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Merimbula Airport Master Plan 2033

For Bega Valley Shire Council

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EXECUTIVE SUMMARY

MASTER PLAN PURPOSE

REHBEIN Airport Consulting was commissioned by Bega Valley Shire Council (BVSC) to prepare the Merimbula Airport Master Plan. The Master Plan establishes a framework for the future planning and sustainable development of Merimbula Airport. The Master Plan considers the maximum potential of the airport site and enables BVSC to safeguard land for potential future development. The Master Plan considers the maximum potential infrastructure requirements to ensure all potential outcomes in terms of aeronautical and non-aeronautical activity could be accommodated in the future if required. Development of any aspect of the proposals included within the Master Plan should only occur when the relevant trigger points are met.

MASTER PLAN PROCESS

The Master Plan is the first step in the planning and development process of the airport. The proposed infrastructure developments set out within this Master Plan are conceptual only and a feasibility study including costings and an investment appraisal should be carried out prior to the design of any aspects.

AVIATION ACTIVITY

In 1985 there were approximately 36,000 passengers per annum, dropping to approximately 24,000 in 2002. In 2003, Regional Express (Rex) began operating to Merimbula. From this time passenger numbers grew to 66,000 in 2007 which equated to an annual average growth rate of approximately 25% over this 5 year period. Since 2007 passenger numbers have been falling. In 2011 there were approximately 51,000 passengers per annum. The decline in passenger numbers has however started to slow.

Limited information is available for historical aircraft movement numbers at Merimbula Airport. It is estimated that in the last 12 months there were approximately 9,000 total movements including both RPT and General Aviation (GA) aircraft.

Passenger traffic has been forecast to provide a basis for future infrastructure requirements. Based on a number of potential drivers, three overall growth scenarios have been developed and are shown in Chart I.

Projections of annual aircraft movements have also been developed by segmenting aviation activity into the principal component sectors, each of which having different drivers and prospects for growth at Merimbula Airport. These forecast movements to 2033 are shown in Chart II.

Chart I: Forecast Passenger Traffic 2013 – 2033

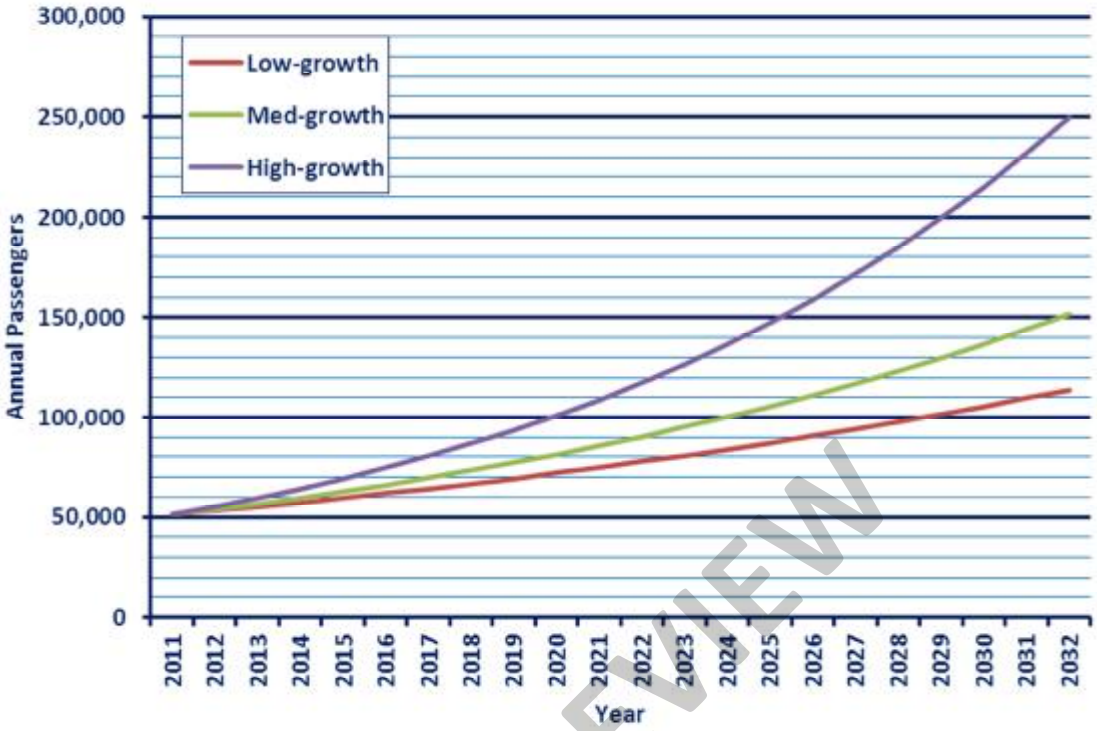
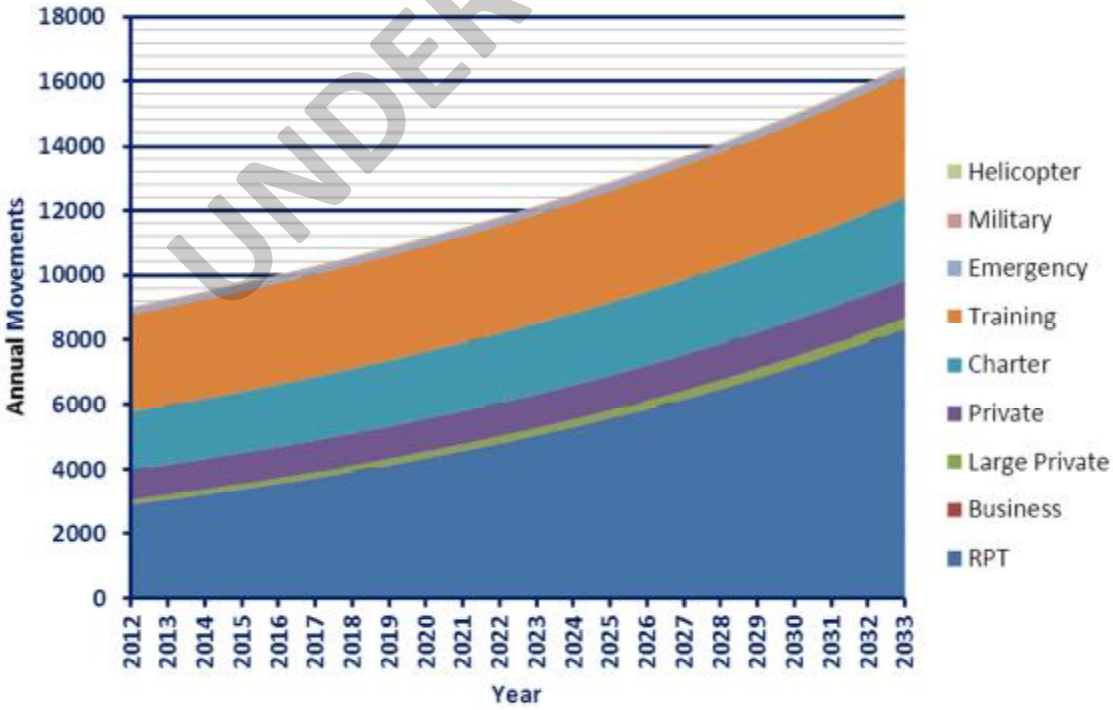


Chart II: Forecast Aircraft Movements 2011 – 2013



AERONAUTICAL INFRASTRUCTURE DEVELOPMENT

Runway

The Master Plan proposes the following runway developments:

- Sealing to the end of the Runway End Safety Area (RESA) to the south, achieving an additional 120 metres of runway seal. The additional seal would only be useable for take-off to the north and would provide a total take-off run available (TORA) of 1,720 metres to the north. The landing distance available would remain at the current 1,600 metres;
- Extension of the existing runway to the north by 200 metres. Due to the proximity of the airport site boundary and surrounding obstacles it will not be possible to move the inner edge of the take-off climb surface to the end of the extended runway. The take-off climb surface inner edge must stay in its current position. This means that the extension would only be useable for take-off to the south and would provide a total take-off run available (TORA) of 1,800 metres. The landing distance available would remain at the current 1,600 metres. An interim runway development stage to the north is possible by sealing only to the end of the RESA in the first instance, providing a TORA of 1,720 metres to the south of 1,720 metres similar to the arrangement to the south of the runway. However, due to a number of issues including the economies of constructing the full extension in one step and requirements for runway lighting and turning and by-pass nodes this interim stage is unlikely to be economically viable.

