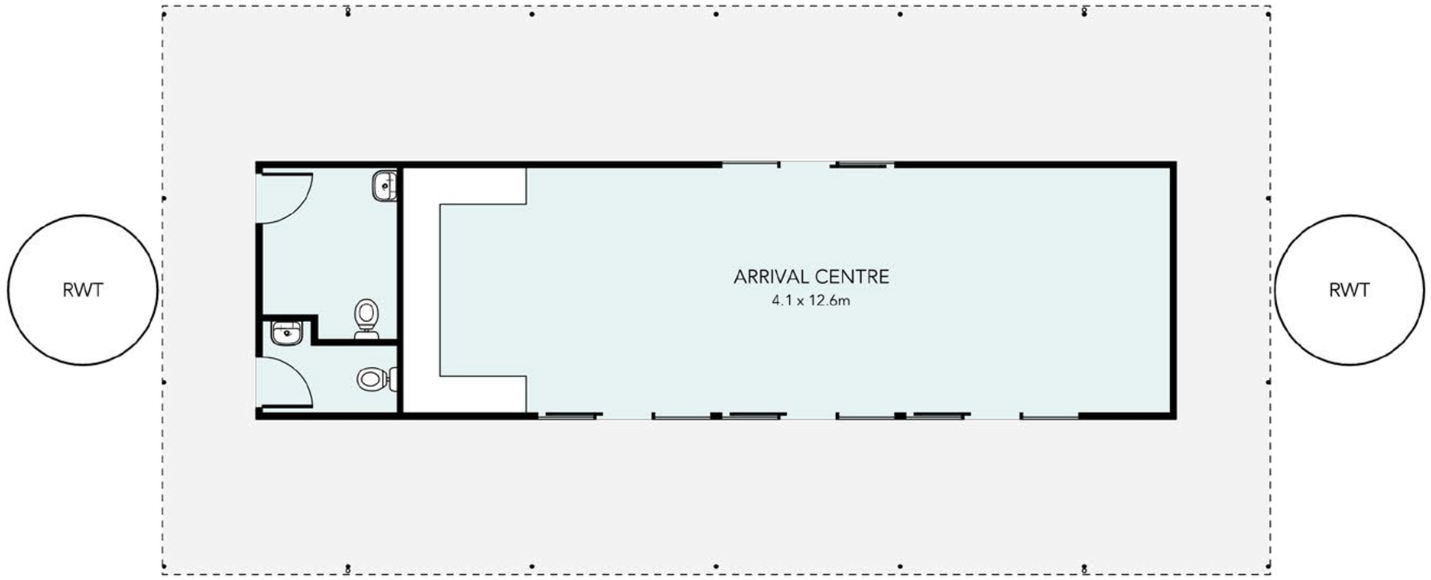
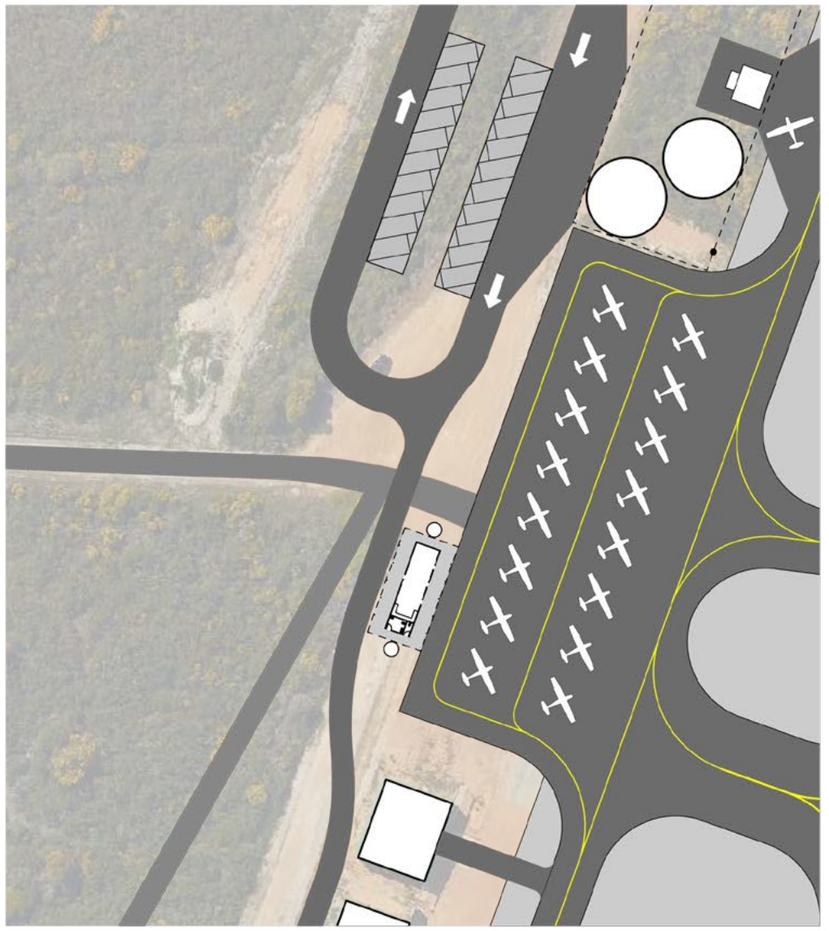


Jurien Bay Airport
Arrivals Centre



Floor Plan
1:100

Front Elevation
1:100



Location Plan
1:1000

Side Elevation
1:100

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Jurien Bay Airport Masterplan

