



# GLEN INNES AIRPORT MASTER PLAN

GLEN INNES SEVERN COUNCIL

30 June 2022

## DOCUMENT AUTHORISATION

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## 1. INTRODUCTION

Glen Innes Severn Council (GISC) engaged REHBEIN Airport Consulting to prepare a Master Plan for the Glen Innes Airport.

The Master Plan seeks to establish objectives, understand existing facilities, consider future demands, and develop plans for future enhancement and utilisation in consideration of the following GISC strategies:

- Community Strategic Plan;
- Local Strategic Planning Statement;
- Economic Development Strategy;
- Destination Management Plan and Background Analysis; and
- GeoToursim Scoping Studies – Glen Innes and New England North West

The existing situation in terms of current facilities and operations is described in [Section 2](#).

An assessment of existing pavement condition forms an important driver of the Master Plan and this is summarised in [Section 3](#).

[Section 0](#) outlines the draft vision and strategic objectives which form the basis of the Master Plan, derived from GISC's background research and master planning requirements.

Growth and development potential for activity at the Glen Innes Airport is discussed in [Section 5](#), while critical airport planning parameters and aerodrome classification considerations are described in [Section 6](#).

[Section 0](#) describes the concept land use plan and [Section 0](#) the staged concept facilities development plan.

Finally, [Section 0](#) discusses the airport safeguarding plan.

## 2. EXISTING SITUATION

The Glen Innes Airport is located eight (8) kilometres from the centre of the town of Glen Innes, in the New England High Country of New South Wales (NSW). [Figure 1](#) illustrates the location.

The airport is accessed off Emmaville Road which forms the eastern boundary of the site. The aerodrome land is approximately 227 hectares in total area. The aerodrome facilities occupy around 92 hectares and the remaining 135 hectares is currently leased to the NSW Department of Primary Industries (DPI) for agricultural pasture.

### 2.1 EXISTING FACILITIES

The Glen Innes Airport aerodrome facilities currently consist of two (2) runways, a taxiway, main apron, three (3) hangars and a small passenger terminal building. Landside is an aero club building and a Rural Fire Service (RFS) brigade shed.

[Figure 2](#) illustrates the existing airport layout. [Figure 3](#) shows the existing development area.



Figure 1: Glen Innes Airport Location

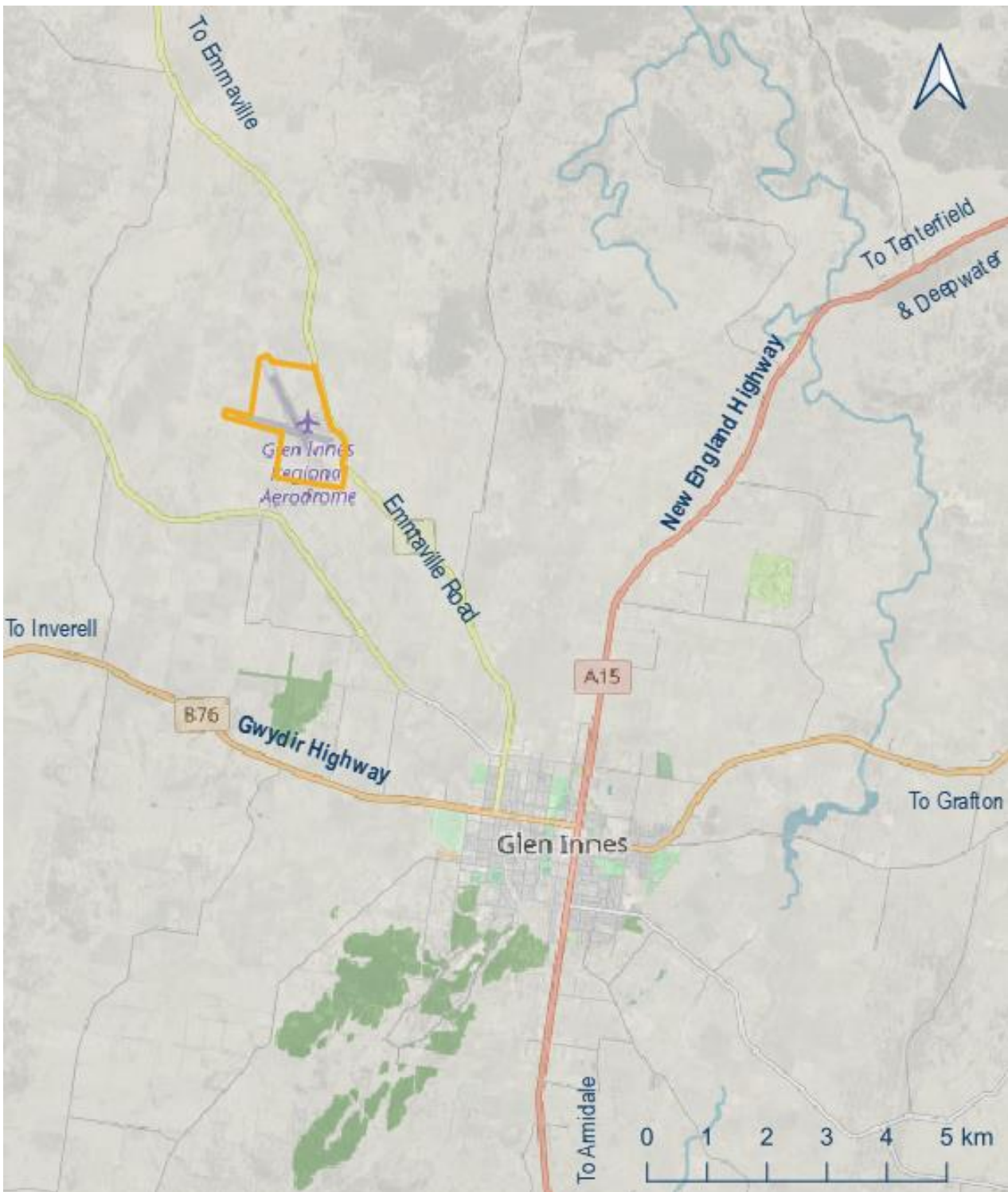


Figure 2: Existing Airport Layout

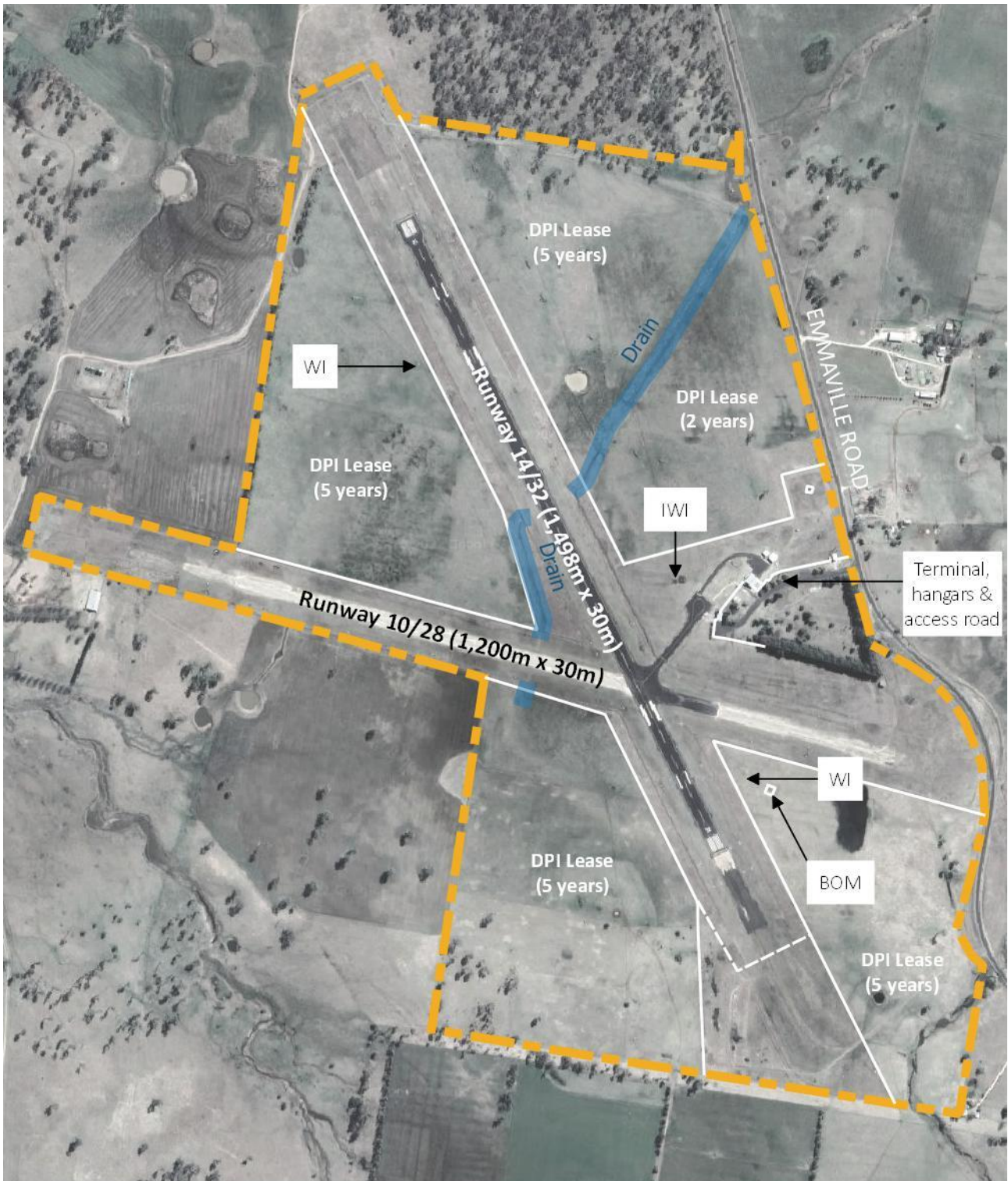
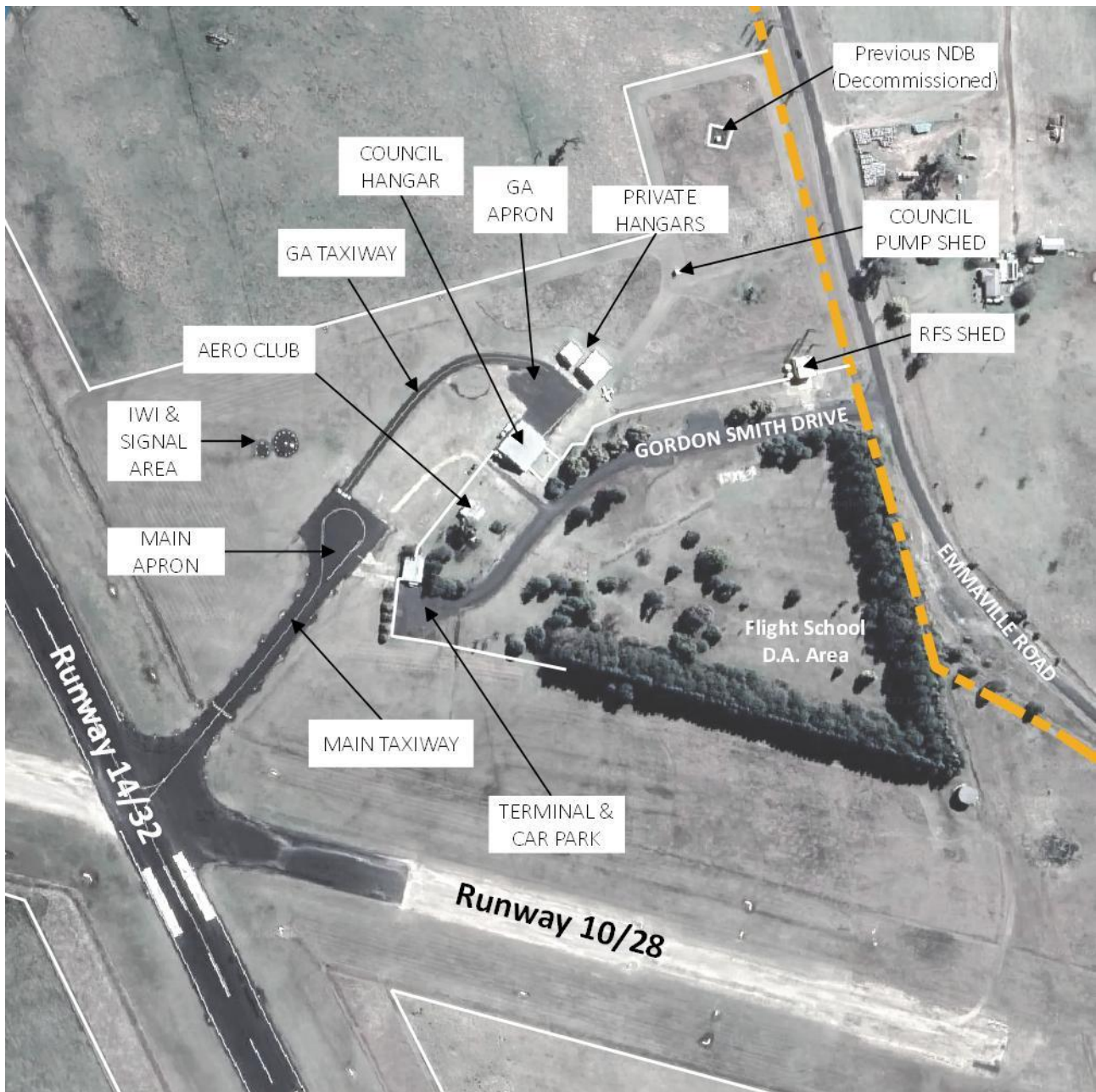




Figure 3: Existing Development



### 2.1.1 RUNWAY 10/28

Runway 10/28 is the secondary runway at Glen Innes. It is 30 m wide and 1,200 m in length with a grey gravel surface, except for a short section of approximately 150 m immediately to the east of the intersection with Runway 14/32. The runway has been reduced in length over time by approximately 240 m at the eastern end and approximately 330 m at the western end. The runway is situated within a 90 m wide by 1,320 m long runway strip.

### 2.1.2 RUNWAY 14/32

The main runway at Glen Innes is designated Runway 14/32. It is 30 m wide and currently 1,498 m long. It has a sealed surface. The runway is located within a 150 m wide and 1,618 m long runway strip. The central 90 m width of the runway strip is graded.



### 2.1.3 TAXIWAYS AND APRONS

The main apron is approximately 40 m by 40 m and is provided with a single marked aircraft parking position, in front of the terminal building.

A stub taxiway connects the main apron to the intersection of the runways. The taxiway is sealed 15 m in width.

A smaller taxiway, approximately 7.5 m wide, runs north-east from the main apron to a sealed GA Apron area in between the hangars.

### 2.1.4 HANGARS

There are three (3) existing hangars on site:

- A GISC-owned hangar, approximately 23 m x 23 m, a portion of which is used as the airport maintenance shed and the remainder leased out to private aircraft storage currently housing four to five light aircraft;
- A private hangar approximately 15 m x 15 m constructed on land leased to aircraft operator SupaAir; and
- A smaller private hangar approximately 12 m x 10 m constructed on privately leased land.

### 2.1.5 VISUAL AND RADIO NAVIGATION AIDS

The aerodrome is equipped with a primary illuminated wind indicator (IWI) to the north of the main apron, and two secondary wind direction indicators (WI) upwind of the 14 and 32 runway thresholds.

Runway 14/32 is equipped with a low intensity runway edge lighting (LIRL) system at 90 m spacing. The taxiway between the main apron and the runways are each equipped with blue elevated taxiway edge lights.

An Automatic Weather Station (AWS) is located between the runways south-east of the intersection. The previous automated weather information system was replaced in August 2022 by the latest technology (CAWIS) providing information to pilots via radio or telephone.

### 2.1.6 INSTRUMENT APPROACH PROCEDURES

The previous non-directional beacon (NDB) radio navigation aid has been decommissioned and removed. Required Navigation Performance (RNP) instrument approach procedures are published to both ends of the main runway 14/32. LNAV minima are 4,040 feet above mean sea level (amsl) (3,940 feet amsl with QNH) for both runways. These procedures allow aircraft to descend safely to approximately 500 feet above the runway before visual contact is made.