Extension of the runway to the north by 200 metres as well as only sealing to the end of the RESAs both result in a number of issues that need to be addressed, including:

- The addition of Runway End Safety Areas (RESAs) at both runway ends;
- Requirements surrounding the inner edge of the take-off surface of the OLS for both runways potentially resulting in the realignment of Arthur Kaine Drive adjacent to the Runway 21 threshold;
- A requirement to increase the runway strip width to 150m;
- The provision of by-pass and turning nodes; and
- Extension of the runway lighting.

Passenger Terminal

The Master Plan proposes expansion of the existing passenger terminal. There is potential for some expansion into the available area to the west of the existing terminal building where the existing open space is located. The terminal could expand to have a terminal footprint of approximately 500m^2 at a limited cost to accommodate up to three simultaneous Saab 340 or Jetstream 41 aircraft (assuming 50% load factor).

When there is demand for the operation of more than three simultaneous 30-50 seat aircraft or equivalent or the operation of larger aircraft, such as the ATR72 or Q400, the Master Plan proposes relocation of the passenger terminal precinct to the south, to the east of the Runway 03

threshold, where available land exists to accommodate a wider range of future scenarios including aircraft frequency, size and the resultant facilities required to support this. The new terminal location would provide sufficient space to accommodate the forecast high growth passengers of 250,000, estimated to be approximately 1,500m^2.

It should be noted that the area identified for the new passenger terminal precinct is included within the SEPP14 Wetlands area and may therefore result in a more lengthy and difficult approvals and planning process to develop this area. There will also be a development cost implication as a result of constructing on a low lying wetland area and the earthworks that will be required to make this feasible.

Aprons

The Master Plan proposes a small extension of the existing RPT apron to the south to accommodate a third Saab 340 parking position.

With the development of a new passenger terminal to the south, a new RPT apron is proposed to be located adjacent to the Runway 03 threshold. The proposed new RPT apron could accommodate up to five aircraft parking bays and has an area of approximately 15,000m^2.

The Master Plan proposes a new area of GA parking to the south of Taxiway G. This will have capacity for approximately 24 Code A and B aircraft. A further grass light aircraft tie down area could be accommodated to the north of this apron if required accommodating approximately 20 Code A aircraft.

Relocation of the passenger terminal precinct to the south would also provide a dedicated GA area on the existing apron and provide space for additional hangars.

The taxiway system is proposed to be developed to provide aircraft access between the runway and parking areas, this includes the developed of a part-parallel taxiway.

AIRSPACE

The Master Plan has considered the future Obstacle Limitation Services (OLS) for the extended runway. This future OLS should be incorporated in to the Bega Valley Local Environment Plan 2013 to protect future aircraft operations being impeded by developments that may penetrate the OLS.

AIRCRAFT NOISE

The consideration of aircraft noise is an important factor in the development of airport master plans. An Australian Noise Exposure Forecast (ANEF) has been prepared for the envisioned development of Merimbula Airport to 2033. This takes account of the forecast level of traffic and aircraft types. An ANEF contour plan has been produced and should also be incorporated into the Bega Valley Local Environment Plan 2013 to ensure compatible development is proposed in the vicinity of the airport and future airport operations are protected.

COMMERCIAL DEVELOPMENT

To accommodate the identified opportunities form stakeholder consultation, commercial development precincts have been identified on the airport site based on their specific requirements, likelihood, timing, synergies with other activities at the airport and the available land. Three potential development precincts have been identified within the existing airport boundary. These are:

- Precinct 1: General Aviation Precinct - including private hangar space and aviation-related commercial activities such as aircraft maintenance and charter operator bases. This precinct is located in the vicinity of the current apron and hangar development. Stage 1 development remains outside of the SEPP14 Wetland, whilst Stage 2 expansion will require the appropriate planning approvals to be sought for this development;
- Precinct 2: Commercial Precinct - including the development of aviation-related and potentially non-aviation-related commercial activities. It is located to the far south of the airport site beyond the threshold of Runway 03. This is located within an area identified as SEPP14 Wetlands for which the relevant planning approvals process will have to be completed prior to the commencement of any development in this area.; and
- Precinct 3: Visitor Information and Cultural Centre - Following the relocation of the passenger terminal precinct to the south, the Master Plan proposes that the existing passenger terminal building potentially be reused as a visitor information centre that could include an Indigenous Cultural Centre and/or National Parks Centre.

The precincts are indicated on Figure 3 at Appendix A.

LANDSIDE ACCESS

With the relocation of the passenger terminal precinct to the south of the airport site and the possible commercial development in Precinct 2, it is proposed that a new intersection with Arthur Kaine Drive be developed in this vicinity. The Master Plan assumes that the existing airport access from Arthur Kaine Drive can be retained as a secondary access for the proposed Visitor Information Centre to be located within the existing passenger terminal building.

The Master Plan proposes the development of the internal access road network to support the proposed aeronautical and non-aeronautical facilities, particularly in the south eastern corner of the airport site.

As passenger numbers increase whilst operations remain at the existing passenger terminal building, the current parking provision may reach capacity. The Master Plan proposes the formalisation of the existing free parking provision and organised by short- and long-stay. If further long-stay parking spaces are required, additional car parking can be developed to the south of the existing secure car park. The existing secure car park could potentially be redeveloped and integrated into the new terminal car park to the south. As is happening at several other regional airports, BVSC may wish to extend the car parking charges across all parking spaces.

With the development of the new passenger terminal precinct to the south, it is proposed that the area directly south of the proposed passenger terminal be dedicated short-stay spaces and the area directly to the north of this be used as long-stay parking.

ENGINEERING SERVICES

The Master Plan proposes an upgrade to the water supply to the airport in Stage 1 through the provision of a new water main capable of providing sufficient water to support the ultimate airport development. The existing sewer pumping station and related infrastructure are assumed to be adequate for Stage 1, however the Master Plan proposes the upgrade of the pumping station and rising main to the waste water treatment plant in Stage 2. The Master Plan also safeguards for the upgrade of the current power infrastructure with a new connection at the northern extremity of the airport site to support the ultimate airport development.

IMPLEMENTATION PLAN

Development staging is subject to a range of external factors as well as demand. The timing and location of developments as set out below will need to be subject to periodic review and adjustment as a result of these factors. The Master Plan, whilst setting out the optimum long-term land-use arrangement for the airport site, incorporates flexibility to adjust the location and timing of particular developments as necessary to suit specific constraints.