Address
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Arrival Centre

Plot Date **12/2/20**

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Drawing No **A106**

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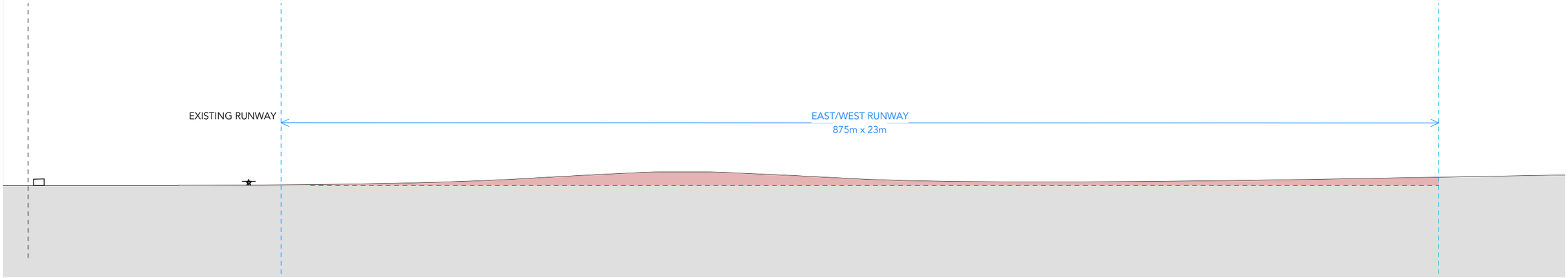

Site Section

Scale 1:3000, Ratio x=1 y=5

ISSUE	DATE	REVISION

Project
Jurien Bay Airport Masterplan

Address
Airstrip Road
Jurien Bay

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Site Section

Plot Date **25/2/20**

Scale @ A3 **as shown** | Rev

Project No **19058**

Drawing No **A300**

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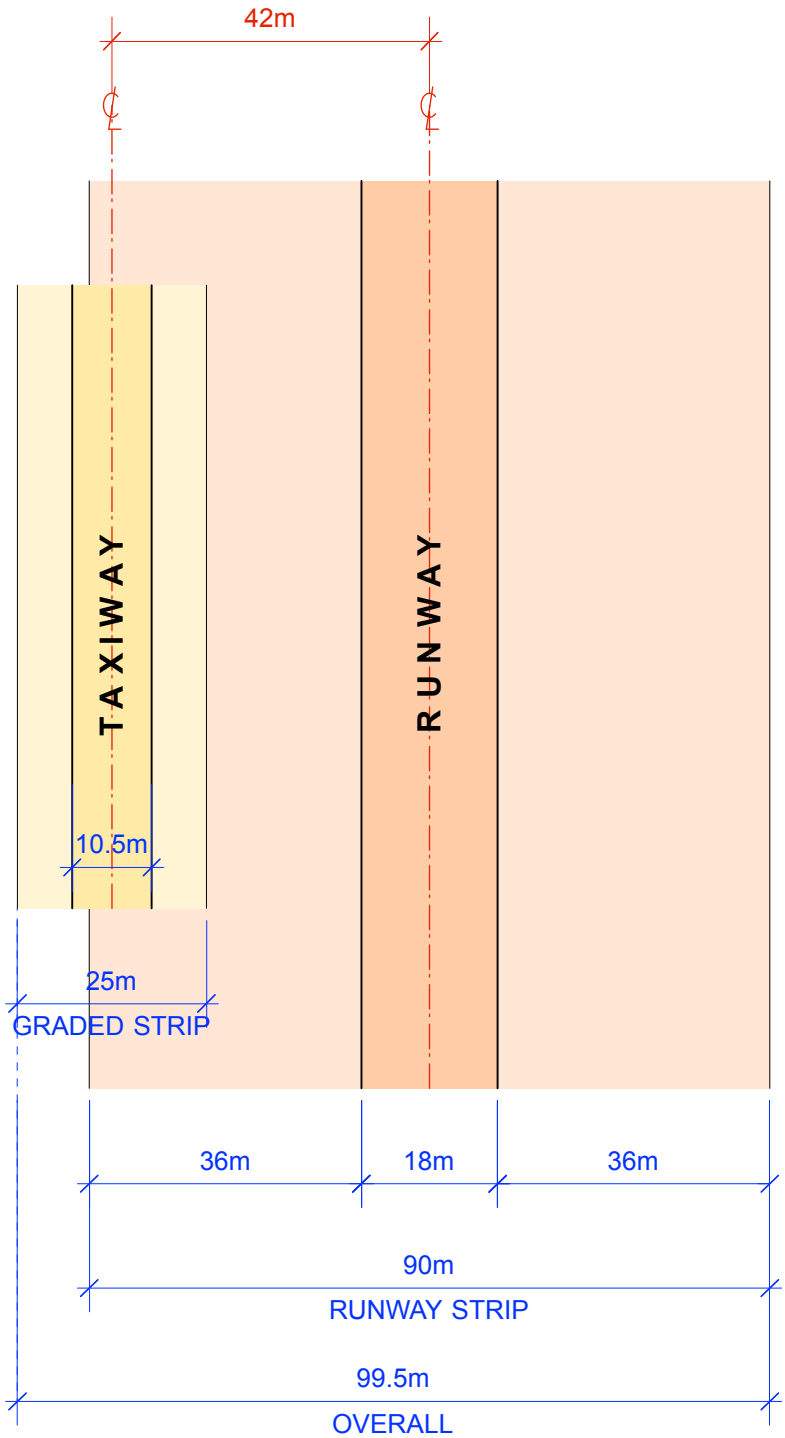