At night, LNAV minima were not available and the circling minima apply which are 300-500 feet higher than the LNAV. This is due to the unlit secondary wind indicators (IWI are required for instrument approach runways). GISC has recently obtained and installed an upgrade to the on-airport Bureau of Meteorology (BoM) instrumentation enclosure which enables an Automated Weather Information Broadcast (AWIB). An AWIB is an acceptable alternative means of providing wind information to pilots and alleviates the need for secondary IWI. Nevertheless, illumination of secondary WI is nonetheless recommended if practicable.

### 2.1.7 TERMINAL AND AEROCLUB FACILITIES

A small terminal with internal toilets is located adjacent to the main apron. Outside is a public toilet block and a small hut owned by Glen Innes Aero Club inc.

### 2.1.8 FLIGHT TRAINING SCHOOL DEVELOPMENT APPROVAL

In 2017, Council approved a Development Application to develop a commercial flight training academy using the area south of Gordon Smith Drive. The proposal has not gone ahead, being abandoned by the proponent Australia Asia Flight Training in 2018. However, the DA approval remains with the possibility of the project being reactivated should it prove viable again in the future.

## 2.2 CURRENT OPERATIONS

The most recent available usage data for Glen Innes Airport record some 3,700 usages (landings or training circuits) in the period from September 2018 through February 2021 inclusive. This translates to 7,400 annual aircraft movements (landings or take-offs) or an average of around 3,000 annual movements.

Aerial firefighting related operations in the summer 2019-2020 bushfire season account for approximately 4,000 of the total movements.

**Chart 1** and **Table 1** show the main contributors to aircraft traffic at Glen Innes Airport in recent years are:

- Firefighting (61% of movements);
- Other VH-registered (private, commercial, charter and aerial work) (14%);
- Flying School (8%);
- Aeromedical (7%);
- Unidentified customers, estimated as 50% Defence and 50% recreational (i.e. light sports aircraft or 'ultralight' users) (7%); and
- Emergency (2%).

Chart 1: Estimated Monthly Aircraft Movements September 2018 – February 2022

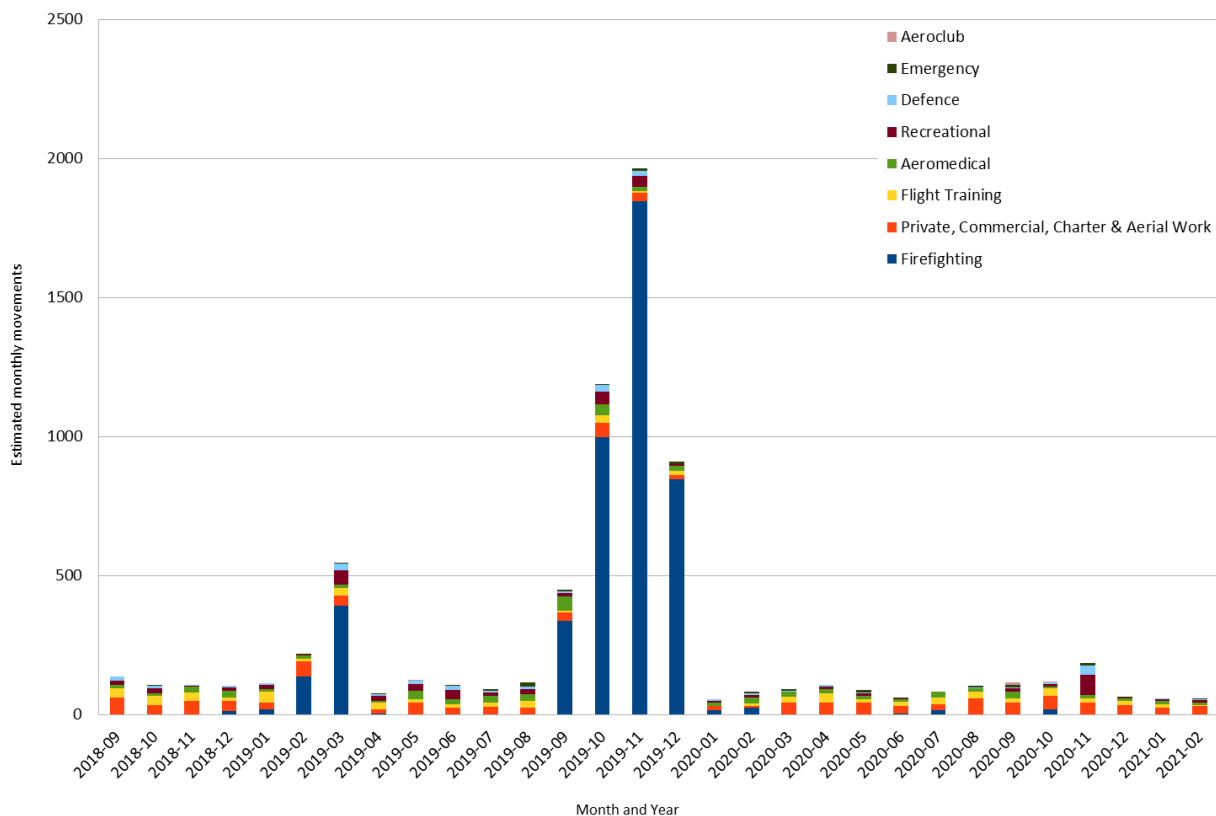


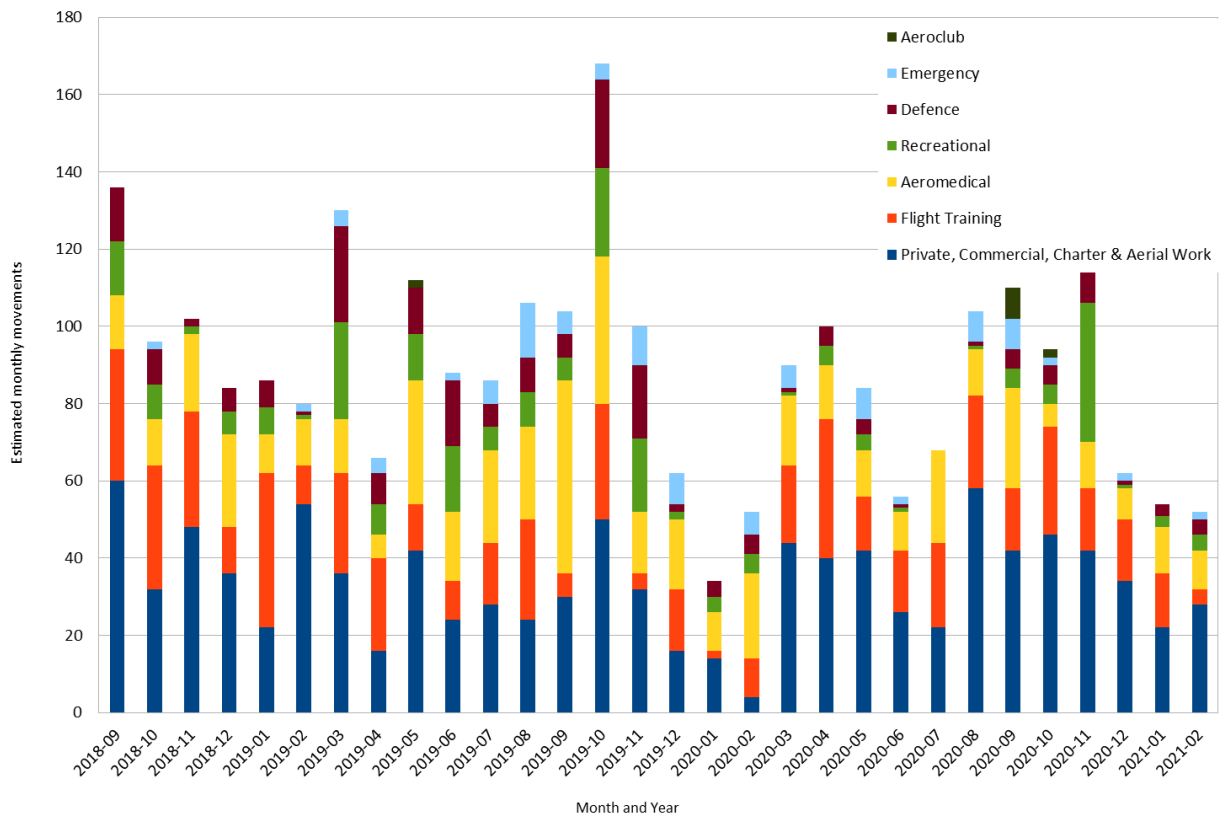
Table 1: Estimated Aircraft Operations

CATEGORY OF OPERATION	ESTIMATED MOVEMENTS 09/2019 THROUGH 02/2021"	"ESTIMATED AVERAGE ANNUAL MOVEMENTS"	% OF OVERALL USE
Firefighting	4,690	1,876	61.4%
Private, Commercial, Charter & Aerial Work	1,014	406	13.3%
Flight Training	566	226	7.4%
Aeromedical	528	211	6.9%
Recreational	468	187	6.1%

CATEGORY OF OPERATION	ESTIMATED MOVEMENTS 09/2019 THROUGH 02/2021"	"ESTIMATED AVERAGE ANNUAL MOVEMENTS"	% OF OVERALL USE
Defence	241	96	3.2%
Emergency	114	46	1.5%
Aeroclub	12	5	0.2%
Total	7,633	3,053	100%

When adjusted to remove the firefighting operations, which predominantly occurred from September to December 2019, the aerodrome usage looks as shown in **Chart 2** and **Table 2**.

*Chart 2: Estimated Monthly Aircraft Movements (No Firefighting)*



**Table 2: Estimated Annual Operations (No Firefighting)**

CATEGORY OF OPERATION	ESTIMATED MOVEMENTS 09/2019 THROUGH 02/2021"	"ESTIMATED AVERAGE ANNUAL MOVEMENTS"	% OF OVERALL USE
Private, Commercial, Charter & Aerial Work	1,014	406	37.3%
Flight Training	566	226	20.8%
Aeromedical	528	211	19.4%
Recreational	241	96	8.9%
Defence	241	96	8.9%
Emergency	114	46	4.2%
Aeroclub	12	5	0.4%
Total	2,716	1,086	100.0%

Table 2 shows that, after firefighting which is essential but by its nature is seasonal and may only occur in certain years, the main users of Glen Innes Airport are for private, commercial, charter and aerial work, flight training, and aeromedical purposes which together make up 75% of regular airport use.



The aero club aircraft recorded 6 usages (12 movements) over the 30 months of recorded usage and represents less than 1% of total activity at Glen Innes.

Total annual movements, at between 1,000 and 3,000 approximately, are low.

The largest aircraft type regularly using the airport is the Beechcraft King Air 350i (B350) operated by the Royal Flying Doctor Service. Infrequent usage by other aircraft types of a similar aerodrome reference code (ARC) and weight (6 to 8 tonnes Maximum Take-Off Weight – MTOW) also occurs. Air Tractor 802F aircraft anecdotally reported as being used during the bushfire operations, but not captured by aircraft type in the reported data, are approximately 7 tonnes MTOW.

## 2.3 AIRPORT MANAGEMENT

### 2.3.1 OWNERSHIP AND OPERATION

Glen Innes Airport is owned and operated by GISC and is a certified aerodrome under the *Civil Aviation Safety Regulations 1998* (CASR) and the Civil Aviation Safety Authority (CASA) *Part 139 (Aerodrome) Manual of Standards 2019* (Part 139 MOS (2019)). The aerodrome previously held ‘registered’ status under the CASR and is transitioning to equivalent ‘certified’ status under the current legislative framework.

### 2.3.2 REGULATORY CONTEXT

As a certified aerodrome, the aerodrome operator (GISC) is responsible for ensuring that facilities are maintained in accordance with the CASA Part 139 MOS (2019) and that the condition and status of aerodrome facilities is promulgated to pilots and aircraft operators through the Aeronautical Information Package (AIP).

### 2.3.3 OPERATING COSTS AND REVENUES

The airport is managed directly by GISC at an operating cost (historical) of approximately \$200,000 per year. This includes aviation compliance activities and minor operational maintenance of airfield pavements but excludes capital costs of major rehabilitation or other cyclical maintenance requirements.

Aircraft landing fees are currently not charged by GISC. Landing fees charged at a selection of local airports (Armidale, Gunnedah, Inverell, Kempsey and Tamworth) vary from around \$9 to \$13 (excluding GST) per 1,000 kg of MTOW, depending on aircraft type, fuel use and other factors. Based on a total annual landed MTOW weight of 725,545 kg eligible for billing (as recorded by AvData for GISC over 12 months between March 2020 and February 2021), current operations could be expected to recover around \$7,000 to \$9,000 per year (ex.GST). This level of revenue is an order of magnitude below the annual operating costs. This is a common scenario at regional aerodromes across Australia.

## 3. PAVEMENT INVESTIGATION

### 3.1 EXISTING CONDITION

Runway pavements typically require a complete re-surfacing every 10 years. The Glen Innes airport main runway was last re-sealed in 1998, the main taxiway and apron in 2002 and the GA taxiway and apron in 2011. All existing pavements are due for a reseal.

The main runway is currently adequate in strength for the existing aircraft types using it, however the surface is deteriorating due to age. Whilst currently serviceable, it requires regular and increasing maintenance to re-seal areas which become loose. Over time, it will pose an increasing risk of foreign object debris (FOD) damage to aircraft.

A full pavement condition assessment of the main runway, taxiway and apron has been conducted to inform this Airport Master Plan. The report prepared by Kamen Engineering is included at [Appendix B](#). The technical assessment supports the current published PCN for Runway 14/32 but recommends a change in the subgrade classification from Category ‘C’ to Category ‘D’.

## 3.2 DRAINAGE

The 2017 ASI report identifies issues with significant ponding of water at the runway intersection, which have been reiterated anecdotally by airport operational staff as still being an issue.

The installation of subsoil drainage along the runway, taxiway and apron pavement flanks is strongly recommended by the pavement assessment, especially so if larger aircraft are to be operate without risk of pavement damage.

## 3.3 TREATMENT OPTIONS

### 3.3.1 RUNWAY 14/32

The existing runway requires re-sealing as a matter of priority. In order to make this effective, rehabilitation of the existing granular base is required. To achieve this would require incorporating new crushed rock material to improve the grading of the base course and provide pavement surface shape correction, and at the same time stabilising the blended material by incorporating bitumen or another suitable binder for durability. By its nature, this treatment would most likely achieve a strengthening of the pavement to a degree suitable for aircraft up to around 20 tonnes, based on the preliminary pavement rehabilitation treatments identified by Kamen Engineering. The cost to complete this has been estimated as being in the order of \$2.5 million, including the recommended subsoil drain installation.

Using a similar methodology, the runway could be increased further in strength to handle aircraft up to 30 tonnes MTOW, which would accommodate medium-size business jets and aerial firefighting aircraft including the Bombardier Dash 8 Q400AT air tanker, regional turboprop aircraft, and military airlift types such as the C130 Hercules and C27 Spartan. It is estimated that this would cost only around 10-15% more than the simple rehabilitation and reseal alone.

### 3.3.2 APRON & TAXIWAY

For the main taxiway and apron, the recommended treatment is to improve the existing granular subbase course with the addition of lime and to rework/improve the granular base course. If the base course is improved through the incorporation of bitumen as a stabiliser, the strength could be improved to match the 30 tonnes MTOW capability without increasing the pavement thickness.

To rehabilitate the main taxiway and apron to the same standard as Runway 14/32 (i.e. suitable for aircraft up to 30 tonnes MTOW) is estimated as being in the order of \$0.5 million.

## 4. STRATEGIC VISION AND OBJECTIVES

### 4.1 DRAFT VISION

The draft strategic vision to be implemented by the Master Plan is:

***“A place surrounded by nature where adventure is found, experienced, and remembered both on the ground, in the sky and throughout the community”***

The draft vision encompasses the potential for a variety of uses and experiences at the Glen Innes Airport for the local community and those that utilise this community asset. Opportunities to increase utilisation which align with the draft vision are discussed in **Section 5**.