The key components of the aeronautical concept proposed in Stage 1 and Stage 2 are summarised in Table 4 and Table II respectively. Expected trigger points for implementation of each component and anticipated lead time including design and construction are also indicated (the stated lead time does not include the planning approvals process).

Table I: Proposed Stage 1 Aeronautical Development

Proposed Development	Anticipated Trigger	Lead Time
Expand existing terminal	2 simultaneous Saab 340/Jetstream 41 aircraft or 50,000 - 60,000 pax per annum	6 months
Expand existing RPT apron	2 simultaneous Saab 340/Jetstream 41 aircraft or 50,000 - 60,000 pax per annum	6 months
GA Apron	Hangar development	6 months
Part Taxiway B from Taxiway H to Taxiway J	Hangar development	6 months
Taxiway access to proposed hangars (incl. Taxiways F, G, H & J)	Hangar development	6 months
Existing runway 200m extension to the north	Operation of larger turboprop aircraft or approx.. 100,000 pax. per annum*	6 months
Existing runway 120m extension (south)	Operation of larger turboprop aircraft or approx.. 120,000 pax. per annum*	6 months

*Passenger numbers have been provided to indicate when in the future larger aircraft may begin operations however, these passenger numbers could theoretically also be achieved by a higher frequency schedule with smaller aircraft.

Table II: Proposed Stage 2 Aeronautical Development

Proposed Development	Anticipated Trigger	Lead Time
Develop new passenger terminal precinct to the south incl. terminal building and car parking	Operation of larger turboprop aircraft (ATR72/Q400) or approx. 120,000 pax. per annum*or requirement to implement passenger and baggage screening	1 year
Extend Taxiway B south of Runway 03 threshold	Commercial Precinct development	6 months
Commercial Precinct apron development	Demand for commercial sub-division with airside access	6 months
Expand new passenger terminal precinct	More than 2 simultaneous ATR72 or Q400 aircraft or 200,000+ pax. per annum	6 months

*Passenger numbers have been provided to indicate when in the future larger aircraft may begin operations however, these passenger numbers could theoretically also be achieved by a higher frequency schedule with smaller aircraft.

The optimum staging of the non-aeronautical development is in part linked to the proposed aeronautical development concept staging. Table III provides a summary of the non-aeronautical development proposals within each stage together with anticipated trigger points.

Table III: Commercial & Landside Access Development Staging

Proposed Development	Anticipated Trigger
STAGE 1(2013 - 2022)	
Precinct 1 – General Aviation (hangar development)	Immediate
Long-stay car park on opposite side of Arthur Kaine Drive	On demand
STAGE 2 (2023 - 2033)	
Precincts 1 Expansion	Development of new passenger terminal precinct
Precinct 2 – Commercial	On demand
Long and short-stay car park development	Development of new passenger terminal precinct

The Master Plan is the first step in the planning and development process of the airport. The proposed infrastructure developments set out within this Master Plan are conceptual only and a feasibility study including costings and an investment appraisal should be carried out prior to the design of any aspects.

GLOSSARY OF TERMS AND ABBREVIATIONS

ACN (Aircraft Classification Number)	A number expressing the relative effect of an aircraft on a pavement for a specified standard subgrade category.
ASV	Annual Service Volume
Aerodrome	A defined area on land or water (including any buildings, installations and equipment) intended to be used either wholly or in part for the arrival, departure and surface movement of aircraft.
AFRU (Aerodrome Frequency Response Unit)	The AFRU is an electronic, ground based, aviation safety enhancement device, intended for use on the CTAF or MBZ frequency at non-controlled aerodromes.
AIP ERSA	Airservices Australia Aeronautical Information Package En-Route Supplement Australia
ANEF	Australian Noise Exposure Forecast
ARC (Aerodrome Reference Code)	A code used to specify the standards for individual aerodrome facilities which are suitable for use by aeroplanes within a range of performances and sizes. The code is composed of two elements: the first is a number (from 1 to 4) related to the aeroplane reference field length and the second is a letter (from A to F) related to the aeroplane wingspan and outer main gear wheel span.
ARP	Aerodrome Reference Point
ATC	Air Traffic Control
AWIS	Automatic Weather Information Service
BoM	Bureau of Meteorology
CAGR	Compound Annual Growth Rate
CASA (Civil Aviation Safety Authority)	The Australian federal government department responsible for setting and maintaining safety standards for civil aviation. CASA is responsible for the codification of international standards and recommended practices into Australian legislation and for the issue of licences for aviation personnel including pilots, amongst other responsibilities.
CASR (Civil Aviation Safety Regulation)	CASRs establish the regulatory framework (*Regulations*) within which all service providers must operate.
CTAF	Common Traffic Advisory Frequency
EOC	Emergency Operations Centre
FAA	Federal Aviation Administration (United States Department of Transportation)
General Aviation (GA)	The sector of the aviation industry that does not include regular public transport (RPT) airlines and military aviation.
GPS	Global Positioning System
IATA	International Air Transport Association
ICAO	International Civil Aviation Organisation

IFR/IMC (Instrument Flight Rules/ Instrument Meteorological Conditions)	Refers to rules under which flight involving navigation requiring reference to radio navigational aids or instruments is carried out. Weather conditions below a certain minima are referred to as instrument meteorological conditions (IMC). IFR flight requires pilots to be qualified in the use of instrument navigation and to use radio navigational aids provided at airports.
INM	Integrated Noise Model
IWI	Illuminated Wind Indicator
LIRL	Low Intensity Runway Lighting
LoS	Level of Service – a range of values or assessments of the ability of the terminal to meet demand
MOS	Manual of Standards
MTOW	Maximum Take-off Weight
Navaid	Commonly-used abbreviation for 'radio navigational aid'
NDB (Non Directional Beacon)	A simple and common type of radio navigational aid which allows pilots to track to or from its location.
Non-precision instrument approach	An instrument approach and landing that uses lateral guidance but does not use vertical guidance.
OLS	Obstacle Limitation Surfaces
PAL	Pilot Activated Lighting
Pavement Classification Number (PCN)	A number expressing the bearing strength of a pavement for unrestricted operations by aircraft with ACN value less than or equal to PCN.
Payload	The total weight of passengers and cargo that an aircraft can carry.
PSI	Unit of pressure or stress (pounds per square inch)
RESA (Runway End Safety Area)	Area provided at the end of a runway strip, to protect the aeroplane in the event of undershooting or overrunning the runway.
RFDS	Royal Flying Doctor Service
RNAV/GNSS Approach	Area Navigation/Global Navigation Satellite System Approach. A form of instrument approach procedure using signals from orbiting satellites to determine an aircraft's precise position at a point in time.
RPT (Regular Public Transport)	Air services operated by airlines that are scheduled to occur on a regular basis at fixed times or frequencies and on fixed routes.
Runway Strip	A defined area including the runway and stopway, intended to reduce risk of damage to aircraft running off a runway and to protect aircraft flying over it during take-off or landing operations.
BVSC	Bega Valley Shire Council
DME	Radio navigation system: Distance-based measuring equipment

VFR/VMC (Visual Flight Rules/ Visual Meteorological Conditions)	Refers to rules under which flight involving navigation solely by reference to visual cues (rather than requiring reference to radio navigational aids or instruments) is carried out. VFR flight is permissible only when meteorological conditions (cloud base and visibility) are above defined limits. Such conditions are referred to as visual meteorological conditions (VMC). VFR flight does not require pilots to be qualified in the use of instrument navigation, nor does it require expensive radio navigational aids to be provided at airports.
WI	Wind Indicator