JURIEN BAY AIRFIELD
Cross Strip
1:1000 @ A4

Jurien Bay Airport Masterplan 2020

Appendices

Appendix 1 - Jurien Bay Airport Key documents

Background Documentation

Previous plans for the site include a Master Plan (2010) undertaken by Airport Assist and a 2015 Management Plan conducted by Opus International. Some of the key findings have been actioned by the Shire of Dandaragan, however key recommendations that are still pertinent include:

- A passenger terminal for Charters and possible Regular Public Transport (RPT) flights.
- Consider the commercial development of non-aviation use land as a means to improve viability of the airport.
- Development of an Airpark Estate
- Mitigating for the potential failure of lighting systems and the need for a back-up option.
- Considering Aerodrome registration with Civil Aviation Safety Authority (CASA). This requires regular CASA inspections which enforces Shire compliance with safety and maintenance procedures, appoints and trains an Aerodrome Reporting officer (ARO and a Work Safety Officer (WSO).
- Alternative site for the airport as the community grows and there are possible objections to aircraft noise.

New documentation

The Shire of Dandaragan's Local Planning Strategy 2019, currently under review with the Department of Planning, confirms the importance of a regional Airport as part of the Shire's infrastructure in serving the region. (p. 16)

The 'Central Midlands Sub-regional Economic Strategy' (2014) identified Jurien Bay having an above average competitive advantage in tourism, particularly in the domestic overnight tourism provided that there is accommodation.

The Northern Growth Alliance Tourism Strategy (2019) commissioned by the Wheatbelt Development Commission, along with the Shire of Dandaragan's Local Tourism Planning Strategy outlines a range of activities to be explored for the day tripper or weekend getaway.

Air tourism is an emerging market in WA. Aviators need to fly regularly and are required to have their aircraft regularly serviced and assessed by a LAME. A mid week jaunt or a long weekend stay in Jurien Bay is an excellent way to accomplish these requirements while boosting tourism in region.

BACK

Appendix 2 - Masterplan methodology

Slavin Architects was commissioned to undertake a new masterplan focussing on the development potential of the existing airfield.

Instilled with a passion for country aerodromes, Slavin Architects, together with the Shire of Dandaragan organised a range of data collection strategies, including a fly-in held on 30 November 2019. Aviators from all over the state and a couple from the East, joined townspeople and interested others to discuss the airfield's possible futures.

This event was preceded by interviews, and discussions with those who have short term needs and interests.

There is a high level of sophistication and understanding that sets the Shire of Dandaragan apart from most shires which manage an aerodrome. It is manifested in the sound state of the current Airport infrastructure and aided by a number of prior studies into finding the best airport options for the community.

BACK

Appendix 3 - Airport Site Details

Snapshot of the Jurien Bay Airport

FEATURE	DATA	COMMENTS
Location		100 nautical miles from Perth and Geraldton
Runway Length	1300 m	Extension is difficult on site, use of old VOR site may be considered.
Runway Width	20 m	Satisfactory
Runway Strip	90 m	Satisfactory for night operations
Flyover	Obstacle free	Satisfactory
Markers	Yes	Should be flush with natural ground level
Wind direction indicator	One	Consider a pivoting sock mast for quick change of windsock
Taxiways and aprons	Informal	Seal and mark for greater safety
Runway designation	02/20	Recommend change to 03/21
Runway Markings	Yes	Update to 03/21
Fencing	Yes	Require fencing, gates and signage for site security
Lighting	32 metres across the runway strip width and lights are spaced 60 m apart	Feed from overhead mains power to RFDS patient Transfer station only No power back up available
Night operations	Pilot activated	Frequency 119.60
Current uses	RFDS Skydive Jurien Recreational aviation Emergency Services	8-10 per week 20-40 per week No data As required
Types of suitable aircraft	Aircraft with a MTOW of less than 5700 kg	For example, Cessna Caravan, (Skydive), Pilatus (RFDS), King Air B200 are suitable
Landing Fees	Currently $14.20	Unpopular and counterproductive to encouraging tourism,.
Fuel Supplies	Adhoc arrangements	Formalise through a fuel supplier
Accommodation	5 private hangars	Scope for more hangars, air park and industrial units.

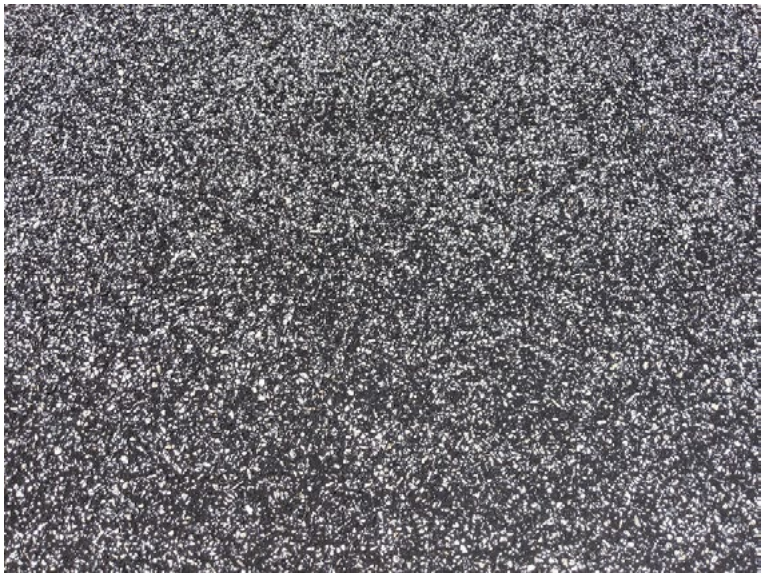
Runway Inspection Details

The Jurien Bay Airport runway was inspected by Fraser Sparks of Aerodrome Management Services Pty Ltd (AMS) on 31 October 2019.