### 4.2 OBJECTIVES

The key objectives the Glen Innes Master Plan should deliver against include:

- Objectives which are key enablers for the **continued safe and unrestricted operation of aircraft** at the Glen Innes Airport in accordance with regulatory requirements and relevant aviation guidance. Objectives in this category include:
  - Maintain the ability for aircraft to operate safely and unrestricted through the maintenance of existing infrastructure, to agreed service levels
  - Ensure the airport is operating in accordance with National regulations, standards (including new MOS 139 standards), legislation and policies, including the National Airports Safeguarding Framework
  - Understand the class of airstrip from a technical perspective to set the maximum aircraft size taking into consideration emergency service aviation requirements, likely compatibility with other local RPT airports (Armidale) and likely aviation business requirements
  - Identify current operating surface condition (including testing and assigning a PCR value for runways, taxiways, and aprons), performance, utilisation (using two years of Council AVDATA and target group engagement) and costs and provide increased revenue and opportunity for Council and community
  - Plan for and support the ability for airport facilities to be maintained, enhanced and expanded where required to support master plan concepts and activities
  - Managing risks associated with asset liability
  - Managing risks outside of the airport, including land use conflicts, wildlife, and public safety.
- Objectives which relate to **developing a role for the airport** as a sustainable community asset and driver of visitation. Objectives in this category include:
  - Develop a role for the airport as a community asset and driver of visitation to enhance socio-economic prosperity including employment, education, entrepreneurialism and innovation
  - Develop options for attracting and developing more general and recreational aviation activity at the airport including administration, parking, and hangarage accommodation options (eg private land lease, communal hangarage, or Council/private hangar ownership models) for relevant target groups – consider industry partnerships to reduce capital expenditure to deliver such initiatives
  - Investigating future commercial usage for pilot training and aircraft engineering businesses
  - Improving financial sustainability through diverse income sources and providing a pricing model options for landing, parking, approach/training, Council hangarage fees
  - Identify key improvements and short-term gains to for the use of the airport as a regional staging area to support the Regional Fire Control Centre and Emergency Precinct; eg. multi-fuelling capability, low dust/recirculation helicopter parking areas, increasing runway/aprons load capacity to support RJ-type aircraft conducting admin support to RFS and other emergency services.
  - Plans ensuring improvements are made to support medevac, casevac, air mobility, and aerial fire-fighting/response units
- Objectives which provide guidance and direction to GISC in the form of a **forward-looking site plan which identifies and safeguards a phased approach** to development. Objectives in this category include:



- Managing environmental and heritage constraints
- Provide direction for Councillors, Council officers, user groups and the community
- Airport Concept Plans to guide future development and priorities for investment, grant funding and socio-economic benefit
- Provide a forward-looking site plan which specifically identifies and, therefore safeguards areas for a phased approach in developing possible:
  - a. Refuel site with associated manoeuvring areas/access.
  - b. Parking areas with associated manoeuvring areas/access.
  - c. Communal, Council, or private hangarage areas and associated manoeuvring areas/access
  - d. Airside Business hangarage areas and associated manoeuvring areas/access.
  - e. Deployment area which can host surge operations such as rotary and fixed wing fire-fighting or emergency support operations.
  - f. Flying school lay-down (current Development Application held by Council)
  - g. The current long-term grazing lease areas.

## 5. GROWTH AND DEVELOPMENT POTENTIAL

### 5.1 STRATEGIC PLANNING CONTEXT

A series of strategic background documents have been prepared by GISC, regional and state agencies as part of their ongoing planning and development activities. These include:

- The New England North West Regional Plan 2036;
- Glen Innes Severn Community Strategic Plan 2022-2032;
- Glen Innes Highlands Economic Development Strategy 2020-2040 & Action Plan 2020-2025;
- Glen Innes Severn Council Local Strategic Planning Statement – A Strategic Land Use Vision to 2040; and
- Glen Innes Highlands Destination Management Plan 2021-2026.

These documents have been reviewed for relevance to the Glen Innes Airport Master Plan and the key aspects are summarised in the following sub-sections.

#### 5.1.1 NEW ENGLAND NORTH WEST REGIONAL PLAN 2036

The *New England North West Regional Plan* is to guide the NSW Government’s land use planning priorities and decisions to 2036 by providing an overarching framework of guidance and direction for subsequent detailed land use plans, development proposals and infrastructure funding decisions.

The vision includes nationally valued landscapes, and communities that are well connected, attractive, healthy, safe and prosperous with a strong sense of community identity.

Regional airports at Armidale, Inverell, Moree, Narrabri and Tamworth are identified as elements of the inter-regional transport connections within the Plan.

Glen Innes is identified as a centre of regional strategic importance focussed on the following priorities:

- Delivering housing options;
- Diversification in agriculture including harnessing international opportunities as well as maximising innovation and efficiencies;
- Supporting the growth of the hospital;
- Expanding nature based tourism and enhancing visitor experiences; and
- Wind, solar and other renewable energy production opportunities.

### 5.1.2 GLEN INNES SEVERN COMMUNITY STRATEGIC PLAN 2022-32

The Glen Innes Severn Community Strategic Plan is informed by the community for the future of the Glen Innes Severn local government area (LGA) as it grows over the 10-year period. One of the top priorities of the community is attracting new business and investment.

The vision for Glen Innes Severn is

*A prosperous connected community that nurtures its people and places*

The Community Strategic Plan contains five (5) strategic objectives each with multiple goals including

- **An Attractive Quality of Life** - that is enhanced by cultural expression, an active inclusive community, with accessibility to the best possible services and facilities in a high-country climate.
- **A Prosperous Local Economy** - that is encouraged and supported by sustainable investment opportunities, in a diversified business environment with accessibility to a trained and willing labour market.
- **Fit for Purpose Public Infrastructure** - that is designed, constructed and appropriately maintained, to keep our community and visitors, connected, safe and able to access the amenities and services they require. with a priority to provide adequate infrastructure and facilities for the existing and future population. This is to be achieved through ensuring optimal services, and proper management of infrastructure and assets while striving for funding.
- **An Appealing Sense of Place** - that is protected and preserved, so that our authentic natural and built assets are showcased and enhanced for the enjoyment of all and enriched by new developments.
- **Recognised for Local Leadership** - that upholds its values and responsibilities, is focused on the community through the custodianship of its assets and empowerment of its employees, to deliver the best value services and projects in partnership with others and within the means of Council.

### 5.1.3 ECONOMIC DEVELOPMENT STRATEGY 2020-2040 & ACTION PLAN 2020-2025

The Glen Innes Highlands Economic Development Strategy provides a clear pathway for Council and Community to foster local socio-economic prosperity and growth through the four key pillars of Partnerships, People, Place and Prosperity.

Various opportunities for growth are identified such as the visitor economy, value adding and niche agriculture, local business growth and support as well as asset-based place-making. Leveraging the Glen Innes Airport is raised as a top comment for growth and local opportunities.

Council's tasks include:

- Delivering an 'open for business' approach to attracting business through effective support and guidance;
- Delivering a vision for the town and villages to guide, prioritise and seek funding in order to invest in the activation, appeal and liveability of the LGA and leverage our natural and built assets;
- Health care and social assistance services;
- Attracting and retaining population through liveability and opportunities through starting a business and contributing to local economic prosperity;
- Facilitate agri-innovation business development to leverage agriculture for tourism and business-related opportunities to expand the agri-economy through value-adding and value chain development;
- Deliver the 'disused asset audit' of which the airport has been identified as a disused asset and link to ideas and opportunities; and
- Design and deliver an 'investment attraction policy' to encourage industry across sectors identified as growth opportunities.

### 5.1.4 GLEN INNES SEVERN COUNCIL LOCAL STRATEGIC PLANNING STATEMENT – A STRATEGIC LAND USE VISION TO 2040

The Local Strategic Planning Statement (LSPS) is informed by the New England North West Regional Plan, the Community Strategic Plan and the Economic Development Strategy. Population growth is a key focus,

developing new strategies to attract people to the area. The aspirational target is to reach and maintain 10,000 residents by 2027. The vision is:

*Glen Innes Highlands is the place to experience a unique lifestyle with opportunity, connection and wellbeing among a cherished and sustainable environment.*

There are four themes that make up the community vision with various planning priorities that are to be delivered through strategies to guide actions and land use directions to be undertaken by the Council.

- **A renewed economy and authentic place**
  - Support a ‘whole of place’ approach toward economic development and land-use planning. A renewed economy and authentic place approach identifies the airport as a developing key asset. Developing the airport, to support the delivery of a well-positioned place-based approach to economic development and sustainable land-use planning, is key;
  - Encourage diversification in agriculture, horticulture and agribusiness to grow these sectors and respond to domestic and international opportunities;
  - Expand nature-based adventure and cultural tourism places by leveraging environmental and iconic assets;
- **A thriving and vibrant community**
  - Deliver a variety of housing options and promote development that contributes to the community character;
  - Raise the awareness of employment, business development lifestyle opportunities, particularly for younger people and provide services for the ageing population,
- **Strong and connected infrastructure**
  - Continue to develop service and logistics infrastructure on appropriate sites to encourage new industry opportunities and population growth. The investment, integration and alignment of road, rail, port, utility and airport infrastructure across the New England North West to foster emerging industries;
- **Sustainable environment and protected heritage**
  - Protect and celebrate the unique natural and cultural heritage;
  - Protect areas of high environmental value and significance;
  - Adapt to natural hazards and climate change. Droughts and bushfires have highlighted to the community the severity of natural hazards, its vulnerability and the need to enable communities and individuals to be better prepared and more resilient to the impacts of insufficient water; and
  - Promote and support the transition to renewable energy.

Under these themes, the following planning priorities have may have relevance to the Glen Innes Airport:

- Planning **Priority 2**: Encourage diversification in agriculture, horticulture and agribusiness to grow these sectors and respond to domestic and international opportunities.
- Planning **Priority 3**: Expand nature-based adventure and cultural tourism by leveraging environmental and iconic assets such as World Heritage listed National Parks and the Australian Standing Stones.
- Planning **Priority 5**: Raise the area’s profile and awareness of employment, business development and lifestyle opportunities particularly for younger people and provide services for the ageing population.
- Planning **Priority 9**: Adapt to natural hazard and climate change.
- Planning **Priority 10**: Promote and support renewable energy production opportunities.

### 5.1.5 GLEN INNES HIGHLANDS DESTINATION MANAGEMENT PLAN 2021-2026

The Glen Innes Highlands (GIH) Destination Management Plan (DMP) aims to development, management and marketing of the tourist destinations. In NSW, a DMP is a pre-requisite to accessing tourism funding and assists in accessing a range of Federal and State Government grant programs. The key strategic pillars are improving customer experiences, evolving the brand positioning, development and improving existing experiences and creating and delivering new experiences.



The primary goals of the DMP are:

- Increase visitation to and visitor expenditure;
- Diversify the local economy and create a stronger. More resilient community;
- Improve the viability and sustainability of local business;
- Attract public and private sector investment; and
- Create local employment

To achieve these goals focus needs to be directed to initiatives to grow and diversify visitation, develop attractions, activities, experiences and events, ensuring that infrastructure, facilities and services are in place to support the growth, and embracing opportunities to leverage nature-based, geo-tourism and agri-tourism.

The DMP identifies agriculture and tourism as the ‘engine’ industries in GIH. Adventure and sports are an established top attraction and continue to develop. Developing more adventure-based sporting activities and experiences utilising under-utilised assets and locations which provide breadth and depth across the nature and adventure-based tourism is identified as an opportunity for growth which potentially relates to the Glen Innes Airport.

The GIH marketing strategy is organised under the three pillars of Visit, Live and Invest and has six brand themes which represent the area’s strengths, products and experiences – **Adventure** Country, **High** Country, **Ngoorabul** Country, **Celtic** Country, **Heritage** country and **Progressive** Country.

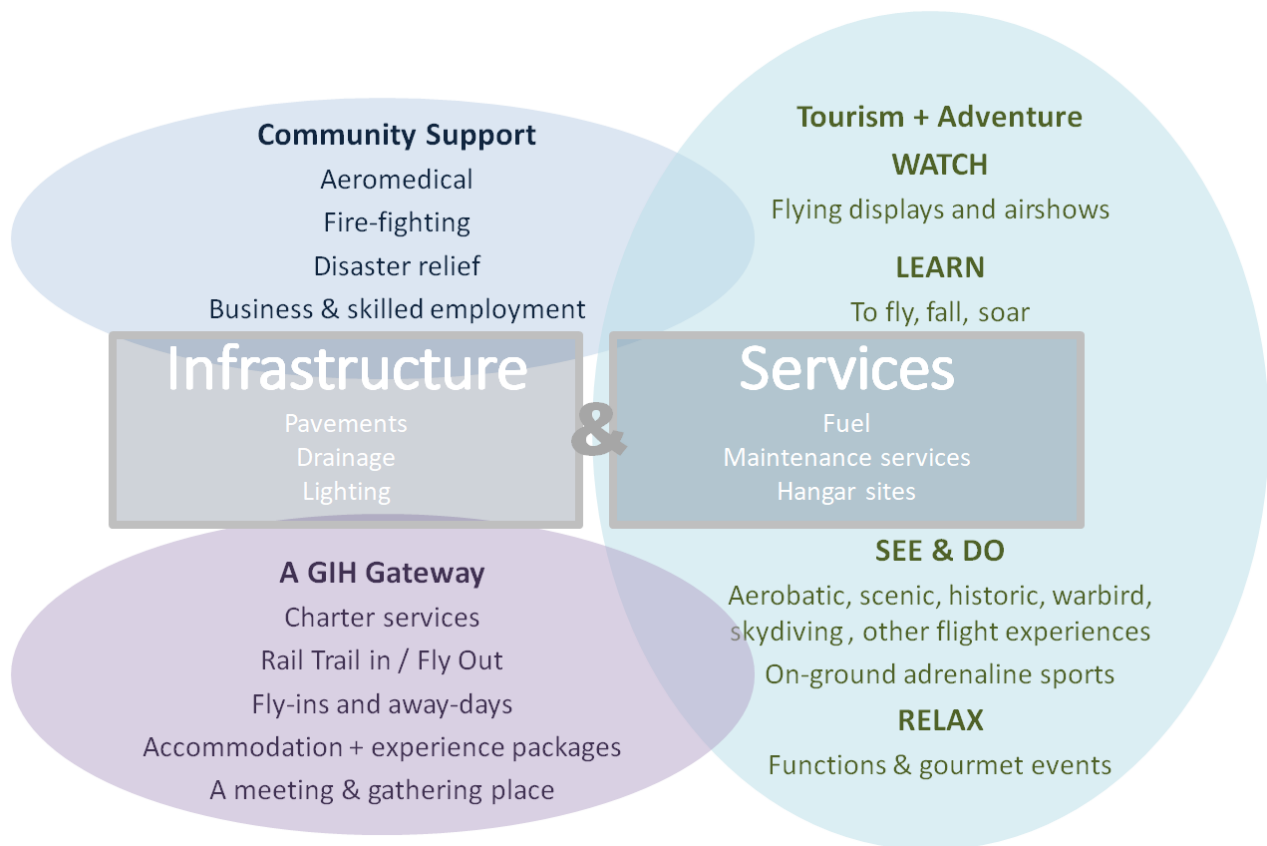
Under the DMP – Strategy, strategic objectives 3 and 4 relate to experiences that could have a connection to the Glen Innes Airport. The strategic goals under these pillars are:

- Improve the quality and capacity of our existing attractions, activities and experiences through connection, collaboration and support of local people and businesses.
- Be bold, adventurous, and ambitious to create new ideas and experiences to attract domestic and international visitors based on trends, interests, and the discerning traveller.

## 5.2 AIRPORT ROLE AND OPPORTUNITIES

A series of possible opportunities for increased utilisation and future development of the Glen Innes Airport were identified through reference to the strategic planning documents discussed in **Section 5.1** above and reviewed against the Airport Master Plan objectives. These are illustrated conceptually in **Figure 4**.