1.0 INTRODUCTION

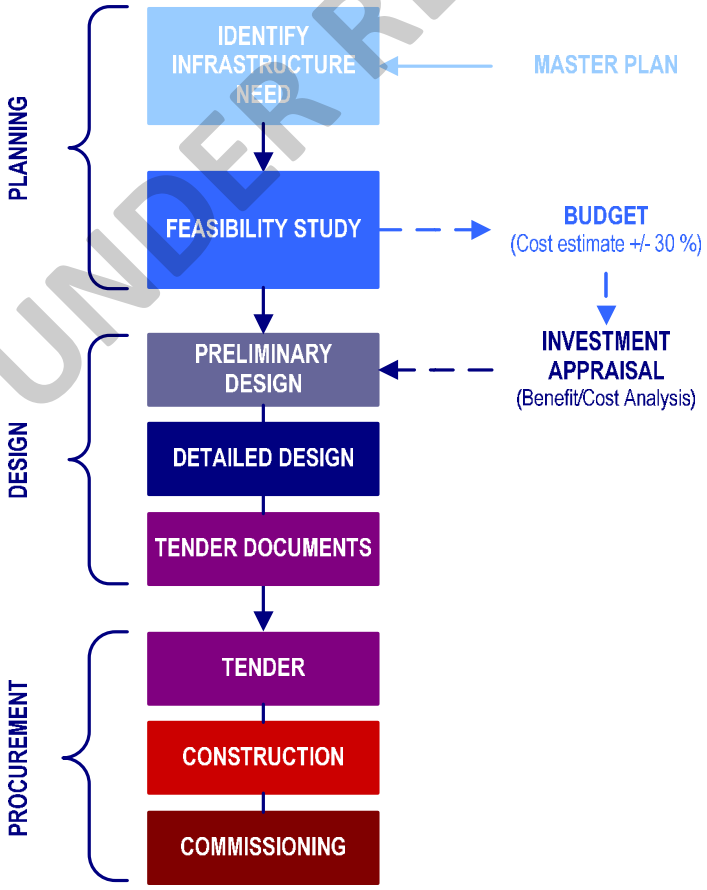
REHBEIN Airport Consulting was commissioned by Bega Valley Shire Council (BVSC) to prepare the Merimbula Airport Master Plan. The Master Plan establishes a framework for the future planning and sustainable development of Merimbula Airport.

1.1 MASTER PLAN PURPOSE & PROCESS

The Master Plan enables an airport operator to safeguard land for potential future development. The Master Plan considers the maximum potential infrastructure requirements to ensure all potential outcomes in terms of aeronautical and non-aeronautical activity could be accommodated in the future if required. Development of any aspect of the proposals included within the Master Plan should only occur when the relevant trigger points (See Section 9.1) are met.

The Master Plan is the first step in the planning and development process of the airport. The proposed infrastructure developments set out within this Master Plan are conceptual only and a feasibility study as well as an investment appraisal should be carried out prior to the design of any aspects. Chart 1 shows the infrastructure development process.

Chart 1: Infrastructure Development Process



1.2 MASTER PLAN OBJECTIVES

Airport master planning is undertaken to enable best-management practises and sound land-use development in addressing diverse aviation and community interests. An Airport Master Plan is the primary strategic tool available to airport owners and operators and communicates the operator's intentions with respect to development of the airport. Its purpose is to set out a long-term framework for the development of all facilities within the airport that protects future development against the effects of current decisions.

Consistent with these strategic considerations, the *Airports Act 1996* summarises the aims of an Airport Master Plan as follows:

- Establishing strategic direction for the efficient and economic development of the airport over the planning period;
- Providing for the development of additional uses of the airport site;
- Indicating to the public the intended uses of the airport site; and
- Reducing potential conflicts between uses of the airport site, and to ensure that uses of the airport site are compatible with the areas surrounding the airport.

Although the *Airport Act 1996* does not have statutory application to Merimbula Airport, this does not reduce the relevance of these four key aims. BVSC has identified several further specific objectives in commissioning this Master Plan, including the desire to:

- Provide a basis for timely and coordinated development of aviation facilities and infrastructure to support the forecast increase in passenger and aircraft movements;
- Provide a basis for appropriate management of the environment;
- Address key issues facing the airport through the development of concepts or options;
- Understand the current and future potential economic significance and importance of the airport to the community; and
- Inform the Merimbula Airport and Precinct Strategy.

The Merimbula Airport Master Plan must realistically represent future facilities that will satisfy projected air traffic demand and potential economic growth opportunities and must also ensure compatibility with user needs and regulatory obligations including safety and security. At the same time it should be sensitive to the surrounding environment.

Whilst this Master Plan sets out strategic infrastructure requirements for Merimbula Airport over the next 20 years, it is important to recognise that the Master Plan makes no assertion as to the commercial viability of any individual component. Suitable trigger points and anticipated timings for each element are identified; however each development should be subject to its own business case prior to any decision to proceed with capital expenditure.

1.3 METHODOLOGY

The principal steps in its preparation of this Master Plan were as follows:

- A site visit was undertaken on Tuesday 4 December 2012;
- Stakeholder Consultation was undertaken to solicit the views issues and concerns of key stakeholders including BVSC representatives, airlines, airport tenants and users, local businesses and organisations. Discussion was largely focussed on the future infrastructure requirements and expansion potential of Merimbula Airport. Consultation was undertaken in Merimbula as well as by telephone. A stakeholder consultation schedule can be found at Appendix A;
- Based on consultation with these key stakeholders and consideration of relevant market trends, future aviation activity forecasts were developed. Low, medium and high growth scenarios were developed;
- Based on selected future scenarios, aeronautical infrastructure development proposals were set out and a staged development plan formulated to provide guidance on the implementation of the proposals;
- Once the requirements for aeronautical infrastructure and the required supporting services were confirmed, proposals for non-aeronautical development at the airport were developed. These were also based on the results of the stakeholder consultation, desktop research of the local economy and experience at other airports;
- Noise and airspace assessments have also been undertaken to provide direction for land use planning on the land surrounding the airport. ANEC (Australian Noise Exposure Forecast) contours have been developed for Merimbula Airport to guide future development surrounding the airport. N60 and N70 contours have also been developed to assist the community to better understand the impacts of aircraft noise. Future Obstacle Limitation Surfaces (OLS) were also developed which will help define land use and specific development surrounding the airport;
- Indicative capital cost estimates have also been developed to aid with the implementation of both the aeronautical and non-aeronautical proposals within this Master Plan;
- The potential car parking revenue at the airport has been considered; and
- The economic significance of the airport has also been reviewed.

1.4 REPORT STRUCTURE

This Master Plan report is structured as follows:

- Section 2.0 describes the master planning context;
- Section 3.0 describes the existing situation with respect to airport facilities;
- Section 4.0 discusses historical and forecast future aviation activity;
- Section 5.0 outlines the aeronautical development concept;
- Section 6.0 describes the existing and future airspace;
- Section 6.1 considers aircraft noise;

- Section 8.0 outlines the non-aeronautical development concept including commercial development, landside access and car parking;
- Section 9.0 provides the implementation plan including indicative capital cost estimates for the proposals set out within this document as well as development staging; and
- Section 10.0 provides an indication of the economic significance of the airport.