The runway appeared to be in relatively good condition and is certainly fit-for-purpose for the smaller aircraft that are using it.

The surfacing consists of a spray seal and appears to have recently (past few years) had a fog spray to rejuvenate the existing bitumen and assist with aggregate retention. No loose aggregate was sighted on the runway. The surface had good texture and would easily have a minimum of 1mm.

General runway view



Close up of surfacing

There was some rutting and depressions holding water, although they were not extensive. These were situated near the centreline, and at an intersection of the taxiway and runway. Reports from pilots should be monitored, however they do not appear to be a safety hazard at this time.

The rutting is more likely to be a construction fault than due to traffic.

Centreline rut

There was some damage to the surfacing which appeared to have been patched with cold-mix asphalt. This was attributed to an Air Force C130 Hercules performing a tight turn. The damage only appears to be the surfacing, with no major damage to the underlying pavement. This attests to the strength of the pavement.

Turing C130 surface damage

Some Dynamic Cone Penetrometer (DCP) testing was carried out on the edges of the runway, just outside the seal. Generally, the DCP was unable to penetrate the gravel layers and this is not unexpected based on the appearance of the gravel; it seems to be a particularly good material.

One test did manage to penetrate to 900mm, and gave an indicative California Bearing Ratio (CBR) of in excess of 50% and a subgrade (under the pavement layers, estimated) CBR of between 20 and 30%.

Two tests were conducted on the runway strip, to determine a CBR of the natural ground. These tests gave values of between 6% and 15%. This indicates that the runway has potentially been improved to depth.

Gravel shoulders

It is suggested that some attention be paid to the runway strips, and in particular around the runway lights, as these have been built up with small aggregate around them. Ideally, the lights should be flush with the surrounding ground.

Light surrounded by aggregate pile

The vegetation around the airport seemed to be of a suitable height, and the approach and take-off areas appeared clear of any infringing vegetation.

BACK

Appendix 4 - The difference between GA and LSA

General Aviation in Western Australia

General aviation is defined by the type of aircraft or flying activity and is made up of many groups and individual with a common interest in the operation of small aircraft.

Aircraft with a VH-prefix are registered with the Civil Aviation Safety Authority (CASA) which handles commercially produced and amateur built aircraft, manned balloons, helicopters and gliders.

Examples of GA Aircraft using Jurien Bay Airport include charter flights, RFDS, most local enthusiasts and the Jurien Skydive aircraft.

The trend towards Light Sports Aircraft (LSA)

In examining the trends of aircraft ownership and registration in WA it appears that the future of aviation will change markedly due to the cost benefit of owning and running a Light Sports Aircraft. Jurien Airport may be promoted as an option for hangar storage, airparks, and air tourism with this burgeoning market.

A light sport aircraft is an aircraft, other than a helicopter, that has:

- A maximum take-off weight of 600 kg or 650 kg for an aircraft intended and configured for operation on water or 560 kg for a lighter-than-air aircraft.
- A maximum stall speed in the landing configuration (Vso) of 45 knots CAS.
- Maximum two person, including the pilot.
- Fixed landing gear. A glider may have retractable landing gear.
- A single, non-turbine engine fitted with a propeller.
- A non-pressurised cabin.

Types of aircraft that may satisfy these criteria are 3-axis aeroplanes, powered parachutes, weight-shift control aeroplanes (trikes), gliders, balloons, airships and gyroplanes.

What is not a Light Sports Aircraft (LSA)?

The types of aircraft that do not fit in this category are:

- Hang gliders
- Paragliders
- Multi-engine aircraft
- Helicopters
- Complex aeroplanes with retractable undercarriages or turbine engines