Figure 4: Glen Innes Airport Role & Opportunities



Some of the main opportunities are discussed below and include:

- Aviation and aviation-related opportunities
  - Passenger services;
  - Fuel facility;
  - Aircraft maintenance;
  - Private hangarage;
  - Airpark estate and premium hangar accommodation;
  - Scenic and other flight experiences;
  - Flying training;
  - Other aviation businesses;
  - Community support;
  - Aviation events;
  - A complementary Glen Innes gateway; and
- Non-aviation related opportunities
  - Conference facilities;
  - Non-aviation events;

- Motor sports complex;
- Other non-aviation opportunities.

The list is not exhaustive and is intended to provide a flavour of the types of activity which the Land Use Plan and Concept Development Plan should make provision for, to maximise the development and growth potential of Glen Innes Airport.

### 5.2.1 PASSENGER SERVICES

The possibility of passenger services has been a topic discussed in previous Council plans and is worth addressing. Passenger services can be provided in two ways: through Regular Public Transport (RPT) – i.e. scheduled airline services; or through charter operators.

Glen Innes is unlikely to be able to sustain viable RPT services, principally on the basis of population size, the economics of regional airline operations and the presence of established RPT services from Armidale (20 weekly return flight to Sydney) and Inverell (3 weekly return flights to Brisbane and Sydney), both accessible within a 1 – 1.5 hour drive.

Charter operations are more likely to be viable. In contrast to RPT, where aircraft smaller than 70 seats are no longer in global production, charter services can avail of a wider fleet of smaller aeroplanes that are established in the Australian general aviation fleet and will continue to operate for the foreseeable future.

A charter operator might be attracted to establish at Glen Innes Airport if tourism or agri-business driven visitation were to increase substantially. Alternatively, or in parallel, Glen Innes Airport might be served by operators based elsewhere, potentially complementing RPT services as a means of accessing the GIH region for those wishing to experience the area without bringing in a vehicle.

### 5.2.2 FUEL FACILITY

Access to aviation fuel is an essential enabler for increased asset utilisation. Private flyers, in particular, commonly flight plan and actively choose destinations to visit based around availability of competitively priced fuel. Fuel provision is also an essential consideration for emergency services use including visitation by police and air ambulance. For air ambulance, in particular, access to fuel can increase aeromedical coverage and response across regional areas. Charter and freight operations may also be constrained by a lack of available fuel on site.

Various models exist for service provision, however a common model at regional airports is for a specialist provider to lease a suitable portion of land on-airport and construct the facility to its own specifications ensuring all regulatory requirements are adhered to. The refuelling company then sells the fuel at a commercial rate to recover its costs. Facilities can include taxi-up card-swipe bowsers offering Avgas and Jet A-1 for users to self-fuel. Larger facilities at busier airport can also include a refuelling truck on site which can travel to individual hangar facilities.

### 5.2.3 AIRCRAFT MAINTENANCE

After fuel, provision of aircraft maintenance services is typically the next key enabler for greater airport utilisation. Aircraft maintenance businesses attract aircraft and their pilots to visit communities through ferrying aircraft. Maintenance providers will need a hangar workshop and space to park aircraft. They would either fit out an existing facility or more commonly build to their own requirements. Constructing such a facility is a significant investment and so businesses would likely be looking for a long-term lease arrangement. In the interim, in order to kick-start development, GISC could consider leasing the existing Council Hangar to a prospective maintenance business until the market is proven and established.

### 5.2.4 PRIVATE HANGARAGE

The ability to accommodate local aircraft is important. While demand is hard to predict, having suitable space for aircraft owners to lease is essential for increasing asset activation. This should include a mix of space for co-habitation of several smaller aircraft in a single hangar, individual hangar site for light aircraft, and larger sites suitable to accommodate private or corporate aircraft including light jets.

### 5.2.5 AIRPARK ESTATE

Airpark development in Australia has had mixed results. There are several commercially successful developments, as well as many which have been proposed but have not been developed for whatever reason. The quality of the resulting community varies greatly and success relies heavily on the right mix of vision and strategic investment by Council, with appropriate land development skills and expertise from the private sector. The viability of an airpark development at Glen Innes needs greater proving at a feasibility level before incorporating into any land use plan or development concept.

The conventional approach is to sell land to prospective owners. Given the need to offer a freehold tenure (or a very long leasehold) to enable owners to invest in the property, any land occupied by the airpark should be that which otherwise makes the least contribution to the airport operations. Airside and landside access, and servicing requirements, need careful consideration. The costs of providing and maintaining infrastructure need to be factored into any business case.

Until such detailed feasibility is concluded, and the appropriate location and size determined, the airpark should not be included in the Airport Master Plan.

### 5.2.6 FLY-IN TOURISM ACCOMMODATION

Although freehold airpark-style development requires further investigation and feasibility, several models are available for short-term accommodation on regional airports which allow users to access directly to the runway. At Glen Innes these could leverage the GIH brand and the Destination Management Plan by encouraging businesses to establish accommodation which allows aviators to fly themselves into the region and experience adventure on the ground through a tourism 'hangar + residence + vehicle' package. As a commercial operation, rather than someone's home, a long leasehold arrangement on the airside lots is likely to be more palatable to all parties and maintains flexibility for redevelopment in the longer term.

### 5.2.7 SCENIC AND OTHER FLIGHT EXPERIENCES

With the GIH and New England North West focus on stunning landscapes there is potential for scenic flights to offer another way to experience this stunning natural beauty, as a complement for visitors also immersing themselves in it on the ground. These scenic geo-tourism experiences could be through aeroplane, gliding or helicopter flights and might be provided by businesses based at Glen Innes Airport as well as itinerant operators using them as part of a passenger transport charter package.

Other experiences could leverage the Glen Innes Highlands DMP goals to create new experiences. These could initially build on more conventional aviation thrill-seeking experiences such as aerobatic flights, vintage aircraft and warbirds, skydiving and gliding while encouraging the market to innovate with new experiences over time.

Sports such as hang gliding, paragliding and hot air ballooning, whilst not suitable to take place at the airport itself (for practical and safety reasons) could be based here taking customers to more suitable sites.

### 5.2.8 FLYING TRAINING

Private flight schools, in contrast to a commercial training academy as has previously been proposed at Glen Innes, might serve not only the local community, but also the visitor economy. With a recreational pilot licence (RPL), people can obtain a certificate in as little as 20 hours flight time. Glen Innes may be an attractive location for people to come for an intensive experience to cover elements of the syllabus. Some may continue, once qualified, to obtain their private pilot licence (PPL) or perhaps wish to hire a light sport aircraft for their own recreation on a future visit to the GIH.

### 5.2.9 OTHER AVIATION BUSINESSES

A range of other aviation and aviation-support businesses might be attracted to establish at Glen Innes Airport, if and when, activity levels and support facilities are established. These might include light sport aircraft and/or RPAS (drone) manufacturing, avionics, survey and other aerial work, mustering and helicopters. All of these are likely to have a need for hangar and other facilities, including fuel and maintenance services, within an aviation business park arrangement.



## 5.2.10 COMMUNITY SUPPORT

Increased provision for aviation services supporting the community in adapting to the consequences of climate change, notably aerial fire-fighting and aeromedical services as well as disaster relief, is an important role for regional airports which can provide an essential lifeline.

## 5.2.11 AVIATION EVENTS

A vibrant aviation events scene is an effective way to increase airport utilisation and grow the visitor economy. Examples of such events at regional airports include Wings Over Illawarra at the Shellharbour Regional Airport and Warbirds Downunder at Temora. Whilst events of this size take time to establish, smaller-scale flying displays, aerobatics displays, competitions and other airshow type events are consistent with the Strategic Vision and Objectives and, with the necessary product development and promotion, are conceivable at Glen Innes.

These events would need to be the subject of thorough management plans to mitigate the risk of wildlife attraction.

## 5.2.12 A COMPLEMENTARY GLEN INNES HIGHLANDS GATEWAY

With the establishment of the New England Rail Trail, the railhead will become a significant gateway to GIH. With charter services and other flight experiences as discussed above, the Glen Innes Airport could become a complementary gateway to travel in and out of the region. In keeping with the GIH brand, it is possible to envisage visitors travelling by airline service to Armidale, experiencing the rail trail, enjoying the Glen Innes region and leaving via charter transfer (or perhaps as an add-on to a scenic flight) to connect back to the airline network and home.

The airport might also serve as a stopping off point for purely ground-based travellers as they make their way around the region into or out of Glen Innes by road, and/or a place for people to fly in and meet tour operators for a motorcycle, 4WD or gravel/mountain bike experience.

It is possible to see an opportunity for comfortable visitor facilities and amenities including places to meet and wait, enjoy food and drink, and learn more about the region's attractions. Facilities might include a cafe/restaurant (which might be a gourmet destination in itself), lounge with visitor information and passenger access to the aircraft.

## 5.2.13 CONFERENCE FACILITIES

Glen Innes has, reportedly, a need for high-capacity conference facilities capable of holding events in the order of 300-350 persons. Accommodation is not required, but conference space, catering and amenities are essential. There could be an opportunity to utilise some otherwise unutilised land that is not required for aviation purposes to accommodate this type of facility. The facilities management services required might also have some synergies with the passenger and visitor facilities, and potentially management of events and accommodation, thereby improving the overall amenity of the airport precinct

## 5.2.14 MOTOR SPORTS COMPLEX

The concept of a motor sports complex at Glen Innes Airport has been identified by GISC in stakeholder consultation. In considering motor sports on airport land, it is important to differentiate between those that would use the runway (such as drag racing) and a separate facility such as a karting track which is landside.

**Motor sports on airfield pavements should not be permitted.** Such activities are completely incompatible with the vision of a functioning and vibrant airport. In order to undertake events, the aerodrome must be closed. This prevents essential aeromedical access and disrupts other aviation users from going about their business and enjoyment. Motor sports and drag racing will damage the runway surface and risks damage to other infrastructure such as lighting, causing safety issues and expensive repairs. If there is demand for a facility for drag racing and the like in the Glen Innes region, it is not recommended to utilise the airport for this purpose.

Other motor sports facilities, such as a kart track or dirt bike course, could potentially be developed on non-airside land, subject to ensuring aspects such as dust, smoke, and lighting are managed carefully in accordance with the Airport Safeguarding Plan to avoid any impact on aviation safety.

### 5.2.15 NON-AVIATION EVENTS

In addition to aviation events, potential exists to use landside areas for outdoor events such as farmer's and craft markets, weddings and corporate events, shows and festivals. Through temporary and semi-permanent structures such as marquees, seating and amenities, the Flight School D.A. Area could be used without impinging on the ability to capitalise on any future flight school opportunity.

These events would need to be the subject of thorough management plans to mitigate the risk of wildlife attraction.

### 5.2.16 OTHER NON-AVIATION OPPORTUNITIES

Other opportunities which may be able to utilise some of the space available on airport land, but which are not otherwise related to aviation, include:

- Archery or shooting range (indoor);
- Bowling (strike or lawn, indoor or outdoor);
- Assault-style adventure course;
- Mountain bike or BMX track;
- Museum (aviation – non-flying – or non-aviation); and
- Continuation of the current DPI lease arrangements. The DPI agricultural grazing and research activity is quite compatible with airport operations (providing livestock is adequately separated from the airside by appropriate fencing). As it does not involve development of infrastructure, it preserves the flexibility for future uses to evolve and for progressive development of aviation and non-aviation facilities as the airport activity grows.

## 6. CRITICAL AERODROME PLANNING PARAMETERS

Central to the development layout planning is the establishment of appropriate airport planning parameters. These are based on the most critical design aircraft intended to use each of the airport facilities and infrastructure.

There are several parameters which contribute to determining the planning and design standards to which the future layout must adhere. These parameters are informed by the growth opportunities outlined above in [Section 5.2](#).

### 6.1 THE AERODROME REFERENCE CODE SYSTEM

The standards an aerodrome must meet, if it is 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. This system is established by the International Civil Aviation Organisation (ICAO) and is implemented in Australian aviation standards through the Civil Aviation Safety Authority (CASA).

The ARC links the aerodrome design criteria to the operational and physical characteristics of the design aircraft. The 2019 CASA *Part 139 (Aerodromes) Manual of Standards 2019* (Part 139 MOS) sets out three (3) elements that make up the ARC as described in the following subsections.

#### 6.1.1 ARC ELEMENT 1: CODE NUMBER

The ARC code number is one of the key parameters which determine the required physical characteristics of runways and the surrounding obstacle restrictions. The code number is determined by the aeroplane reference field length of the aircraft intended to use a runway. The aeroplane reference field length is a measure of the runway length required by an aeroplane in certain standardised conditions, which allows a comparison between different aircraft to be made. [Table 3](#) indicates how the code number is related to aeroplane reference field length.

Table 3: Code Element 1 - ARC Number (or runway code number)

Code number	Aeroplane reference field length
1	Less than 800 m
2	Not less than 800 m
3	Not less than 1,200 m
4	Not less than 1,800 m

Source: Part 139 (Aerodromes) Manual of Standards 2019 [Table 4.01(3)]

Reference field length is related to, but is not the same as, the physical runway length available. The operational runway length required by aircraft varies dependent on a number of factors such as aircraft load factor, wind direction, altitude, temperature and runway slope. It may also be influenced by surrounding obstacles.

#### 6.1.2 ARC ELEMENT 2: CODE LETTER

The code letter is used to define required clearances to objects for aeroplanes manoeuvring on the runways, taxiways and aprons. It is determined by the wingspan of the design aircraft as per [Table 4](#) below.

Table 4: Code Element 2 - ARC letter

Code letter	Aeroplane wingspan
A	Up to but not including 15 m
B	15 m up to but not including 24 m
C	24 m up to but not including 36 m
D	36 m up to but not including 52 m

Code letter	Aeroplane wingspan
E	52 m up to but not including 65 m
F	65 m up to but not including 80 m

Source: Part 139 (Aerodromes) Manual of Standards 2019 [Table 4.01 (4)]

### 6.1.3 ARC ELEMENT 3: OUTER MAIN GEAR WHEEL SPAN

The Outer Main Gear Wheel Span (OMGWS) relates to the ground-based manoeuvring capability of the aircraft and therefore applies to the movement area pavements, including runways, taxiways and aprons. OMGWS can be in one of four categories as per **Table 5**.

Table 5: Code Element 3 - OMGWS

Aeroplane OMGWS
OMGWS up to but not including 4.5 m
OMGWS 4.5 m up to but not including 6 m
OMGWS 6 m up to but not including 9 m
OMGWS 9 m up to but not including 15 m

Source: Part 139 (Aerodromes) Manual of Standards 2019 [Table 4.01 (5)]

## 6.2 GLEN INNES AERODROME CLASSIFICATION

The ARC elements described in **Section 6.1** above apply separately to each aerodrome facility (i.e. each runway, taxiway section, apron and aircraft parking position). However, the overall aerodrome classification is generally described in relation to the physical characteristics of the main runway and its associated obstacle limitation surfaces and navigational aids.

Glen Innes Airport facilities currently meet the dimensional requirements as follows:

### 6.2.1 RUNWAY 14/32

The main runway 14/32 is currently published as an ARC code number 3 non-precision instrument approach runway. The dimensions of the runway and associated runway strip meet the following:

- The runway width of 30 m meets the standards for a runway ARC code number of 3 and on OMGWS of 6 m up to but not including 9 m, in accordance with Part 139 MOS 2019 6.02 (1);
- The runway graded strip width of 90 m meets the standards for a non-instrument approach runway ARC code number of 3, where the runway width is 30 m and the runway is not used for schedule international air transport operations, in accordance with Part 139 MOS 2019 6.17 (2);
- The overall runway strip width, including the flyover area of 150 m, meets the standards for an instrument non-precision approach runway ARC code number of 2, in accordance with Part 139 MOS 2019 6.17 (4); and
- The overall runway strip width of 150 m can be deemed to comply with the standards for an instrument non-precision approach runway ARC code number 3 as an existing grandfathered facility which meets the standards that were in place immediately before the commencement of the Part 139 MOS 2019 under the transitional provisions set out in Section 2.04 therein.