2.0 MASTER PLANNING CONTEXT

2.1 BEGA VALLEY SHIRE

2.1.1 GEOGRAPHY

Bega Valley Shire is located in the south-eastern corner of New South Wales, extending to the Victorian border to the south. It has a coast line of approximately 225 kilometres which forms the Sapphire Coast. Bega Valley Shire has a total area of approximately 6,280 square kilometres, 73% of which is protected National Park or State Forest.

The town of Bega is the regional administrative centre with three further main towns in the area, namely Merimbula, Eden and Bermagui.

Merimbula is located approximately 32 kilometres south of Bega on National Route 1. Sydney is located approximately 460 kilometres to the north of Merimbula, Melbourne is located approximately 580 kilometres to the west and Canberra is located approximately 150 kilometres to the north west.

Figure 1 at Appendix B provides a location plan of Merimbula and Merimbula Airport.

2.1.2 ECONOMY

The economy of the Merimbula area was traditionally dominated by primary industries including agriculture, forestry and fishing. Although these industries are still present, a number of other sectors have developed, most notably tourism.

Agriculture, Forestry and Fishing

Dairy farming began in the area following the first European settlers and continues today. Bega Cheese is headquartered in the Shire and is the area's largest employer with annual revenues of $931 million in 2011[1].

Bega Valley also has thriving timber and fishing operations. In 2010, approval was given for a $65 million upgrade of a softwood mill at Bombala, approximately 85 kilometres west of Merimbula. The upgrade is currently being constructed and is expected to be launched in April/May 2013. Merimbula itself is also renowned for its fresh Rock Oysters.

In 2006/07, one in five local businesses sat within the Agriculture, Forestry and Fishery industry accounting for 19.8%[1] of all registered businesses in the BVSC area.

Tourism

In more recent years tourism has become a key industry with the BVSC area and continues to grow with the Sapphire Coast becoming an increasingly popular tourist destination. The BVSC

[1] Bega Valley Shire Council

area's combined attributes of natural beauty, temperate climate, and proximity to Sydney, Melbourne and Canberra, has attracted visitors for many years.

The Sapphire Coast forms part of Australia's Coastal Wilderness. Australia's Coastal Wilderness is part of Tourism Australia's National Landscapes program and comprises over 31,000 square kilometres of coastal wilderness including marine parks, national parks, state forests and private land encompassing 200 kilometres of walking trails. Its aim is to lure the international 'Experience Seeker'.

In conjunction with Australia's Coastal Wilderness, BVSC plan to link Eden with Merimbula by walking tracks to form the Coastal Wilderness Way to attract further tourists to the region.

As well as a number of other land–based activities such as game fishing and whale watching continue to be very popular attractions.

Resources

Australia's growing resource activity is also set to have an impact on the economy of the BVSC area. Mining company Eastern Iron announced a plan early in 2012 to investigate using a site at Nowa Nowa in East Gippsland to mine for magnetite. As part of this mining project, the company would use the South East Fibre Exports mill at Eden to distribute the mineral. It is reported that Eastern Iron plans to export 800 thousand tonnes of magnetite each year.

2.1.3 POPULATION

The Estimated Resident Population (ERP) of Bega Valley Shire in 2011 was 32,999[2]. The ERP has been growing at an average rate of 0.7% per year over the last 10 years. However, the ERP actually declined slightly in 2011, falling from 33,058 in 2010.

The Bega Valley Shire is forecast to grow by approximately 1% per annum to 2030[3], which will result in a population of approximately 41,660 by 2030.

It should be noted that the population of the Shire increases during the summer peak tourist season. On average, Bega Valley Shire receives over 820,000 visitors annually, more than half of whom are domestic overnight visitors. It is estimated that Merimbula, and other seaside towns including Eden and Bermagui experience a threefold boost in their populations during the peak summer tourist season.

2.2 MERIMBULA AIRPORT

Merimbula Airport is owned by Bega Valley Shire Council but is operated by a third party. The operation of the airport is currently contracted to Airport Agencies Pty Ltd. The current lease is due to expire in June 2013 with a one year option. The airport site has recently been resurveyed and

[2] Profile.id
[3] Forecast2.id

subdivided to segregate the airport operational area (105.4 hectares) from the surrounding land uses which include the golf course and waste water treatment plant.

Regular Passenger Transport (RPT) services are operated to and from the airport by Regional Express (Rex) to Sydney, Melbourne and Moruya using Saab 340 aircraft. The airport also supports the operations of the Air Ambulance, Royal Flying Doctor Service (RFDS), the Rural Fire Service (RFS), freight operators as well as local and visiting private and recreational pilots.

Merimbula Airport is located to the west of Arthur Kaine Drive approximately 2 kilometres south of the centre of Merimbula.

Figure 2 at Appendix A highlights the existing constraints to future development at the airport.

2.3 PLANNING INTEGRATION

A number of strategies and plans already in place have some implications for Merimbula Airport and the airport should be developed to align with these plans. Relevant key local and regional plans are discussed below.

2.3.1 SOUTH COAST REGIONAL STRATEGY

The South Coast Regional Strategy (SCRS) sets out a land use plan for the NSW South Coast, which balances the demands for future growth with the need to protect and enhance environmental values between 2006 and 2031. The primary purpose of the Regional Strategy is to ensure that adequate land is available and appropriately located to sustainably accommodate the projected housing and employment needs of the Region's population over the next 25 years as well as inform future infrastructure investment priorities to ensure that future population growth is supported by adequate services and infrastructure.

The SCRS identifies Bega as a major regional centre suited to take the majority of growth in the area with Merimbula identified as a major town. Merimbula Airport is identified as an existing airport that will be strengthened to support its role for transport, freight, tourism and defence activities.

2.3.2 BEGA VALLEY LOCAL ENVIRONMENTAL PLAN 2013

Within the Bega Valley Local Environmental Plan (LEP) 2013 the airport precinct is zoned as "SP2 – Infrastructure".

Land adjoining the eastern and western boundaries of the northern section of the airport site is zoned as "E2 - Environmental Conservation". A small area located to the east of Arthur Kaine Drive is zoned as "SP1 - Special Activities". Either side of the southern section of the airport site is zoned as "RE1 – Public Recreation". The area to the south of the airport site is zoned "RU2 – Rural Landscape".

To the south, southeast and west of the runway are areas identified as State Environmental Planning Policy (SEPP) 14 (Coastal Wetlands) Wetland areas. The aim of the SEPP14 is to ensure that the coastal wetlands are preserved and protected in the environmental and economic interests of the State. There are restrictions on the development of this land with regard to clearing,

construction, draining and filling and consent must be given for this to occur. In considering whether such development should be allowed the local environment would need to be considered including the growth of native plants and survival of native wildlife and whether adequate safeguards and rehabilitation measures have been, or will be, made to protect the environment.

The northern and north-western area of the airport site is identified as a Watercourse – Waterway in the LEP 2012.

2.3.3 BEGA VALLEY DEVELOPMENT CONTROL PLAN

Development Control Plans supplement the Local Environmental Plan and provide more detailed provisions to guide development in the Bega Valley. BVSC has prepared and exhibited a comprehensive Draft Development Control Plan 2012 (DCP).

DCP No. 31 refers specifically to Airport Lands and aims to:

- Facilitate the orderly and economic development of land at Merimbula Airport;
- Preserve the financial viability of the Merimbula and Pambula CBD's by minimising unnecessary competition;
- Encourage transport related industry on airport lands;
- Allow for commercial and industrial opportunities which do no not conflict with the effective operation of Merimbula Airport; and
- Ensure ecologically sustainable development.