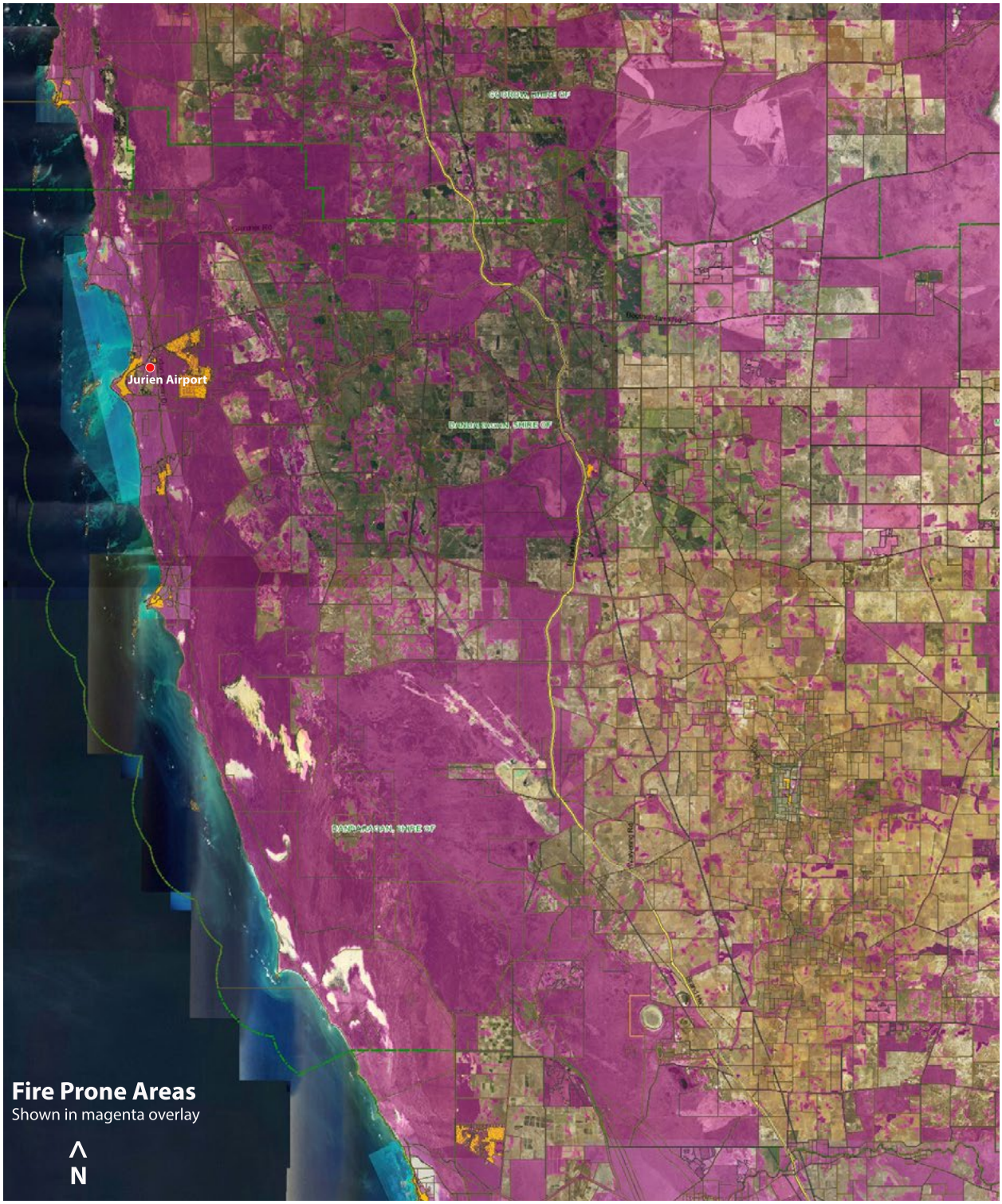
Administration of Light Sports Aircraft

A Light Sports Aircraft may operate under either a sport and recreational aviation organisation such as Recreation Aviation Australia (RA-Aus), or under CASA.

BACK

Appendix 5 - Airfield requirements for a bushfire response.

Jurien Bay is central to a vast area of bushfire prone sites, including a number of national parks vital to preservation of biodiversity. There are popular with local and overseas tourists. While there are a range of airfields in the area, Jurien Bay Airport, the townsite and the townspeople are well-placed to form a hub for fire fighting and intelligence gathering on fires.



Map of Bush Fire Prone Areas www.slip.wa.gov.au

Nearby airfields to Jurien Bay Airfield - customised with Google Maps

Prior experiences with catastrophic fire events in Margaret River (2011), Esperance (2015) and Waroona (2016) have shown that aerial intelligence and fire fighting support are key to mobilisation and response in isolated areas. An incident management control that is close to the fire, rather than at a major centre such as Perth, was also demonstrated to be far more effective in interpreting aerial and local fire intelligence and fighting fires.

> "Aerial suppression can slow the spread of a fire but requires ground support to be fully effective." (Nous Group: Major Incident Review of the Esperance District Fires, March 2016 p 30)

As part of this masterplan, Slavin Architects interviewed:

- Personnel from the Department of Biodiversity Conservation and Attractions, the government department which manages the aerial response for fires for the Department of Emergency Services.
- Raalin Wheeler who established Wheeler Field in Coolup as a self funded airstrip devoted to fire fighting.
- Neville Dunn of Dunn Aviation, contractor with a fleet of aircraft equipped for fire fighting.

Requirements to manage a fire event and prepare the Jurien Bay Airport include:

Runways

- A new east west runway of 1000m is preferable, though 800m is adequate. While a bitumenised surface is ideal, a compacted turf or well-maintained compacted gravel surface is acceptable. Compacted limestone is not to be used as it is damaging to aircraft

- Taxiways for all runways need to be established to safely manage multiple aircraft movements

- The existing runway (now 03/21) should have a marked centre line and piano keys which mark the runway's threshold

- Tie-down area for aircraft

- Runway lighting and lighting to windsock for night operations.