Continued compliance with these and other relevant provisions of the Part 139 MOS 2019 for a code number 3 instrument non-precision approach runway is considered appropriate to the Glen Innes Airport role and opportunities set out in **Section 5.2**.

### 6.2.2 RUNWAY 10/28

The cross runway 10/28 is currently published as an ARC code number 2 non-instrument approach runway. The dimensions of the runway and associated runway strip meet the following:



- The runway width of 30 m meets the standards for a runway ARC code number of 3 and on OMGWS of 6 m up to but not including 9 m, in accordance with Part 139 MOS 2019 6.02 (1);
- The current runway strip width is 90 m. A runway graded strip width of 80 m will meet the standards for a non-instrument approach runway ARC code number of 2, in accordance with Part 139 MOS 2019 6.17 (2).

Continued compliance with these and other relevant provisions of the Part 139 MOS 2019 for a code number 2 non-instrument approach runway is considered appropriate to the Glen Innes Airport role and opportunities set out in [Section 5.2](#).

### 6.3 DESIGN AIRCRAFT

The design aircraft is selected by the airport operator to inform the master planning process, by determining the set of standards and regulations which will apply to the airport and which should be adopted in the layout planning.

The design aircraft defines which operations may be accommodated at the airport in the future and, conversely, the operations which the airport will not be able to accept.

Typically, non-passenger (i.e. General Aviation) operations fall into three groups:

- Code 1A/2A aeroplanes, which are typical of private and recreational flying and some smaller charter operations;
- Code 1B/2B aeroplanes, which are typical of aeromedical, aerial work, charter, freight and private or small business jet operations; and
- Code 3C/4C aeroplanes, which include some aerial work, (especially large air tanker types for fire-fighting), charter, freight and larger business jets.

Most facilities at Glen Innes can be adequately planned for use by aeroplanes up to ARC 2B, which is typical of current operations at the airport. However, it is prudent to maintain flexibility for larger aircraft up to Code 3C in order to preserve opportunities into the future.

**Table 6** provides some critical parameters associated with the range of aircraft types anticipated to serve the opportunities discussed in [Section 5.2](#).

Table 6: Typical Aircraft Types

Aircraft	ICAO Designator	Pax	MTOW (kg)	Wingspan (m)	ARC Number	ARC Letter	ARC OMGWS
Cessna 172R Skyhawk	C172	3	1,100	10.9	1	A	0 < 4.5m
Beech Baron 58	BE58	5	2,450	11.5	1	A	0 < 4.5m
Learjet-60	LJ60	8	10,650	13.4	1	A	0 < 4.5m
Piper PA-42	PAY4	6-9	5,460	14.5	1	A	4.5 < 6m
Cessna 208 Caravan	C208	9	3,630	15.9	1	B	0 < 4.5m
Air Tractor AT-802F	AT8T	-	7,250	18.1	1	B	0 < 4.5m
Cessna Citation 560	C560	9	9,200	17.0	2	B	4.5 < 6m
Beech King Air 350i	B350	9	6,800	17.7	2	B	4.5 < 6m
Embraer Legacy 500	E550	8-12	10,750	20.3	3	B	0 < 4.5m
Fairchild Metro III / 23	SW4	19	7,250	17.4	3	B	4.5 < 6m
Beech 1900D	B190	19	7,770	17.7	3	B	4.5 < 6m
Embraer ERJ-145	E145	50	22,000	20.1	3	B	4.5 < 6m
Embraer Legacy 600	E35L	13-14	22,500	21.2	3	B	4.5 < 6m
SAAB 340B	SF34	34	13,160	21.5	3	B	4.5 < 6m

Aircraft	ICAO Designator	Pax	MTOW (kg)	Wingspan (m)	ARC Number	ARC Letter	ARC OMGWS
Jetstream 41	JS41	19	6,950	18.4	3	B	6 < 9m
ATR72	AT76	68	23,000	27.1	3	C	4.5 < 6m
Dash 8-100/200	DH8B	36	16,470	27.4	3	C	6 < 9m
Dash 8-300	DH8C	50	19,510	27.4	3	C	6 < 9m
Dash 8-Q400	DH8D	72	29,260	28.4	3	C	9 < 15m

Note: Data are indicative only to illustrate common aircraft groupings for master planning purposes only. Actual data may vary according to manufacturer's data and actual aircraft operator configuration.

Source: AviPlan, Wikipedia

## 6.4 FACILITY REQUIREMENTS

### 6.4.1 RUNWAYS

Runway width requirements are determined by reference to ARC number and OMGWS. A runway width of 30 m allows for Code 3 Aeroplanes with OMGWS up to but not including 9 m, which encompasses all of the design aircraft for Glen Innes except for the Dash-8 Q400. However, the Q400 has previously been given approval for use on 30 m wide runways. The current runways are adequate for the expected operating aircraft types into the future.

Although not envisaged as an immediate requirement under this Master Plan, additional length may be beneficial for larger aircraft, in particular Q400 aerial fire-fighting units, as the current length may not allow take-off at maximum weight. Additional length could be provided within the airport land to the north and the south. The actual length and the nature of the extension (conventional for use by all operations in each direction, or 'starter' extension to provide additional take-off length in one direction only and/or stopway in the opposite direction) would need to be determined through further detailed feasibility investigations. Such investigations should cover all aspects of compliance including examination of runway longitudinal profile and the obstacle environment. However, the Master Plan should preserve the land to the north and south of the existing runway for some form of extension in each direction, should this prove necessary and justifiable in the future. The obstacle environment off-airport should also be protected as far as possible, to maximise the operational benefit-to-cost of any extension/s.

### 6.4.2 RUNWAY END SAFETY AREAS

Even if runway extensions are not provided, the land at each end of both runways beyond the end of the runway strip (clearway) should be preserved in a state compliant with the requirements Runway End Safety Areas (RESAs), in accordance with CASA Part 139 MOS (2019) which are:

- A minimum width of 60 m for both runways;
- A minimum length of 60 m and a preferred length of 120 m for Runway 10/28; and
- A minimum length of 240 m and a preferred length of 240 m for Runway 14/32.

The preferred length should be provided where space is available. The slopes on a RESA should not exceed 5% for the downward longitudinal slope, or the transverse slope (upward or downward).

### 6.4.3 TAXIWAYS & APRONS

Taxiway and apron spatial planning is dependent on the ARC letter (for wingtip clearances) and the OMGWS (for pavement requirements). For the purposes of taxiways and apron layout, the following groups of aircraft are logical:

- Code A aeroplanes with OMGWS less than 4.5m
- Code B aeroplanes with OMGWS less than 6 m and Code A aeroplanes with OMGWS greater than 4.5m but less than 6 m; and

- Code C aeroplanes with OMGWS less than 9 m and Code B aeroplanes with OMGWS greater than 6 m but less than 9 m.

In general, areas on-airport intended for use by aircraft in each group should be planned to meet the wingtip and pavement width/wheel clearance requirements (as defined in Part 139 MOS (2019) applicable to the ARC letter and OMGWS category of each group, as set out in Table 7

Table 7: Aircraft Groups for Taxiway & Apron Planning

Group	ARC Letter	OMGWS	Min TWY Width	Min Wheel Clearance	Taxiway CL to object clearance	Taxilane CL to object clearance
I	A	0 < 4.5m	7.5 m	1.5 m	15.5 m	12.0 m
II	A	4.5 < 6 m	10.5 m	2.25 m	20.0 m	16.5 m
	B	< 6 m				
III	B	6 m < 9 m	15.0 m	3.0 m	26.0 m	24.5 m
	C	< 9m				

**Note:** the Dash-8 Q400 has an OMGWS of 9 m < 15m, which would require a 45 m wide runway and 23 m wide taxiway under the Part 139 MOS (2019). However as this aircraft has historically been approved to operate on 15 m wide taxiways and 30 m wide runways throughout Australia and is only anticipated to operate to Glen Innes infrequently for fire-fighting duties, this approval is assumed to endure for master planning purposes.

#### 6.4.4 HANGAR LOTS

In practice, hangar lots sizes can vary greatly, due to a range of factors which relate to the operational requirements of the users. However, for planning purposes, two hangar lot sizes have been assumed based on experience of typical requirements at other regional airports.

- Large hangar lots 50 m deep and nominally 35 m wide. These lots are suitable to accommodate a medium-sized hangar of approximately 30 m wide and 20 m deep and could house 1 or 2 aircraft 15 - 20 m in length, with space to park the aircraft in front of the taxilane and room landside for vehicle parking.
- Small hangar lots 25-30 m deep and nominally 18 m wide. These lots are suitable to accommodate a small hangar of approximately 15 m x 15 m, sufficient to house a typical light private aircraft, with space to park the aircraft in front of the hangar clear of the taxilane.

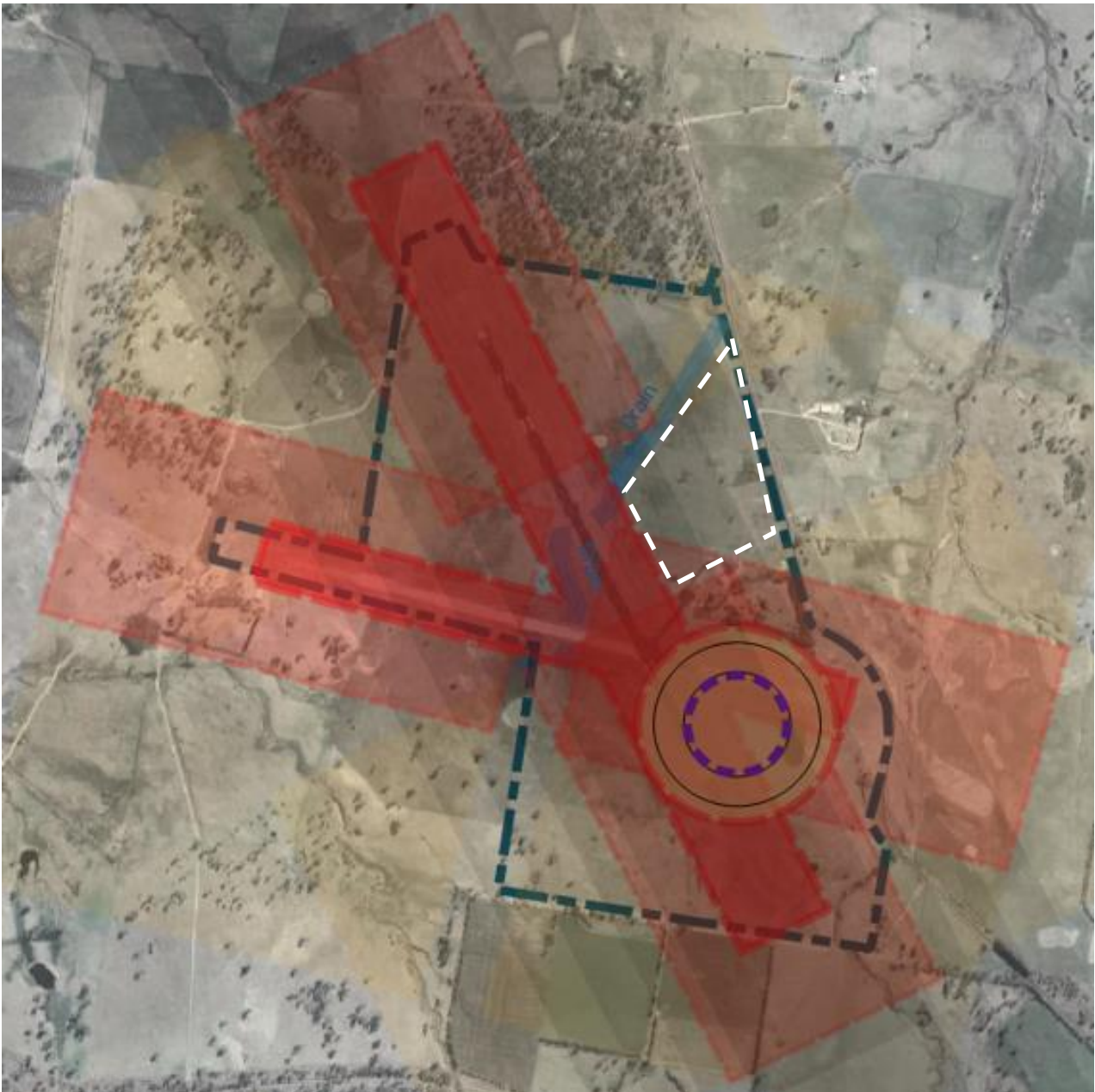
Hangar lot boundaries should be subject to further detailed design and investigation/consultation on specific user requirements is recommended prior to finalising and design or subdivision plans.

## 7. CONCEPT LAND USE PLAN

### 7.1 DEVELOPMENT CONSTRAINTS

Various constraints existing which limit the possible development and appropriate land uses on the Glen Innes Airport site. These include various airport safeguarding requirements (as described in detail in **Section 0**) and Bureau of Meteorology anemometer obstacle clearance limits. These constraints are indicated conceptually in **Figure 5**. This assessment identifies that the area immediately to the north of the existing facilities and south of the open drain (outlined in white dashed line) is the least constrained area on airport land. With proximity to existing services also, it makes sense for development to proceed first in this area. Future development could then progress to the north of the drain, having regard to the airport safeguarding requirements.

*Figure 5: Illustrative Development Constraints*





## 7.2 LAND USE PRECINCTS

The Glen Innes Airport Concept Land Use Plan provides a framework to accommodate a range of aviation and non-aviation growth and development opportunities in a phased and flexible manner. Precincts have been established for the following:

- » Aviation Operations and Immediate Development
- » Aviation Business Park
- » Multi-Use (Airside/Landside) Zone
- » Gateway and Events Zone
- » Non-Aviation Activities
- » Future Aviation and Non-Aviation Development.

The Concept Land Use plan is illustrated on [Figure B21641/01](#) at [Appendix B](#). Anticipated uses and development for each are described in the following subsections.

### 7.2.1 AIRPORT OPERATIONS & IMMEDIATE DEVELOPMENT

Areas have been defined to preserve current and future aviation operations, and to enable immediate development opportunities close to existing hangar, taxiway and apron infrastructure and services. It is anticipated that this could facilitate the accommodation of an aircraft maintenance business, fuel facility and private hangarage in a layout consistent with future aviation and non-aviation development.

### 7.2.2 AVIATION BUSINESS PARK

To accommodate the range of aviation business opportunities presented by the Glen Innes Airport strategic vision and role, an area suitable for the construction of hangars with appropriately-sized lease lots for aviation uses is required.

The aviation business park – an area located on airport that is related to aviation business activity – diversifies the economy and generates activity at the airport. A consolidated area has been identified that can support and facilitate a range of aviation businesses such as aircraft maintenance and repair, agricultural support, private flight schools, charter operators and aircraft manufacture. This area can also incorporate fly-in hangar accommodation in premium lots facing the runway, which would be especially attractive to these types of customer.

### 7.2.3 MULTI-USE (AIRSIDE/LANDSIDE) ZONE

An area suitable for a variety of interchangeable uses has been defined to the north of the Runway 28 threshold and south of the Flight School D.A. Area. This area corresponds to the apron and taxiway extents defined in the Local Government Engineering Services (LGES) Glen Innes Aerodrome Upgrade design for Australia Asia Flight Training Pty Ltd (AAFT). In this way, infrastructure and uses in this area can respect the pre-existing design and will not prohibit the ability to revert to the AAFT concept should another commercial flight training opportunity arise in the future.

It is anticipated this zone could accommodate the following uses, with periodic transition of uses to suit demand through the year:

- Intensive aerial fire-fighting ground operations, similar to what occurred in the 2020 bushfire season;
- Flight-line activity associated with aviation events;
- Intermittent landside areas for spectator viewing of aviation events (through deployment of temporary fencing);
- Overflow itinerant aircraft parking for fly-ins and other private recreational flying events, or for overnight charter/corporate/private jet aircraft; and
- Other community support emergency services deployment such as disaster relief.