2.3.4 AUSTRALIA'S COASTAL WILDERNESS TOURISM MASTER PLAN

Australia's Coastal Wilderness (ACW) Tourism Master Plan identifies a number of projects that assist in attaining the vision of ACW for the area:

"An accessible yet remote coastal destination where you can escape to the lakes and forest, or stand on the beach with no one else's footprints but your own!"

The Master Plan identifies the expansion of Merimbula Airport as a key priority project to achieve this vision as it provides a critical link to the Merimbula, Pambula and Bega area.

2.3.5 MERIMBULA AIRPORT AND PRECINCT STRATEGY

The Merimbula Airport and Precinct Strategy (MAPS) was drafted and exhibited in May 2011 and was informed by a number of background papers covering a wide range of feasibility, planning, economic and environmental studies. MAPS has a number of objectives and goals including:

- Growth of air services for the Shire;
- Providing adequate airport infrastructure for the future;
- Ensuring adequate supply of serviced business land;
- Conserving the core environmental values and cultural heritage of the airport precinct as well as ensure sound, long-term land use planning; and

- Ensuring airport users contribute adequately towards the cost of the airport development

Finalisation of MAPS is being delayed until the completion of this Master Plan.

2.4 OTHER PROJECTS & STUDIES

2.4.1 RUNWAY, TAXIWAY & APRON RENEWAL

BVSC has currently completed the renewal of the runway, main taxiway and RPT apron including a 300mm overlay of the runway, overlay and widening of the taxiway and overlay and extension of the RPT apron.

2.4.2 MERIMBULA AIRPORT DEMAND, ROUTE PROFITABILITY AND AIRPORT CHARGES

The Merimbula Airport Demand, route profitability and airport charges study completed by Webber Quantitative Consulting in February 2011 includes demand estimation for three city pairs including Sydney to Merimbula, Melbourne to Merimbula and Canberra to Merimbula. The demand estimation is undertaken using a statistical model that takes into account the influence of the population size of each city in the pair, the distance between the city pairs, and the extent of airport competition in the vicinity of the two airports that comprise that city pair.

The total forward-looking demand estimates for the city pairs estimated, for 2016 was 640,000 passengers. The study indicates that the demand for Merimbula Airport is over ten times the current number of passenger movements which suggests that there is currently seat supply constraint.

The study does indicate that there are of course risks to these demand projections including the use of invalid assumptions, volatility in the global economy, a strong Australian dollar and constraints in the tourism supply chain including the number of visitor beds available in the region.

2.4.3 MERIMBULA AIRPORT REVIEW AND DEVELOPMENT FEASIBILITY REPORT

Macroplan Australia completed the Merimbula Airport Review and Development Feasibility Report – Site Assessment & Feasibility in March 2011. The study undertook an economic assessment and property feasibility review with regards to financing the proposed expansion of Merimbula Airport. The study made a number of recommendations including the completion of a Master Plan for the airport precinct.

2.4.4 MERIMBULA AIRPORT BUSINESS PLAN

The Merimbula Airport Business Plan is being developed concurrently with the Master Plan by Don McDowell. In developing this Master Plan, consultation will be undertaken with Don McDowell to ensure the appropriate inputs from the business plan are encapsulated within this Master Plan and vice versa.

2.5 STAKEHOLDER ENGAGEMENT

Feedback obtained during the stakeholder consultation included a wide range of issues which provided a valuable background to the Merimbula Airport existing situation and future aspirations. The key themes relevant to the development of this Master Plan are summarised as follows:

- Additional hangar space required;
- Current airport lease situation;
- Attraction of additional airlines operating to a wider range of destinations;
- Potential for a Fire/Ambulance/Police base located on airport
- Aviation-related business park development; and
- Non-aviation related business park development.

2.6 REGULATORY CONTEXT

The Civil Aviation Safety Authority (CASA) is the statutory authority that conducts the safety regulation of civil air operations in Australia including the regulation of certified and registered aerodromes. The Manual of Standards (MOS) - Part 139 Aerodromes is made pursuant to Civil Aviation Safety Regulations (CASR) Part 139. CASR Part 139 sets out the regulatory regime for aerodromes used by aeroplanes conducting air transport operations. The MOS sets out the standards and operating procedures for certified, registered aerodromes and other aerodromes used in air transport operations. The existing facilities and any proposed future facilities included within this Master Plan for Merimbula Airport must comply with the MOS.

The Aviation Transport Security Act 2004 establishes a regulatory framework to safeguard against unlawful interference with aviation. To achieve this purpose, the Act establishes minimum security requirements for civil aviation in Australia by imposing obligations on airport operators. Existing and future facilities must comply with the Aviation Transport Security Regulations 2005 made under the Aviation Transport Security Act 2004.

3.0 EXISTING FACILITIES & ACTIVITIES

The following sections provide a brief description of the existing facilities and activities at Merimbula Airport. A plan showing the existing facilities can be found on Figure 2 at Appendix B.

3.1 AIRFIELD FACILITIES

3.1.1 RUNWAY 03/21

Runway 03/21 is 1,602 metres long and 30 metres wide. The runway strip has a width of 90 metres and a length of approximately 1,722 metres. The runway is classified as Code 3. The runway strip width is non-standard (it does not comply with the Manual of Standards Part 139 requirements), the facility is operated on grandfathered provisions for the current operator.

The runway has a sealed surface with a published Pavement Classification Number of 8/F/A/580(84PSI)/U. Based on published Aircraft Classification Numbers, the runway strength is suitable to accommodate Saab 340 or Embraer EMB120 aircraft, assuming a subgrade category B. The runway pavement is currently showing designs of distress and surface failures. A project to upgrade the runway pavement is currently underway including a 300mm overlay.

3.1.2 TAXIWAYS

The main taxiway between the runway and the RPT apron has been labelled Taxiway A for the purpose of this report. It has a width of approximately 15 metres and is suitable to accommodate Code C aircraft. The recent tender for the upgrade works includes a 300mm pavement overlay to this taxiway.

3.1.3 APRONS

RPT APRON

The RPT apron is located adjacent to the passenger terminal building. The sealed apron is approximately 50 metres deep by 90 metres wide. The apron currently has two aircraft parking stands able to accommodate Saab 340 aircraft. The recent tender for the upgrade works also includes a 300mm pavement overlay to the RPT apron.

GA PARKING AREAS

There is a sealed parking area for larger visiting GA aircraft to the west of the RPT apron. This apron is approximately 25 metres deep by 45 metres wide.

There is a grassed parking area for light visiting GA aircraft to the south of the RPT apron. Aircraft parking also occurs on the grassed area adjacent to the Merimbula Aircraft Maintenance hangar.

3.1.4 VISUAL AND NAVIGATIONAL AIDS

Radio Navigational Aids

A Non-Directional Beacon (NDB) is located on the airport site to the south of the passenger terminal building adjacent to Arthur Kaine Drive. The DME is co-located with the NDB.

Both the NDB and VOR/DME are owned and operated by Airservices Australia.

Markers, markings, signals and signs

The Runway 03/21 strip is marked with standard white gable markers in accordance with CASA requirements. Compliant pavement markings are provided and in good condition.

There is one (primary) illuminated wind direction indicator (IWI) with a signal area located adjacent to the RPT apron. There is also a secondary wind direction indicator (WI) located to the west of the threshold of Runway 21.