Other infrastructure

- Helipad, hardstand with tie downs for helitacs. A onsite helipad obviates the need for duplication at the Medical Centre, reducing disruption to the Medical Centre and its neighbours in town. Patients will require ambulance transfers to rescue helicopters

- Circuits for refilling water or retardant. A logical journey to water tanks and quick turnaround contributes to getting aircraft back in the air. Similarly refueling requires a safe and quick circuit, so all of the circuits must be planned to accommodate the turning circles of tankers delivering water, fuel and retardant

- Two water tanks are optimal for firefighting with two aircraft filling at the same time and allows for continued service if there is damage to a tank

- The water tank has pumps that may be managed through access to a portable 10 kVA generator or use of solar generated power where it is used onsite. Water bombers require 3200 litres per load and a pump requires a pumping capacity of 15 litres/ second

- A container for stockpiling fire fighting equipment supplies (for remote and onsite fires) including site fire extinguishers. If these are loaded onto trailers and placed in the container, then there is quick deployment to where they are required

- Shade structure for emergency services personnel to rest, for training exercises or briefings

- During a protracted fire event two dongas are required; one for a Control Centre and the other for rest and respite. Similarly extra toilets and showers can be bought on site. Access to an existing hangar as a quiet rest area is also needed. The proposed Welcome Centre and toilets at the Airport could be requisitioned to fulfill many of these functions.

- Where possible, an onsite supply of Jet A1, Mogas and Avgas will augment or assist with fueling of aircraft. While Dunn Aviation aims to supply their own for their fleet, there are other service providers requiring fuel.

Wayfinding

- In addition to the issues with wayfinding to and from the Airport, directing authorised traffic to the airport, the design of roads and signage must allow for tanker use.

- While most emergency services driving to the Airport may use GPS, it is assuming that there is a signal. A set of temporary signs may be useful to direct traffic to the airport, beginning on the outskirts of the townsite.

Preparation for an event

- A community simulation exercise for fire fighting irons out issues with wayfinding and site security. It would allow the community to gather a core of competent volunteers to co-opt in a fire fighting event. In the spirit of Asset Based Community Development, many locals have skills and abilities that would enrich and enhance the community support in a bushfire.

Site Security

- Apart from the regular security of the site, in times of emergency, the Airport requires extra security. Media, plane spotters and rubberneckers are an added and unwelcome complication to the site in an emergency. Restricting access to the site well before Airport assists in this and the roads to the airport need to establish roadblocks.

Communications with other aviators

- During a fire fighting or aerial intelligence gathering event, airport radio frequencies may be expropriated for the air fleet. Mobile phone service may be compromised in a fire event, so radio communications for ground and airborne personnel is necessary.

- It is also recommended that the Control Centre designates someone to prepare and report NOTAMS. Notice to Airmen (NOTAMs) are issued to alert pilots to any potential safety hazards along a flight route or in a specified location. They can also advise of changes to aeronautical facilities, services or procedures.

  This requires a designated person to register with the National Aeronautical Information Processing System (NAIPS) well in advance of any event. This person may also be the recipient of other issued NOTAMS and communicate these to aviators through the Control Centre.

General Advice

- The Shire which is preparing their airfield for fire fighting or aerial intelligence flights is well served to discuss the additional use and liability with their insurers and with the lead fire fighting organisation.

- An inspection and maintenance schedule of the Airport is crucial to keep the airfield in readiness for all emergencies. Similarly an annual maintenance budget that accrues provides a source of funds for major repairs and preventative maintenance.

- A good water supply is required for fire fighting. A professional assessment of water flow and refresh at the Airport is required to ensure that aircraft can be filled at 15 litres/second.

- The Airport's status as a fire fighting airport should be noted in the ERSA directory and other directories where the Airport is listed.

BACK

Appendix 6 - Costs and benefits of certification/registration

The aerodrome registration and/or certification process is undertaken by the Civil Aviation Safety Authority (CASA) and the process is outlined in the CASA Regulation 139.

Jurien Bay Airport has made considerable inroads into developing a fully CASA-compliant runway and site as outlined in the Manual of Standards, but the process has stopped before registration or certification.

At this stage there is little need for this accreditation, however as opportunities arise and there are new offerings, registration or certification may be considered. It has been suggested that if a flying school were to offer non-precision instrument training, then some accreditation is required. Similarly, if a Regular Passenger Transport service is established, with over 30 passengers per aircraft, then the Airport needs accreditation. If either scenario arises, the Shire may wish to pass the costs onto the end users.

There is an impost for the Shire of Dandaragan to attain accreditation and then maintain this. There is a registration/certification cost, and a trained Reporting Officer role to be fulfilled. The chart entitled "Aerodrome categories under CASR 139" (see over) shows the differences in classifications. The green-coloured cells indicate a cost to the Shire. It was mentioned at the fly-in of 30 November 2019 that the Shire Ranger and Aerodrome Reporting Officer (ARO) roles are not compatible, though there was no rationale provided for this generalisation.

Airport users are required to have an AVID (Aviation Identification) or ASIC (Aviation Security Identification Card) background check to enter an aerodrome with RPT services. It is an onerous and expensive process to apply and maintain this accreditation, thus these are unpopular with the recreational aviator.

Certification of the Airport will affect the use of the Drop Zone, and while use is not precluded, there will be operational considerations for both the Airport managers and Jurien SkyDive.