This zone is adjacent to the Gateway & Events Zone and some permeability/connectivity is envisaged between these areas during aviation events.

#### 7.2.4 GATEWAY & EVENTS ZONE

Similarly to the Multi-Use (Airside/Landside) Zone, the Gateway & Events Zone is planned so as not to impinge on the opportunity to develop a flight school as previously envisaged, should that opportunity re-emerge, while at the same time not unduly preventing activation of the area in the absence of a flight school.

The current Flight School D.A. Area is a pleasantly landscaped area where it is envisaged a range of non-aviation events such as such as festivals, markets, concerts and potentially weddings and corporate events, could take place, through the use of temporary facilities. This area could also be used to provide greater amenity to aviation events, providing landside areas for hospitality, food and beverage, exhibitions and related entourage away from the airside movement area.

Also in this zone, in and around the existing terminal and aero club, the 'gateway' facilities such as meeting and waiting spaces, café/restaurant, visitor information, passenger terminal/transit and flight administration areas, and amenities. It is envisaged the aero club could be incorporated within the redevelopment of this area, or it could be relocated to another area, depending on what is appropriate to all parties.

Finally in this zone, an air ambulance patient transfer facility is provided, with access from Gordon Smith Drive and direct access to the apron, separate from the public areas for patient privacy.

#### 7.2.5 NON-AVIATION ACTIVITIES

The area along the eastern boundary of the airport, adjacent to Emmaville Road, is not envisaged to be required for aviation uses in this Master Plan. The cost to provide taxiway access from the runway all the way to hangar sites at the eastern boundary would be significant and may inhibit the business case for development. Being further from the runway, this area is less constrained by height limits and other safeguarding requirements and so may lend itself to a wider variety of development options.

Some activities that might be accommodated in this area include car parking for events (in the southern portion, just north of the RFS shed), conference facilities, motor sports of an airport-compatible nature and other non-aviation opportunities.

#### 7.2.6 FUTURE DEVELOPMENT

Areas are identified east of Runway 14/32 and to the north of the existing open drain for future development of aviation uses (closest to the runway) and non-aviation uses (closest to Emmaville Road). The exact delineation and layout would be subject to more detailed analysis and planning beyond this Master Plan. This land can continue on long-term lease to DPI indefinitely, until such time as demand for development requires.

An airpark estate, if it were to be further investigated in the future, might consider the area along the northern boundary of this future development zone, allowing it to be somewhat separated from commercial aircraft operations and to have a separate access from Emmaville Road.

Future development of the remaining areas of the airport site (the long-term DPI lease areas to the west of Runway 14/32 and southeast of the runway intersection, would be the subject of possible development beyond this Master Plan provided that access and services infrastructure can be resolved.

### 7.3 AIRSIDE INFRASTRUCTURE

Airside infrastructure consists of the runway system, taxiway network and apron areas. Although some existing aerodrome facilities are 'grandfathered' in accordance with the old MOS under the transition to new Part 139 MOS (2019) standards, all future airside infrastructure should be planned as far as is practicable to be in accordance with the new standards.

The airside infrastructure concept maintains, as far as possible, the LGES design for the AAFT concept, with the main difference that the parallel taxiway to Runway 14/32 (TWY L) north of the existing taxiway (TWY A) is separated 158 m from the runway centreline, rather than 93 m, in order to ensure compliance with the new standards.

## 8. CONCEPT FACILITIES DEVELOPMENT PLAN

The staged concept facilities development plan is presented below. All concept layouts are indicative in nature and, although they have been planned to enable compliance in accordance with the applicable aviation standards for aerodrome facilities, detailed planning and design in accordance with the *CASA Part 139 (Aerodromes) Manual of Standards 2019* and other applicable standards must be completed prior to implementation of any development.

### 8.1 STAGE 1 (IMMEDIATE) DEVELOPMENT

The following elements are recommended for implementation as soon as possible, to preserve the operational capability of the airport and establish the infrastructure and services necessary to attract more aviation activity over time:

- Rehabilitation of the existing runway, taxiway and apron pavement;
- Replacement and upgrade of the airfield lighting system with more efficient and less maintenance-intensive LED technology in accordance with the latest standards;
- Upgrade of the drainage network to improve operational outcomes due to inundation of the runway intersection;
- Provision of the taxiway connection between TWY A and Runway 14/32 may provide operational advantage for high-intensity fire-fighting operations and consultation with the RFS on this matter is recommended. Construction of this could be considered in conjunction with the drainage upgrade work, as it may be easier to undertake at the same time rather than at a later date;
- Establishment of an aviation refuelling facility; and
- Provision of hangar lots suitable for one or two larger commercial businesses and two to six smaller private sites.

To facilitate this development, a grass taxiway network and unsealed landside access road are proposed. A small amount of expansion of the main apron is also recommended, undertaken in conjunction with the pavement reconstruction, in order to allow aeromedical and other itinerant aircraft to park clear of the taxiway access to the fuel facility and hangar developments.

Stage 1 (Immediate) development is illustrated on [Figure B21641/02](#) at [Appendix A](#).

### 8.2 STAGE 2 (MEDIUM TERM) DEVELOPMENT

Medium term development is more speculative than the Stage 1 (Immediate) and the timing and nature of individual developments will depend on a combination of demand, business case, operational need and the alignment of particular opportunities with the strategic objectives and vision for the Glen Innes Airport. The Stage 2 development concept is intended to map out the indicative development framework and broad concept into which detailed layouts can be established in response to specific triggers.

Some of the developments anticipated over the medium term (nominally five to fifteen years) in order to facilitate the vision are illustrated in [Figure B21641/03](#) at [Appendix B](#) and discussed below.

#### 8.2.1 AVIATION BUSINESS PARK

As activity increases, there is potential for progressive development of the aviation business park precinct, working northwards from the Stage 1 facilities. This precinct would include incremental construction of sealed taxiways, an area for larger commercial hangars and a separate area for smaller commercial and private aircraft.

The development concept is illustrated indicatively on [Figure B21641/03](#) at [Appendix A](#). It is anticipated development would commence once the area for immediate hangar development is full and a business or private tenant requires a site of a different size than is available.

Development of larger hangar sites is intended to be incremental east-to-west and south-to-north, so that access roads, services and all-weather taxiway access of a suitable strength can be progressively provided. It is important to note that, while the larger hangar lots have been sized to suit a typical aviation business

development, detailed layouts in this area should be prepared closer to the commencement of the Aviation Business Park development to ensure the configuration of facilities is closely matched to the precise nature of the demand, as best can be identified at the time through discussions with potential lessees.

For the most space-efficient layout, smaller hangars should be grouped together in their own sub-precinct, which is positioned to the north of the park. These hangars can often be 'off-grid', with solar power and rainwater tanks incorporated, if required before it is economical to provide mains services. These could also be accessed initially by grass taxiway, until such time as there is an operational and economic basis for providing all-weather taxiway along the ultimate parallel taxiway alignment in Stage 3.

To facilitate the business park development, it is anticipated that an all-weather taxiway connection to the main taxiway and thence the runways would be required, and that sealing the taxiway loop access to the fuel facility would improve the amenity to users. The Code A grass taxilane developed in Stage 1 could also be upgraded to all-weather, if operationally and commercially justified.

Sealing an extension of the Stage 1 access road would also be appropriate in this Stage.

### 8.2.2 MAIN APRON EXPANSION

Expansion of the main apron to accommodate two KingAir 350 or similar aircraft, or one larger aeroplane, is envisaged within Stage 2, to allow charter operators greater access to the terminal area for transiting passengers, without limiting access for aeromedical aircraft.

### 8.2.3 PATIENT TRANSFER FACILITY

A patient transfer facility would provide additional amenity for aeromedical patients and could be provided in collaboration with the air ambulance aircraft operators.

### 8.2.4 EVENTS ARENA

Establishment of the Events Arena portion of the Gateway & Events Zone could be activated with minimal infrastructure development, as it is envisaged the use of this area will be conducted with temporary facilities on an event-by-event basis.

### 8.2.5 'GATEWAY' FACILITIES

The area in and around the current terminal and public toilets would be re-developed to incorporate integrated 'gateway' facilities including meeting and waiting spaces, café/restaurant, passenger transfer, amenities, aero club and administration/briefing areas. These could be in a single or several interrelated and sympathetically designed buildings.

### 8.2.6 MULTI-USE AIRSIDE/LANDSIDE ZONE

Sealed apron and taxiway development of part of the LGES flight school apron design would provide a multi-use hardstand area for aircraft operations, and taxiway connection to the main taxiway and Runway 28 threshold. It is anticipated that the remainder of the eastern portion of Runway 10/28, at least, would be sealed at this stage to assist in pavement surface maintenance under regular traffic.

### 8.2.7 NON-AVIATION ACTIVITIES ZONE

Through the upgrade of the aviation business park access road, connectivity is provided to a zone north of the previous NDB location allowing this area to be used for activities that do not require direct access to the airside. Possible uses that might be appropriate in this area with appropriate safeguarding controls to avoid any impacts on aviation safety include car parking for events, conference facilities, or a motor sports area for activities such as karting or motocross.



### 8.3 STAGE 3 (LONG TERM) DEVELOPMENT

Stage 3 (Long Term) represents the ultimate development envisaged by this Master Plan prior to encroaching into 'future' development areas. The key facilities and infrastructure anticipated under the Long Term development concept are illustrated on [Figure B21641/04](#) at [Appendix A](#) and include:

- Sealing of Runway 10/28 and completion of the parallel taxiway to the west of Runway 14/32 in accordance with the LGES upgrade design;
- Connection of the parallel taxiway from the Aviation Business Park to the runway for improved operational traffic flow and possible widening of the southern section of parallel taxiway to accommodate larger (group III) aircraft;
- Possible expansion of the main apron to accommodate additional and potentially larger (Group III) aircraft; and
- Expansion of the multi-use precinct apron to the full LGES flight school design extents, for potential increased use by community support and aviation events (unless and until re-purposed for a possible future flight training school use).

## 9. AIRPORT SAFEGUARDING PLAN

### 9.1 THE NEED FOR SAFEGUARDING

Adequate protection of the basic capability to undertake aircraft operations in accordance with accepted safety standards and regulatory requirements, and in efficient and economic manner, is imperative to the future realisation of aeronautical opportunities at Glen Innes Airport. Safeguarding is particularly important where the capability for future upgrades is to be preserved, for example to accommodate larger aircraft. Development on and around Glen Innes Airport will require adequate respect for safeguarding in order to develop the vision and objectives of the Master Plan and preserve possible future opportunities.

Airport safeguarding includes a number of elements that will be required throughout the planning and development processes. The various safeguarding elements will be triggered by different activities and aircraft operations.

### 9.2 NATIONAL AIRPORTS SAFEGUARDING FRAMEWORK

The National Airports Safeguarding Framework (NASF) is a national land use planning framework that aims to:

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

The NASF was developed by the National Airports Safeguarding Advisory Group (NASAG), comprising of Commonwealth, State and Territory Government planning and transport officials, the Australian Government Department of Defence, the Civil Aviation Safety Authority (CASA), Airservices Australia and the Australian Local Government Association (ALGA).

NASF currently consists of a set of seven principles and nine guidelines. The full NASF principles and guidelines can be found on the Department of Infrastructure and Regional Development's website at: [www.infrastructure.gov.au/aviation/environmental/airport\\_safeguarding/nasf](http://www.infrastructure.gov.au/aviation/environmental/airport_safeguarding/nasf).

The NASF principles are as follows, and each guideline is described in the following subsections.

- **Principle 1:** The safety, efficiency and operational integrity of airports should be protected by all governments, recognising their economic, defence and social significance
- **Principle 2:** Airports, governments and local communities should share responsibility to ensure that airport planning is integrated with local and regional planning
- **Principle 3:** Governments at all levels should align land use planning and building requirements in the vicinity of airports
- **Principle 4:** Land use planning processes should balance and protect both airport/aviation operations and community safety and amenity expectations
- **Principle 5:** Governments will protect operational airspace around airports in the interests of both aviation and community safety
- **Principle 6:** Strategic and statutory planning frameworks should address aircraft noise by applying a comprehensive suite of noise measures
- **Principle 7:** Airports should work with governments to provide comprehensive and understandable information to local communities on their operations concerning noise impacts and airspace requirements.

#### 9.2.1 GUIDELINE A

##### Measures for Managing Impacts of Aircraft Noise

NASF Guideline A can be used in the assessment of new development applications for noise sensitive uses.

While the Australian Noise Exposure Forecast (ANEF) system is recognised by a number of jurisdictions in land use planning decisions, the 20 and 25 ANEF zones do not capture all high noise affected areas around an airport. In addition, Australian Standard AS2021-2015 recognises that the ANEF contours are not

necessarily an indicator of the full spread of noise impacts, particularly for residents newly exposed to aircraft noise.

Guideline A is the Government's recognition of the need to consider a complementary suite of noise measures in conjunction with the ANEF system to better inform strategic planning and to provide more comprehensive and understandable information on aircraft noise for communities.

The guideline notes that an ANEF may not be available at all general aviation airports or airports with low frequencies of scheduled flights, but that whether or not an ANEF is prepared, land use planning should take account of flight paths and the nature of activity on airports.

No noise contours are provided as a part of this Master Plan however, prior to any rezoning of surrounding land, Guideline A should be taken into account. Guideline A suggest minimum 'zone of influence' of five (5) kilometres around an aerodrome for the purposes of considering aircraft noise with respect to land use planning.

**Figure B16241/05** at **Appendix A** illustrates a distance of five kilometres from each of the ultimate runway ends at Glen Innes Airport.

### 9.2.2 GUIDELINE B

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

The purpose of this guideline is to assist land use planners and airport operators in their planning and development processes to reduce the risk of building generated windshear and turbulence at airports near runways.

Applicability of this Guideline is initially determined by the location of the building within an 'assessment trigger area' around the runway ends, that is:

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

The guideline recommends that all developments within the assessment trigger areas which will infringe a 1:35 sloping surface from the runway centreline should be subject to further assessment.

Positioning of all developments on airport will need to be evaluated on a case-by-case basis. Subject to confirmation through such evaluation that no adverse impact on aircraft operations is predicted, then buildings may be located closer to the runways and within the 1:35 surface.

**Figure B16241/06** at **Appendix A** illustrates the assessment trigger areas. Proposed developments in these areas should initially be assessed against the relevant 1:35 surface as described in Guideline B. Buildings that are proposed to infringe this surface may require further assessment in accordance with Guideline B to confirm that no adverse impact on aircraft operations is predicted.

### 9.2.3 GUIDELINE C

#### Managing the Risk of Wildlife Strikes in the Vicinity of Airports

The purpose of Guideline C is to inform the land use planning decisions and the way in which existing land use is managed in the vicinity of airports with respect to the attraction of wildlife, particularly birds. A table is included in Attachment 1 which indicates wildlife attraction risk and associated actions for developments within buffer zones around airports of 3, 8 and 13 kilometres radius.

GISC should consider Guideline C in its planning decisions with respect to land uses and developments within 13 kilometres of the Airport. Refer **Figure B16241/07** at **Appendix A**.

### 9.2.4 GUIDELINE D

#### Managing the Risk to Aviation Safety of Wind Turbine Installations

This guideline provides general information and advice in relation to wind farms and turbines and their hazards to aviation. Proponents of such installations should take account of Guideline D in undertaking assessments of the impacts of the proposals, including on aviation.

GISC should be aware of Guideline D and it may assist in evaluating and commenting on any wind farm proposals.

## 9.2.5 GUIDELINE E

### Managing the Risk of Distraction to Pilots from Lighting in the Vicinity of Airports

The control of light emissions near the airport is of importance to safe aircraft operations for two reasons. Firstly, if lights emit too much light above the horizontal plane, there is the possibility that a pilot can be momentarily dazzled and unable to read instruments or recognise essential cues from aeronautical lights. Secondly, lights might create a pattern that looks similar runway lighting and which may cause confusion for pilots.