Lighting

Runway 03/21 is equipped with Low Intensity Runway Lighting (LIRL) which is pilot activated (PAL). There are also Precision Approach Path Indicator systems on both runways, located on the left hand-side.

Taxiway A is also lit with blue taxiway edge lights. The RPT apron is floodlit with two lighting columns.

3.1.5 AIR TRAFFIC MANAGEMENT

Merimbula Airport is an uncontrolled airport which operates without an air traffic control tower.

The established Common Traffic Area Frequency (CTAF) – Aerodrome Frequency Response Unit (ARFU) for the surrounding airspace requires all aircraft in the vicinity to broadcast their intentions over 126.7 MHz. Vehicles, machinery and taxiing aircraft should also broadcast their intentions whilst operating on movement areas.

3.1.6 FUELLING FACILITIES

Air BP has a 15 year lease on an area located to the south of the passenger Terminal building. Air BP provides Jet A1 by mobile tanker to aircraft on the apron. An Avgas fuel dispenser is located on an apron area adjacent to the Air BP lease area.

3.2 PASSENGER TERMINAL

The passenger terminal has a total footprint of approximately 300m^2. The main area within the terminal provides seating for 34 people. There are two check-in desks, one of which is used by Rex. The other is currently used by Merimbula Car Hire. Behind the check-in desks is a baggage make up area which opens onto the front of the terminal to a luggage collection point. At the opposite end of the terminal building is the airport café, Port Coffee Shop, with four tables seating up to an additional 16 people. Flying Start Travel has a desk within the airport terminal together with three further car hire desks including Hertz, Avis and Europcar. There is also a small office

currently used by the handling agent as well as male and female toilets. In addition, there is a significant outdoor area on the apron side of the building of approximately 180m^2 which accommodates a spacious open area as well as additional tables and chairs for the café. The main arrival and departures gates to the apron are located outside.

3.3 LANDSIDE ACCESS

Access to the airport site is via an intersection with Arthur Kaine Drive.

A 2 minute drop-off zone is located adjacent to the terminal building and car parking is provided adjacent to this. There are approximately 25 parking spaces restricted to three hour stays within this area with a further 13 spaces without any restrictions. In addition there are, 6-8 spaces also limited to three hours adjacent to the Merimbula Aircraft Maintenance hangar to the north of the terminal.

To the south of the terminal, there are 6-8 spaces utilised by the car hire companies at the airport as well as approximately 20 to 25 informal parking spaces in this area which have no restriction and appear to be used by passengers, airport staff and the Tyres & More business located in this area.

Further to the south, is a secure long-term car park with a security fence which can be used at a cost of $11 per day. There is capacity for approximately 40 vehicles.

In total there are approximately 110 parking spaces at the airport.

3.4 OTHER FACILITIES & ACTIVITIES

3.4.1 BUREAU OF METEOROLOGY WEATHER STATION

A Bureau of Meteorology (BoM) weather station is located on the western side of the runway providing an Automatic Weather Information Service (AWIS).

3.4.2 AVIATION-RELATED BUSINESSES

Merimbula Air Services is a training and charter flight provider located at the airport. It is located in a building directly adjacent to the south of the terminal building. It has six aircraft located at the airport.

Air Sapphire also provides scenic and charter flights from Merimbula Airport. Its hangar is located to the north of the terminal building.

Merimbula Aircraft Maintenance is also located to the north of the terminal building and provide aircraft maintenance services to local and visiting general aviation aircraft.

Flying Start Travel operates from the terminal building as a travel agency. Aviation ID Australia, which provides Aviation Security Identity Cards (ASIC) to airports and pilots across the country, also operates from the airport.

3.4.3 NON-AVIATION-RELATED BUSINESSES

There are also a number of non-aviation related businesses located at the airport including a Tyres & More outlet and workshop as well as a locksmith business.

3.5 ENGINEERING SERVICES

The airport is connected to the town sewer system via a private pumping station. This currently provides a basic and bare minimum capacity for the airport.

The airport is connected to the town water supply however this is via a domestic connection which provides a very poor supply. There is insufficient capacity for fire fighting protection. Water tanks and pumps are maintained on site for this purpose, however the supply remains uncompliant. Further development at the airport would be restricted by this water supply.

The airport is connected to the power and telecommunications supplied along Arthur Kaine Drive. Details on the level of this supply have not been attained.

3.6 ENVIRONMENT

Merimbula Airport is located in an environmentally sensitive area between Merimbula Lake to the west and bushland areas to the east of Arthur Kaine Drive, with extensive foreshore dunes that form part of Merimbula Beach. There are also wetland areas to the south, south west and east of Runway 03/21 and within the airport site itself. As a result the area is considered to have environmental significance. These wetland areas are identified in SEPP14 which aims to preserve and protect coastal wetland areas.

The majority of the airport site is cleared of vegetation with the exception of the area to the west of Runway 03/21 and the area in the south west corner of the airport site in the vicinity of the NDB.

4.0 HISTORICAL AND FORECAST AVIATION ACTIVITY

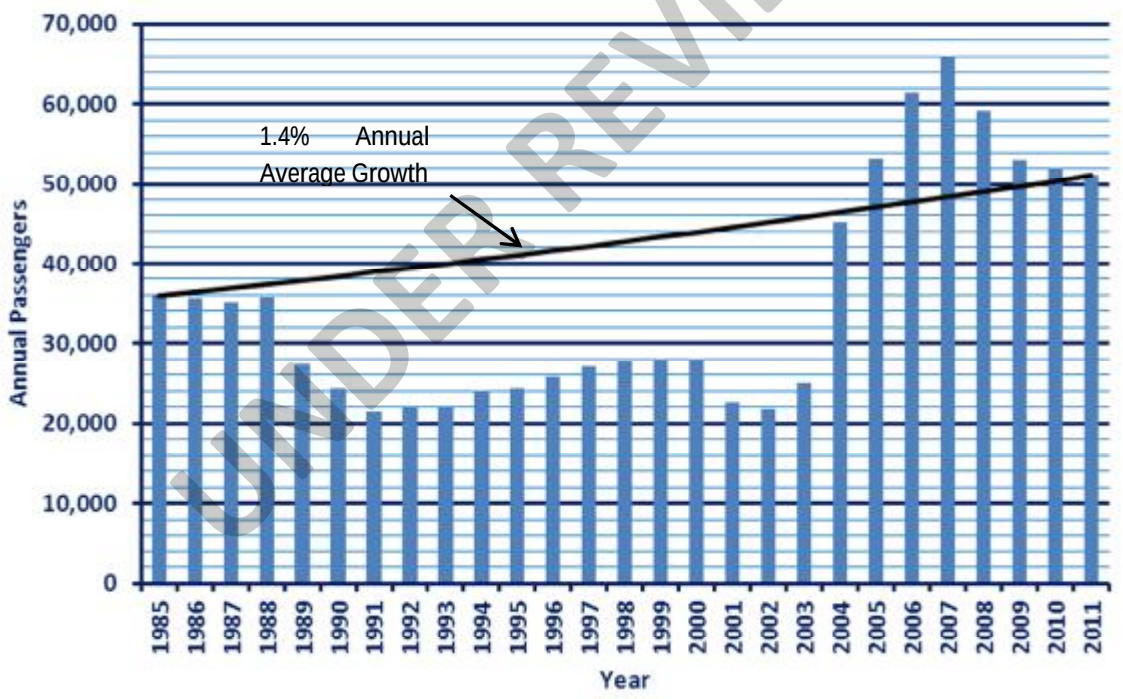
4.1 HISTORICAL AVIATION ACTIVITY

4.1.1 PASSENGER TRAFFIC

Chart 2 shows historical passenger traffic at Merimbula Airport from 1983 to 2011. Overall, there has been an annual average growth of 1.4% over this period.