These are outlined in the CASA Regulations 263/02 section 4.2.16

Aerodrome categories under CASR 139

	Certified Aerodromes	Registered Aerodromes	Other Aerodromes - more than 9 but not more than 30 passengers	Other Aerodromes - operations under proposed CASR 135
Maximum level of service provided	RPT or frequent charter with more than 30 passengers	Same physical standards as certified aerodrome	Not certified or registered but served by RPT or by charter operations at least once per week.	
Who is responsible for certification/registration?	CASA	Approved Person	AOC Holder Responsibility	AOC Holder Responsibility
Where are the standards defined?	MOS	MOS	MOS	MOS Chap 13
Is an aerodrome manual required?	Yes	No	No	No
Is a Safety Management System required?	Yes	No	No	No
Is an Aerodrome Technical Inspection required?	Yes	No	No	No
Is an Aerodrome Safety Inspection required?	No	Yes (if RPT or charter operations with more than 9 passenger seats.)	Yes	No
Is a Trained Reporting Offi cer required?	Yes	Yes	Yes	AOC Holder Responsibility
Are aerodrome details published in ERSA/NOTAM?	Yes	Yes	No	No
Is the aerodrome operator required to monitor obstacles?	Yes	Yes	AOC Holder Responsibility	AOC Holder Responsibility
Can non-precision instrument approach procedures be made available?	Yes	Yes	No	No

BACK

Appendix 7 - Cost Estimate

REPORT SUMMARY

Project: Jurien Bay Airport
Details: Preliminaries Cost Indication - Rev1
Building: Runway, Taxiway & Arrival Centre

Code	Trade Description	Trade Total
	SITE PREPARATION	2,836,500
	EAST/WEST RUNWAY	1,202,374
	EAST/WEST TAXIWAY	530,030
	NORTH/SOUTH TAXIWAY	1,068,316
	ARRIVAL CENTRE	416,819
	ASSUMPTIONS & EXCLUSIONS	0
	NOTE: ALL COSTS EXCL. GST	
	ESTIMATED PROJECT TOTAL	**6,054,038**

WILDE AND WOOLLARD (WA)
Unit 1 / Ground Floor
1008 Wellington Street
West Perth, WA 6005

REPORT DETAIL

Project: Jurien Bay Airport **Details:** Preliminaries Cost Indication - Rev1

Building: Runway, Taxiway & Arrival Centre

Item No.	Item Description	Quantity	Unit	Rate	Amount
	SITE PREPARATION				
1	Clear site of all vegetable matter, bushes, loose surface rocks, small trees not exceeding 0.50m girth, roots, stumps, logs, garbage and solid obstructions, and remove from site		Item		54,000
2	Excavate and cart away unsuitable materials, including payment of all tip fees	80,615	m3	18.00	1,451,070
3	Trim, grade and compact surface of filling/excavation to the final required levels and slopes	107,360	m2	3.00	322,080
	On Costs				
4	Preliminaries, 12%		Item		219,300
5	Design Contingencies, 10%		Item		204,700
6	Contract Contingencies, 5%		Item		112,600
7	Locality allowance, 20%		Item		472,750
	SITE PREPARATION TOTAL				**2,836,500**
	EAST/WEST RUNWAY				
8	Treat ground under paving with grass killer all as specified.	17,759	m2	2.00	35,518
9	125 Thick crushed limestone sub- base course laid to falls on sub-grade, including compaction all as specified.	17,759	m2	15.00	266,385
10	125 Thick crushed rock base course laid to falls on sub-base, including compaction all as specified.	17,759	m2	20.00	355,180
11	Allow extra for selected prime seal as specified	17,759	m2	5.00	88,795
12	Additional marking to runway		Item		28,500
13	Runway lighting		Excl.		
	On Costs				
14	Preliminaries, 12%		Item		93,000
15	Design Contingencies, 10%		Item		86,800
16	Contract Contingencies, 5%		Item		47,800
17	Locality allowance, 20%		Item		200,396
	EAST/WEST RUNWAY TOTAL				**1,202,374**
	EAST/WEST TAXIWAY				
18	Treat ground with grass killer all as specified.	7,776	m2	2.00	15,552
19	125 Thick crushed limestone sub- base course laid to falls on sub-grade, including compaction all as specified.	7,776	m2	15.00	116,640
20	125 Thick crushed rock base course laid to falls on sub-base, including compaction all as specified.	7,776	m2	20.00	155,520
21	Allow extra for 5mm Prime seal as specified	7,776	m2	5.00	38,880
22	Line marking to taxiway		Item		14,700
23	Taxiway lighting		Excl.		
	On Costs				

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Building: Runway, Taxiway & Arrival Centre

Item No.	Item Description	Quantity	Unit	Rate	Amount
	EAST/WEST TAXIWAY				*(Continued)*
24	Preliminaries, 12%		Item		41,000
25	Design Contingencies, 10%		Item		38,300
26	Contract Contingencies, 5%		Item		21,100
27	Locality allowance, 20%		Item		88,338
	EAST/WEST TAXIWAY TOTAL				**530,030**
	NORTH/SOUTH TAXIWAY				
28	Treat ground with grass killer all as specified.	14,264	m2	2.00	28,528
29	125 Thick crushed limestone sub- base course laid to falls on sub-grade, including compaction all as specified.	14,264	m2	15.00	213,960
30	125 Thick crushed rock base course laid to falls on sub-base, including compaction all as specified.	14,264	m2	20.00	285,280
31	Allow extra for 5mm Prime seal as specified	14,264	m2	5.00	71,320
32	Line marking to taxiway	3,165	m	15.00	47,475
33	Additional marking to runway		Item		41,600
34	Taxiway lighting		Excl.		
	On Costs				
35	Preliminaries, 12%		Item		82,600
36	Design Contingencies, 10%		Item		77,100
37	Contract Contingencies, 5%		Item		42,400
38	Locality allowance, 20%		Item		178,053
	NORTH/SOUTH TAXIWAY TOTAL				**1,068,316**
	ARRIVAL CENTRE				
	SITE PREPARATION				
39	Clear site		Item		1,100
40	Remove topsoil and form building pad		Item		700
	TRANSPORTABLE BUILDING				
41	Building costs		Item		113,000
42	Delivery & Transportation		Item		10,000
	CONCRETE WORKS AND EXCAVATIONS				
	Substructure				
43	Concrete bases incl. excavations & reinforcement	7	m3	500.00	3,500
44	Concrete paving	105	m2	65.00	6,825
45	Extra over ordinary excavations for excavating in rock		Excl.		
	Concrete Sundries				
46	Termi-mesh termite treatment to perimeter of ground slab		Item		1,700