NASF Guideline E provides guidance on the risk of distractions to pilots of aircraft from lighting and light fixtures near airports. The *CASA Manual of Standards part 139 Aerodromes* Section 9.21: *Lighting in the Vicinity of Aerodromes* sets out the restrictions and provides advice to lighting suppliers on the general requirements, information and correspondence avenues.

Advice for the guidance of designers and installation contractors is provided for situations where lights are to be installed within a 6 kilometre radius of the airport. Lights within this area fall into a category most likely to be subject to the provisions of regulation 94 of CAR 1988.

The primary area is divided into four light control zones; A, B, C and D. These zones reflect the degree of interference ground lights are permitted to cause pilots as they approach. Lighting associated with any developments should therefore meet the maximum intensity of light sources measured at 3 degrees above the horizontal associated with each Zone as follows:

- Zone A – 0 cd;
- Zone B – 50 cd;
- Zone C – 150 cd; and
- Zone D – 450 cd.

GISC should consider Guideline E in relation to any proposed lighting installations on airport, as well as off-airport (for example, associated with sports fields, industrial facilities and similar) within 6 kilometres of the Airport. Refer **Figure B16241/08** at **Appendix A**.

## 9.2.6 GUIDELINE F

### Managing the Risk of Intrusions into the Protected Airspace of Airports

Guideline F is designed to address the issue of intrusions into the operational airspace of airports by tall structures, such as buildings and cranes in the vicinity of airports.

The safety, efficiency and regularity of aircraft operations require airspace to be largely free of obstacles which may make it unsuitable for the conduct of visual and instrument flights.

The OLS for an airport describe the airspace boundaries for flight in proximity to an airport which should be kept free of obstacles that may endanger aircraft operations in visual operations or during the visual stages of an instrument flight. The OLS components are defined in the International Civil Aviation Organization (ICAO) Annex 14 and in Chapter 7 of the *CASA Part 139 (Aerodromes) Manual of Standards 2019*.

At Glen Innes Airport the Obstacle Limitation Surfaces (OLS) are currently prepared based on the existing published runway lengths of 1,200 m for Runway 10/28 (as a Code 2 non-instrument runway grandfathered in accordance with CASA MOS Part 139 v.1.15 and 1,498 m for Runway 14/32 (as a Code 3 instrument non-precision runway grandfathered in accordance with CASA MOS Part 139 v1.15). See also **Section 6.2** for further discussion on the compliance and category of runway regarding the transitional arrangements from CASA MOS Part 139 v1.15 to the Part 139 MOS (2019) OLS standards.

Aerosafe Inspections Aerodrome Safety Inspection report 2017 recommended that GISC should be encouraged to prepare future OLS plans based on both runways being Code 3 instrument non-precision at their optimum length of 2,150 m for Runway 14/32 and 1,676 m for Runway 10/28. However the same report also notes that a return to the previous Code 3 status is unlikely for Runway 10/28 in the short-medium term as it would result in building and vegetation transitional surface penetrations and land acquisition at the 10 end. As a result of the transition to the Part 139 MOS (2019) any upgrade to the runway code would require the OLS to meet the new standards for Code 3 non-precision approach, with a slope of 2% and an inner edge/runway strip width of 280 m. This would not be possible within the current airport land boundary to the west of Runway 14/32 and would sterilise the area identified for the airside/landside multi-use precinct.

GISC may wish to consider the protection of approach and take-off climb surfaces applicable to an increase in the length of Runway 14/32 as illustrated on **Figure B16241/09** at **Appendix A**.

Subject to aeronautical assessment, an obstacle may be permitted to penetrate the OLS without placing restrictions on the allowable operations, but will normally require it to be marked and/or lit to make it conspicuous to pilots. CASA may also impose operational limitations on aerodrome users in the presence of obstacles. To avoid any undesirable limitations on operations, it is recommended to ensure that obstacles are not permitted to penetrate the approach or departure areas.

The Guideline also addresses activities that could cause air turbulence that could affect the normal flight of aircraft operating in the prescribed airspace and/or emissions of steam, other gas, smoke, dust or other particulate matter that could affect the prescribed airspace in accordance with Visual Flight Rules (VFR).

Glen Innes Airport has published instrument approaches to Runway 14 and Runway 32. GISC should work with Airservices Australia to ensure the information needed for monitoring obstacles within the associated instrument approach procedure protection areas is available, to allow it to fulfil its obligations under the relevant regulations.

### 9.2.7 GUIDELINE G

#### **Protecting Aviation Facilities – Communication, Navigation and Surveillance (CNS)**

The purpose of Guideline G is to provide a consistent approach to land use planning protection of CNS facilities. Guideline G assists land use planning decision makers with guidance for assessing development proposals in Building Restricted Areas (BRA). Attachment 3 to the Guideline provides the BRAs for aviation facilities.

Since the NDB has been decommissioned and subsequently removed, Glen Innes Airport does not have any of the aviation facilities which are the subject of Guideline G.

### 9.2.8 GUIDELINE H

#### **Protecting Strategically Important Helicopter Landing Sites (HLS)**

Guideline H provides guidance on the ongoing operations, protection of flight paths and areas for off-airport HLS. As such it is not applicable to on-airport facilities. However, any on-airport helicopter facilities should be planned and designed in accordance with the guidance set out in CAAP 92-2(2) *Guidelines for the establishment of on-shore helicopter landing sites*.

### 9.2.9 GUIDELINE I

#### **Managing the Risk in Public Safety Areas at the Ends of Runways**

Guideline I provides guidance on approaches for the application of a Public Safety Area (PSA) planning framework in Australian jurisdictions. The Guideline is intended to ensure there is no increase in risk from new development and to assist land-use planners to better consider public safety when assessing development proposals, rezoning requests and when developing strategic land use plans.

A PSA is a designated area of land at the end of an airport runway within which development may be restricted in order to control the number of people on the ground around runway ends. The size and shape of a PSA typically depend on the statistical chance of an accident occurring at a particular location. The risk is related to the number and type of aircraft movements and the distance from the critical take-off and landing points. PSAs are based on the landing threshold for each end of the runway and in most cases become narrower with increasing distance before the threshold.

Guideline I provides two examples of most relevance to Australia (the UK and Queensland approaches) to developing PSA extents:

- The UK model is the most formalised approach to defining a PSA and has been applied at a number of international and Australian airports; and
- The Queensland model is a modified version of the policy and research conducted in the UK.

The Queensland model may be more appropriate at a regional airport such as Glen Innes. Under the Queensland model, an airport's main runway requires a PSA if the runway meets the following criteria:

- RPT jet aircraft services are provided, or



- Greater than 10 000 aircraft movements occur per year (excluding light aircraft movements).

As neither of these criteria are likely to be exceeded at Glen Innes, the requirement for Public Safety Areas is not triggered under this Master Plan. Nevertheless, Council should be cognisant that the areas around the ends of runways (generally within 1 kilometre of the runway end and within 150 metres of the centreline) are subject to greater risk from aircraft accidents than other areas. Development within these areas should be sensitive to this situation. NASF Guideline I provides more information.

## APPENDIX A: AIRPORT MASTER PLAN FIGURES

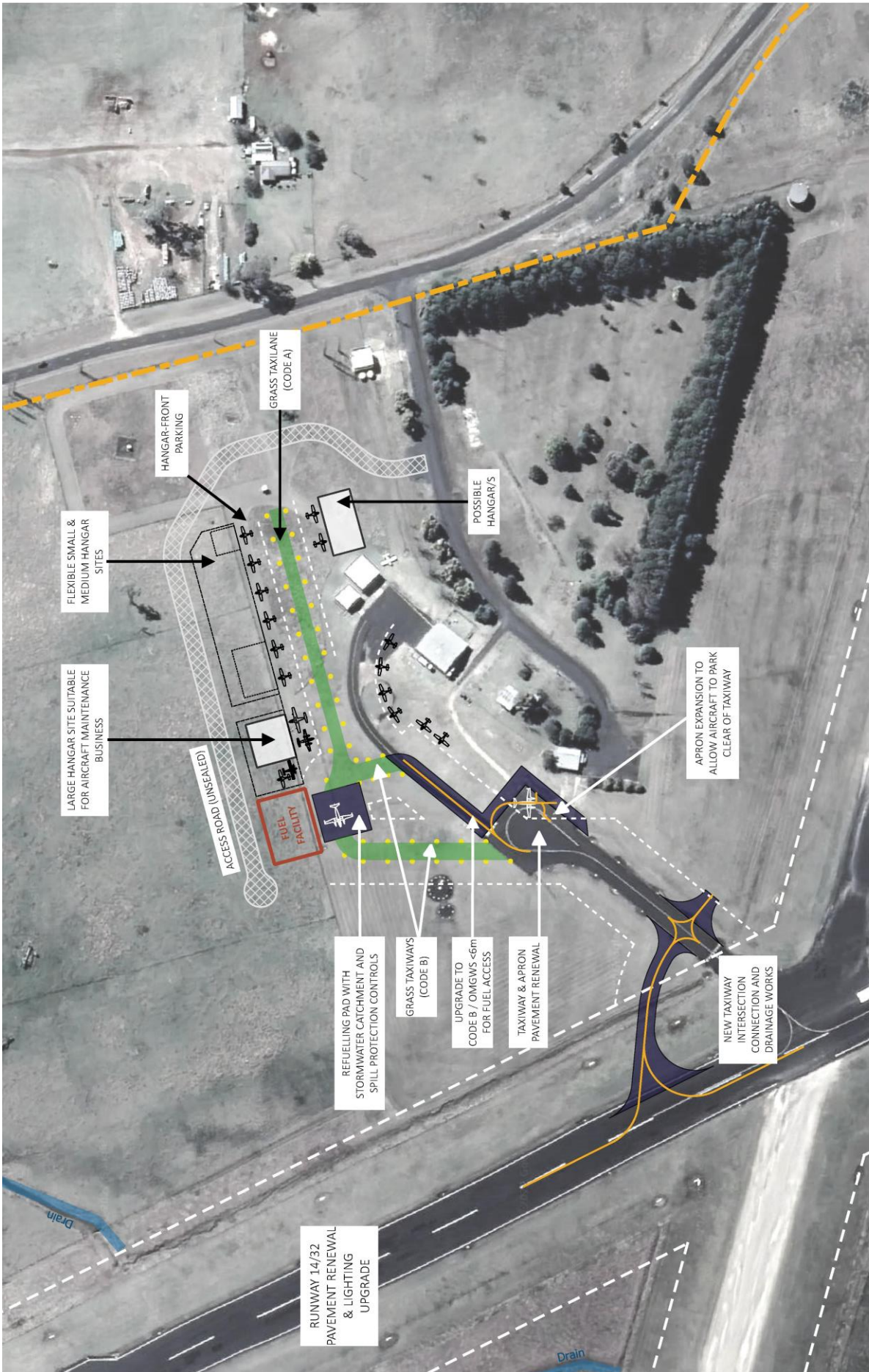


**Figure**  
**Concept Land Use Plan** B16241 / 01



Glen Innes Severn Council  
GLEN INNES AIRPORT MASTER PLAN



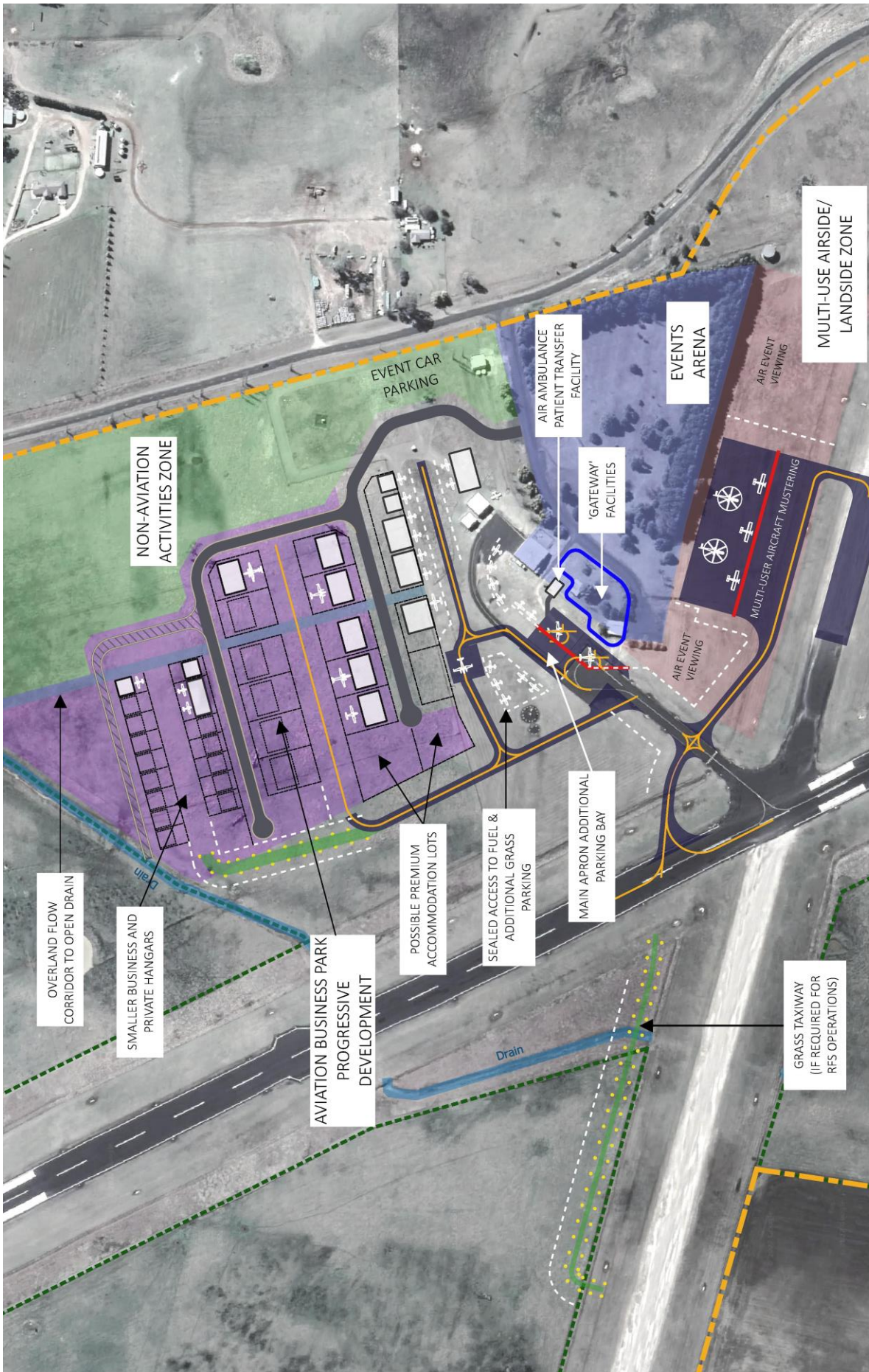


**Development Concept**      **Figure**  
**Stage 1 (Immediate)**      **B16241 / 02**



Glen Innes Severn Council  
 GLEN INNES AIRPORT MASTER PLAN



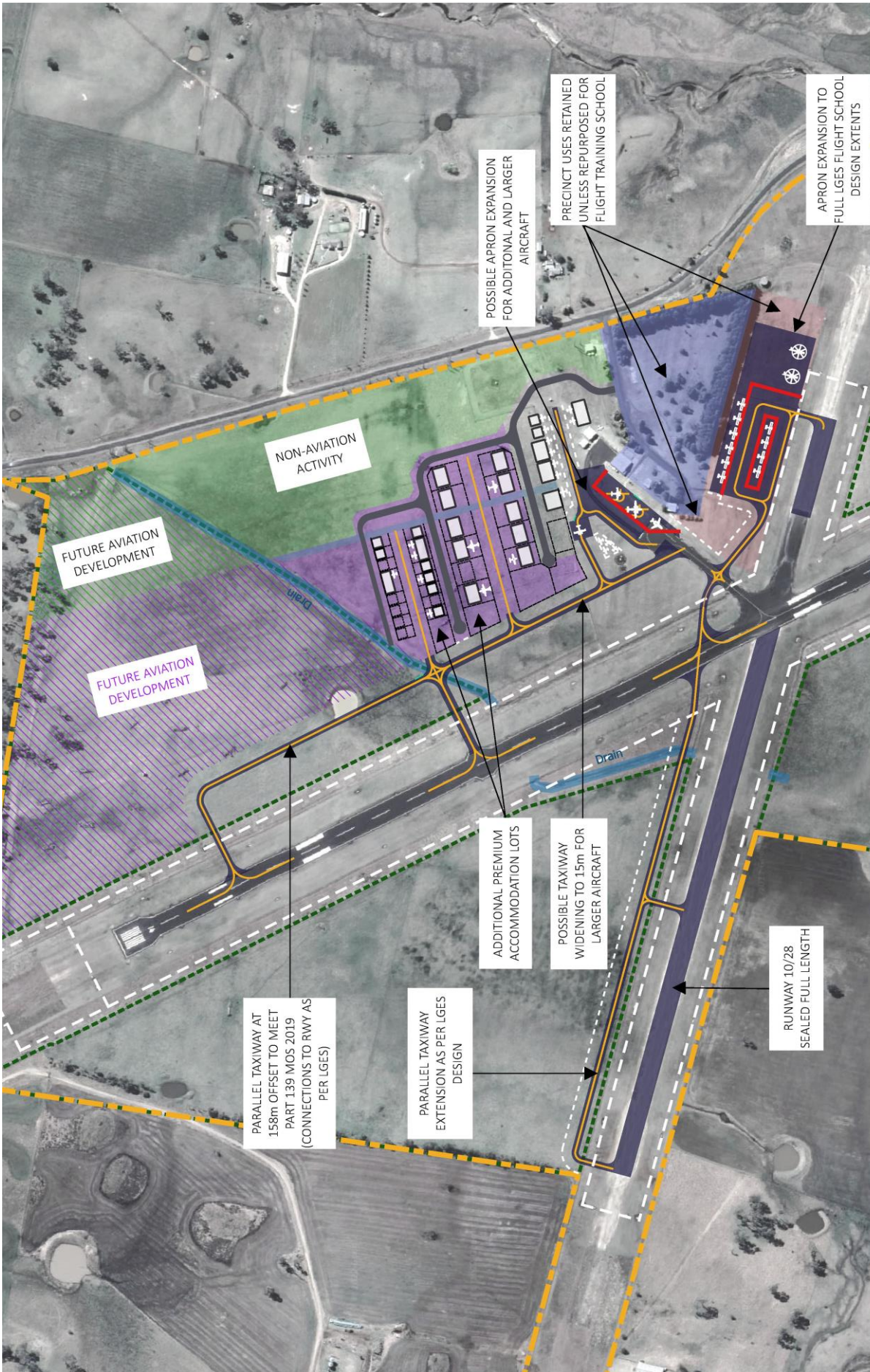


**Development Concept Stage 2 (Medium Term) Figure B16241 / 03**



Glen Innes Severn Council  
 GLEN INNES AIRPORT MASTER PLAN





**Development Concept Figure Stage 3 (Long Term) B16241 / 04**



Glen Innes Severn Council  
**GLEN INNES AIRPORT MASTER PLAN**





ZONE OF INFLUENCE 5 KM FROM  
RUNWAYS AS PER NASF  
GUIDELINE A PARAGRAPH 31.

**NASF Guideline A** **Figure**  
**Aircraft Noise Zone of Influence** **B16241 / 05**



Glen Innes Severn Council  
**GLEN INNES AIRPORT MASTER PLAN**



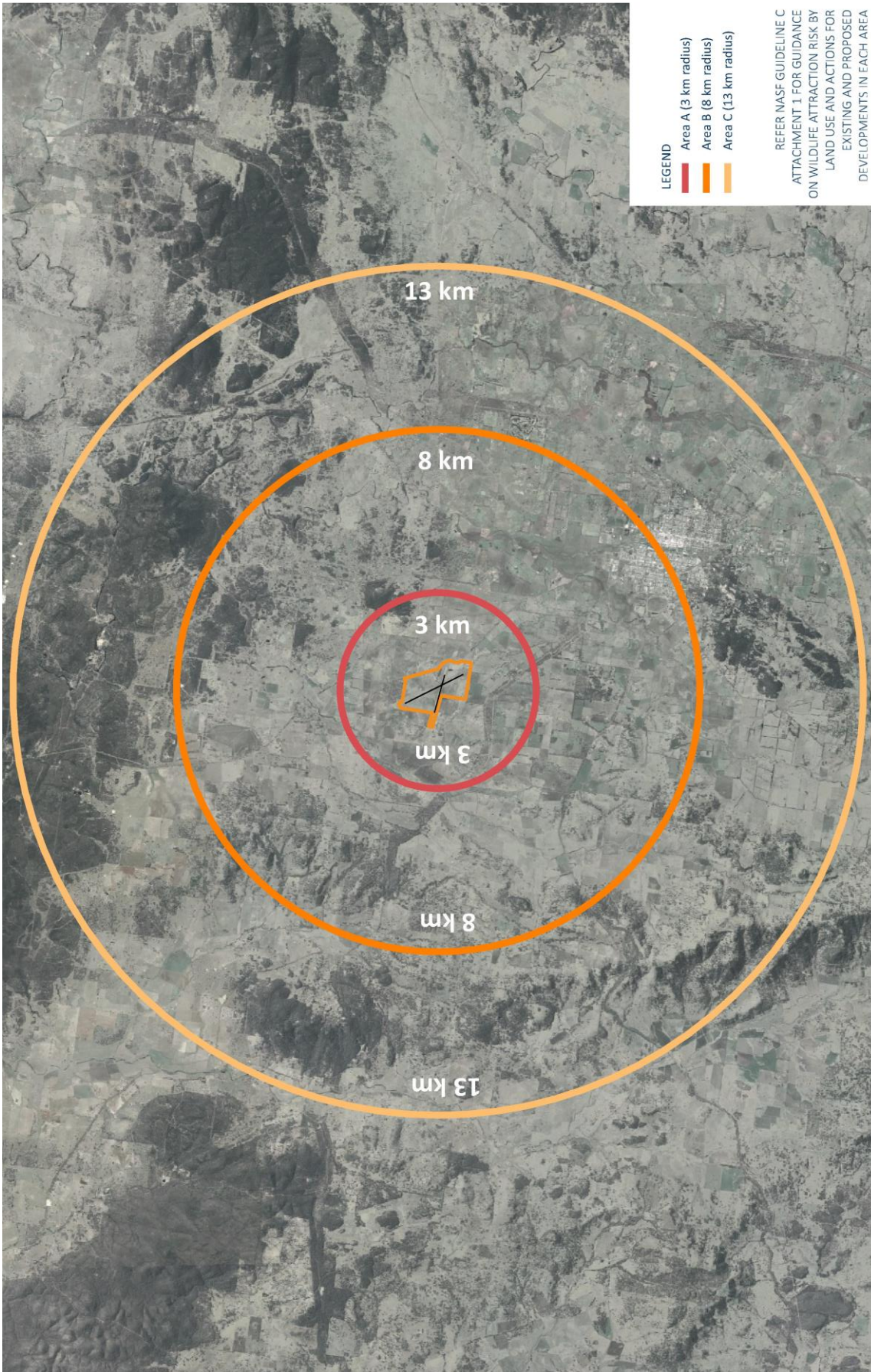


**NASF Guideline B** **Figure**  
**Assessment Trigger Areas** **B16241 / 06**



Glen Innes Severn Council  
**GLEN INNES AIRPORT MASTER PLAN**



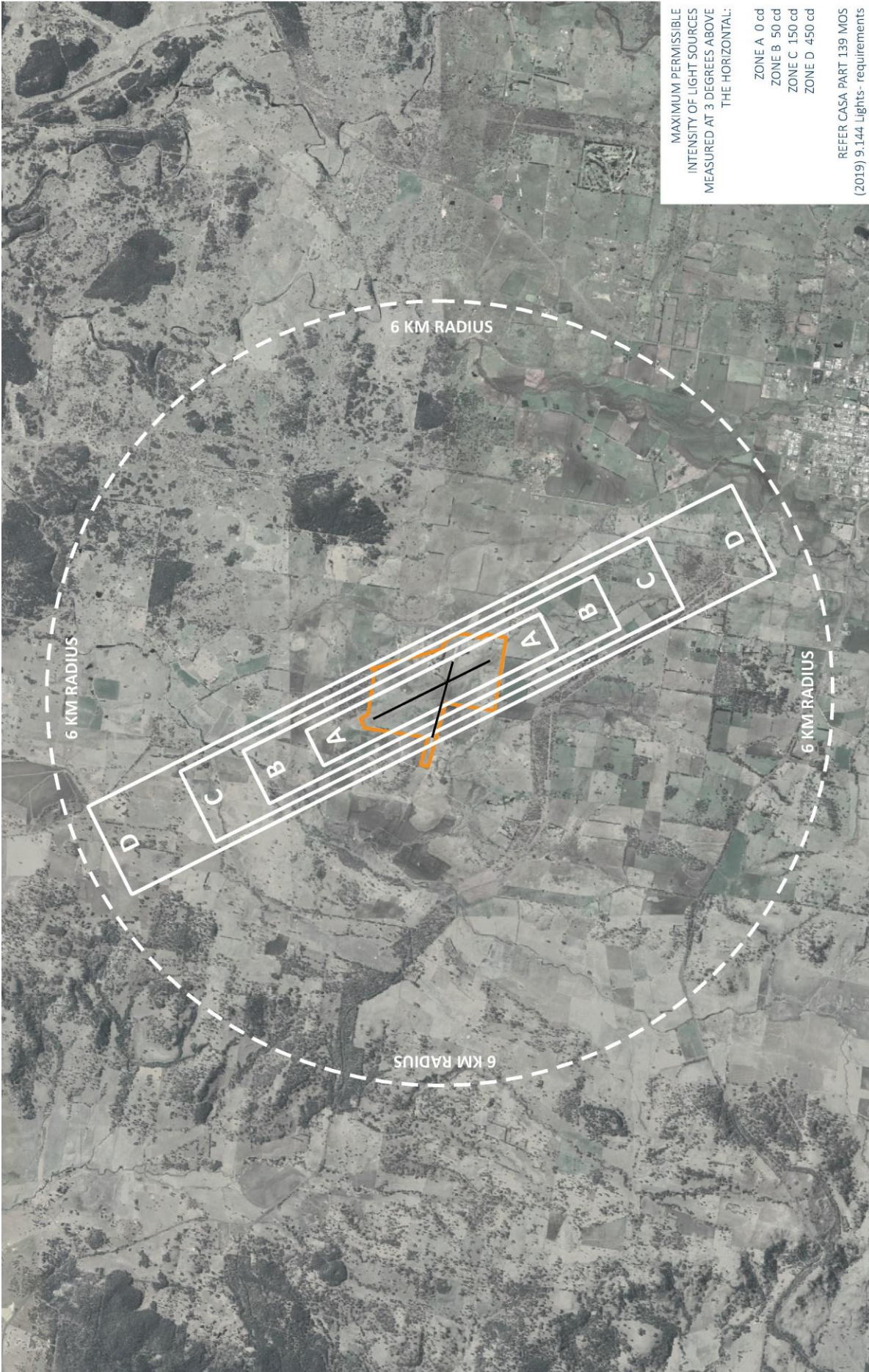


**NASF Guideline C** **Figure**  
**Wildlife Buffer Areas** **B16241 / 07**



Glen Innes Severn Council  
**GLEN INNES AIRPORT MASTER PLAN**



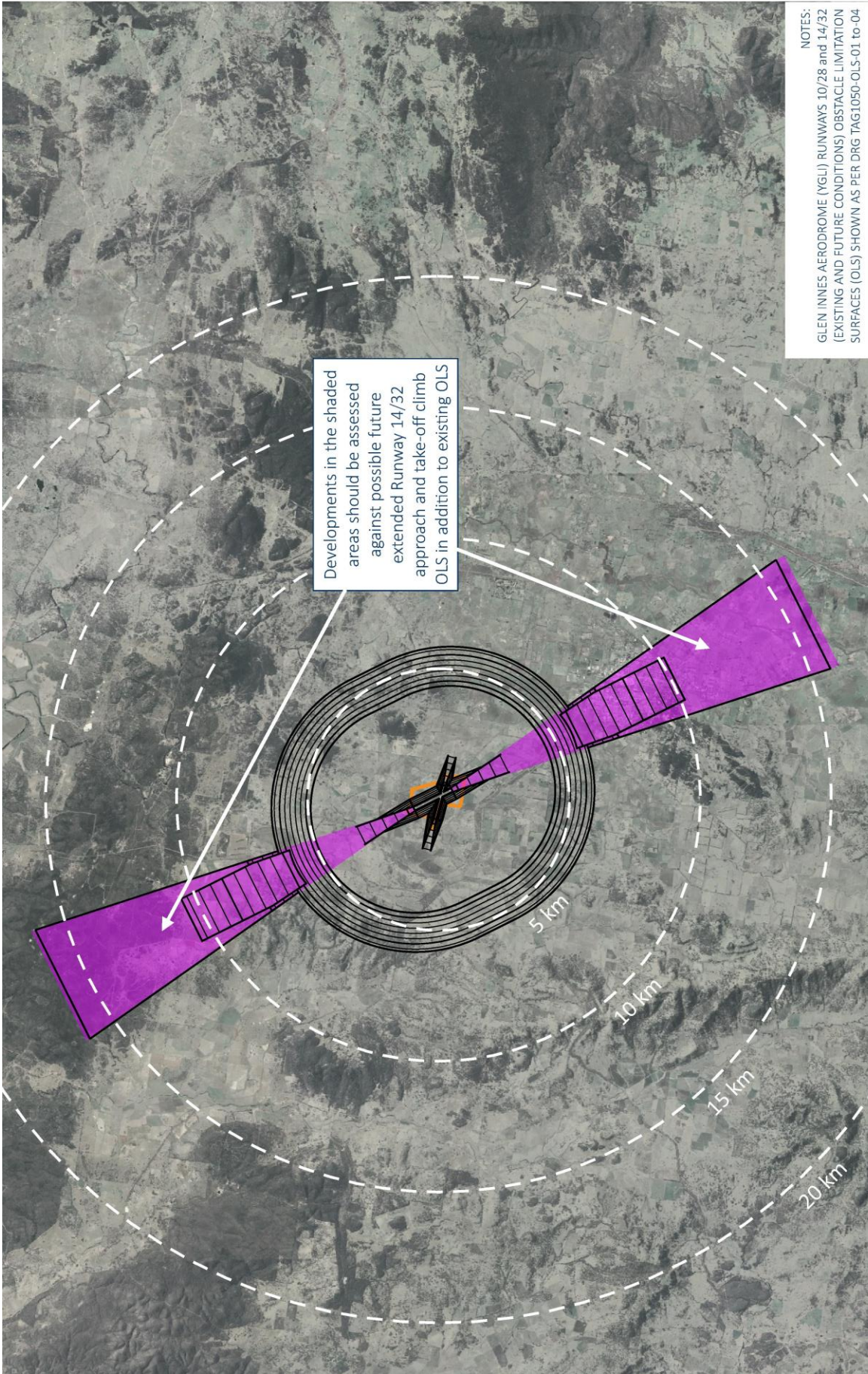


**NASF Guideline E** **Figure**  
**Lighting Restriction Zones** **B16241 / 08**



Glen Innes Severn Council  
**GLEN INNES AIRPORT MASTER PLAN**





NOTES:  
 GLEN INNES AERODROME (VGL) RUNWAYS 10/28 and 14/32  
 (EXISTING AND FUTURE CONDITIONS) OBSTACLE LIMITATION  
 SURFACES (OLS) SHOWN AS PER DRG TAG1050-OLS-01 to-04

Developments in the shaded areas should be assessed against possible future extended Runway 14/32 approach and take-off climb OLS in addition to existing OLS

**NASF Guideline F**      **Figure**  
**Obstacle Limitation Surfaces**      **B16241 / 09**



Glen Innes Severn Council  
**GLEN INNES AIRPORT MASTER PLAN**

## APPENDIX B: PAVEMENT ASSESSMENT