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Building: Runway, Taxiway & Arrival Centre

Item No.	Item Description	Quantity	Unit	Rate	Amount
	ARRIVAL CENTRE				*(Continued)*
47	Concrete sundries		Item		1,000
	STRUCTURAL STEELWORK				
	Columns				
48	Base plates and h.d.b	18	No.	135.00	2,430
49	101.6 CHS x 5.0	0.55	t	7,000.00	3,850
	Roof Structure				
50	Main roof structure	181	m2	175.00	31,675
	Sundries				
51	Attached connections		Item		3,800
52	Sundry detailing & bolts		Item		2,100
53	Shop drawings		Item		5,300
	ROOFING AND ROOF PLUMBING				
	Roofing				
54	Roof covering - 0.48BMT Revspan 700 Curved	181	m2	60.00	10,860
55	Anticon insulation	181	m2	12.00	2,172
56	Safety wire	181	m2	8.00	1,448
57	Barge capping	22	m	42.00	924
	Gutters and Flashings				
58	Eaves gutter - colorbond	38	m	55.00	2,090
59	Rainwater down pipe - colorbond.	12	m	55.00	660
	Sundries				
60	Roof anchor points		Item		2,800
61	Roofing sundries		Item		2,100
	PAINTING				
62	Exposed structural steelwork	181	m2	35.00	6,335
63	Sundry painting		Item		700
	ELECTRICAL SERVICES				
64	Electrical Services to verandah	105	m2	120.00	12,600
65	Security System		Excl.		
66	Builder's Work		Item		2,000
	EXTERNAL HYDRAULIC SERVICES				
	SEWERAGE				

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Project: Jurien Bay Airport **Details:** Preliminaries Cost Indication - Rev1
Building: Runway, Taxiway & Arrival Centre

Item No.	Item Description	Quantity	Unit	Rate	Amount
	ARRIVAL CENTRE				*(Continued)*
67	100 PVC	50	m	75.00	3,750
68	100 Inspection opening	2	No.	170.00	340
69	Septic tanks with 2 off 1500 dia x 1500 deep precast concrete tanks		Item		4,000
70	Leach drain	50	m	150.00	7,500
71	Sewer Headworks		Excl.		
	WATER SUPPLY				
72	25 Copper pipe	20	m	60.00	1,200
73	20 Copper pipe	10	m	52.00	520
74	20 Dia hose-cock	2	No.	45.00	90
75	Water Headworks		Excl.		
76	Fire services		Excl.		
	STORMWATER				
77	100 PVC to rainwater tanks	54	m	70.00	3,780
78	Rainwater tanks, approx 9000 litres	2	No.	2,750.00	5,500
	EXTERNAL ELECTRICAL SERVICES				
79	Provision for connection to main	100	m	95.00	9,500
80	Transformer & transformer compound		Excl.		
81	Builder's Work		Item		500
	ON COSTS				
82	Preliminaries, 12%		Item		32,300
83	Design Contingencies, 10%		Item		30,100
84	Contract Contingencies, 5%		Item		16,600
85	Locality allowance, 20%		Item		69,470
	ARRIVAL CENTRE TOTAL				**416,819**

ASSUMPTIONS & EXCLUSIONS

	ASSUMPTIONS AND EXCLUSIONS				
	ASSUMPTIONS				
86	Finishes generally as measured.				
	GENERAL EXCLUSIONS				
87	Goods & Services Tax. (G.S.T.)				
88	Escalation				
89	Excavation in rock.				
90	Power up-grade.				
91	Transformer				

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Building: Runway, Taxiway & Arrival Centre

Item No.	Item Description	Quantity	Unit	Rate	Amount
	ASSUMPTIONS & EXCLUSIONS *(Continued)*				
92	Tree removal				
93	Aircraft parking area.				
94	Individual private hangars				
95	Dual use public access path connecting to town centre				
96	New day parking area				
97	Aircraft water filling station				
98	Aircraft refueling station				
99	Helipad				
100	Industrial lots				
101	Vehicle access to industrial area via Coal Seam Road extension				
102	Commercial hangars				
103	Residential lots with private hangar				
104	Skydrive drop zone				
105	Airpark				
106	Fire services including fire tanks and pumps				
107	Runway & taxiway lighting				
	GENERALLY				
108	This Cost Indication is based on Drawings:-				
109	A100 Location Plan				
110	A101 Fueling Stations Site Plan				
111	A102 Hangar Zone Site Plan				
112	A103 Industrial Zone Site Plan				
113	A104 Skydive Drop Zone Site Plan				
114	A105 Airpark Site Plan				
115	A106 Arrival Centre				
116	A300 Site Section				
117	A500 Airpark Residential lots Example Layout				
	ASSUMPTIONS & EXCLUSIONS TOTAL				**0**

WILDE AND WOOLLARD (WA)
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