In 1985 there were approximately 36,000 passengers per annum, dropping to approximately 24,000 in 2002. In 2003, Regional Express (Rex) began operating to Merimbula. From this time passenger numbers grew to 66,000 in 2007 which equated to an annual average growth rate of approximately 25% over this 5 year period. Since 2007 passenger numbers have been falling. In 2011 there were approximately 51,000 passengers per annum. The decline in passenger numbers has however started to slow.

Chart 2: Historical Passenger Traffic 1985 to 2011



Source: BITRE

It has been indicated that current operations include approximately 20% leisure passengers and 80% business passengers.

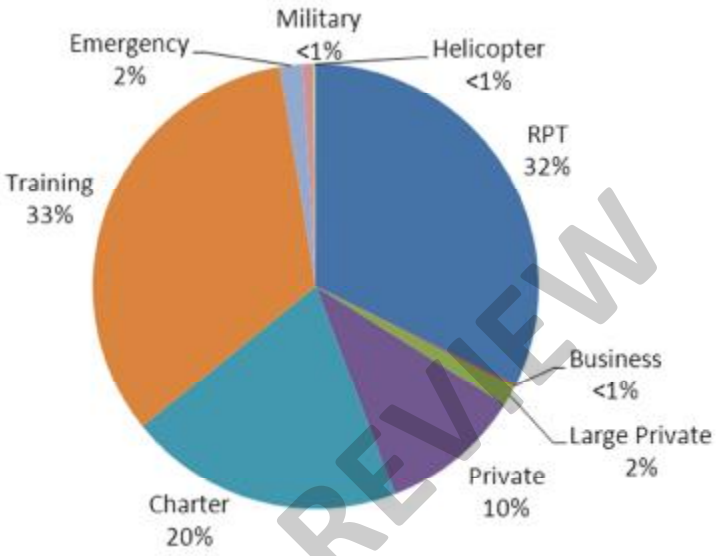
4.1.2 AIRCRAFT MOVEMENTS

Limited information is available for historical aircraft movement numbers at Merimbula Airport. Some data was provided by Airport Agencies Pty Ltd for visiting aircraft however no records are maintained for movements by local aircraft based at the airport. In order to gain an understanding of the approximate level of movements for the last year, indications of movements levels were

provided by some of the frequent local users and these were averaged across the year and added to the itinerant aircraft movements. On this basis it is estimated that in the last 12 months there were approximately 9,000 total movements.

Chart 3 shows the estimated proportion of movements by the type of activity, based on the aircraft movement data collated for 2012.

Chart 3: 2012 Aircraft Movements by Activity



Training

It is estimated that training movements account for approximately one third of all movements. The majority of these movements are assumed to be operated by Merimbula Air Services from the airport itself.

Regular Passenger Transport

Based on the current Rex schedules, it is estimated that approximately a third of all aircraft movements at Merimbula Airport are RPT aircraft. Rex currently operate Saab 340 aircraft to Merimbula from Sydney, Melbourne and Moruya.

Charter

Charter operations are estimated to account for approximately 20% of all aircraft movements. These are assumed to largely be scenic flights operated by the base operators including Merimbula Air Services and Air Sapphire.

Private

It is estimated that approximately 12% of all movements are by private aircraft and are assumed to be largely recreational pilots. However, 2% of these are estimated to be larger private aircraft that may actually be business-related.

Emergency

Emergency operations are estimated to account for approximately 2% of all movements. These largely include operations by the Royal Flying Doctor Service (RFDS).

Business

A very small proportion of all aircraft movements are by small business jets which is estimated to be less than 1% of the total.

Military

Less than 1% of operations are estimated to be military related. Anecdotal evidence suggests that these movements are training-related.

Helicopters

There are only a small number of helicopter movements at the airport, accounting for less than 1%.

4.2 FORECAST AVIATION ACTIVITY

4.2.1 PASSENGER TRAFFIC

Airport infrastructure, particularly the passenger terminal and landside access facilities, need to be planned with sufficient capacity to accommodate potential future passenger levels. Passenger traffic has therefore been forecast to provide a basis for these future facility requirements.

Future passenger numbers and growth rates are related to a variety of factors including travel demand, aircraft types and the resultant seat capacity, aircraft load factors, slot availability at destination airports, airline route economics and traffic growth at existing and potential destinations. Clearly, they are also impacted by a range of external economic system variables that are important to understand in relation to Merimbula and the Bega Valley area.

The key drivers considered to affect passenger numbers and growth rates at Merimbula Airport over the 20 year planning horizon are:

- Growth and development of the tourism market;
- The growth and development in local business activities; and
- Airline activity and business development potential.

The forecasting procedure adopted for this Master Plan included a review of the following:

- Economic conditions affecting the Bega Valley area;
- Underlying demand estimation for domestic city pairs as provided in the Merimbula Airport Demand, Route Profitability and Airport Charges report;
- Potential future airline operating scenarios as set out in the Merimbula Airport Demand, Route Profitability and Airport Charges report;
- Historical and forecast data on passenger movements, aircraft movements, seat capacity and inbound/outbound travel between Merimbula and the existing and future destinations;

- Historical and forecast data on passenger movements, aircraft movements, seat capacity and inbound/outbound travel at other Australian regional airports;
- Airbus and Boeing industry global market forecasts for Australia/New Zealand and the Oceania region as a whole; and
- Other information provided by BVSC.

Based on the drivers highlighted and the information reviewed, three overall growth scenarios have been developed to help determine the potential infrastructure requirements in the future at Merimbula Airport. The passenger numbers have been forecast separately for each scenario based on assumed possible future airline operators, destinations and schedules.

These forecast growth scenarios have been developed for planning purposes to understand the future potential of the airport.

Low-Growth Scenario

The low-growth scenario assumes that the business market currently captured by the existing RPT operations grows steadily but the desired growth in the leisure market is limited. It is assumed that the incumbent airline Rex continues operations to the existing destinations with the same or similar capacity aircraft but with an increase in frequency to both Sydney and Melbourne over the planning period. There is also potential for the commencement of additional service, possibly to Canberra by an additional regional airline operating Saab 340, Jetstream 41 aircraft or similar. This results in a compound annual growth rate of 3.9% and a total of approximately 115,000 passengers per annum by 2033.

Mid-Growth Scenario

The medium growth scenario assumes growth in the tourism market to Merimbula and the entrance of a major regional airline to Merimbula operating larger aircraft, such as the ATR72, Dash 8-300 and/or Q400, to facilitate travel to and from the region by air. The scenario assumes that Rex or a similar minor regional airline continue to operate services largely as they are currently operated.

This results in an annual growth rate of 5.3% over the 20 year planning period and a total of approximately 150,000 passengers per annum by 2033.

High-Growth Scenario

The high growth scenario assumes significant growth in the area's tourism market with the entrance of two major airlines competing on similar routes to Sydney and Melbourne using aircraft such as the ATR72, Dash 8-300 and/or Q400. This scenario anticipates stimulation of demand through this competition as well as the retention of Rex or a similar minor regional airline operating services largely as they do currently.

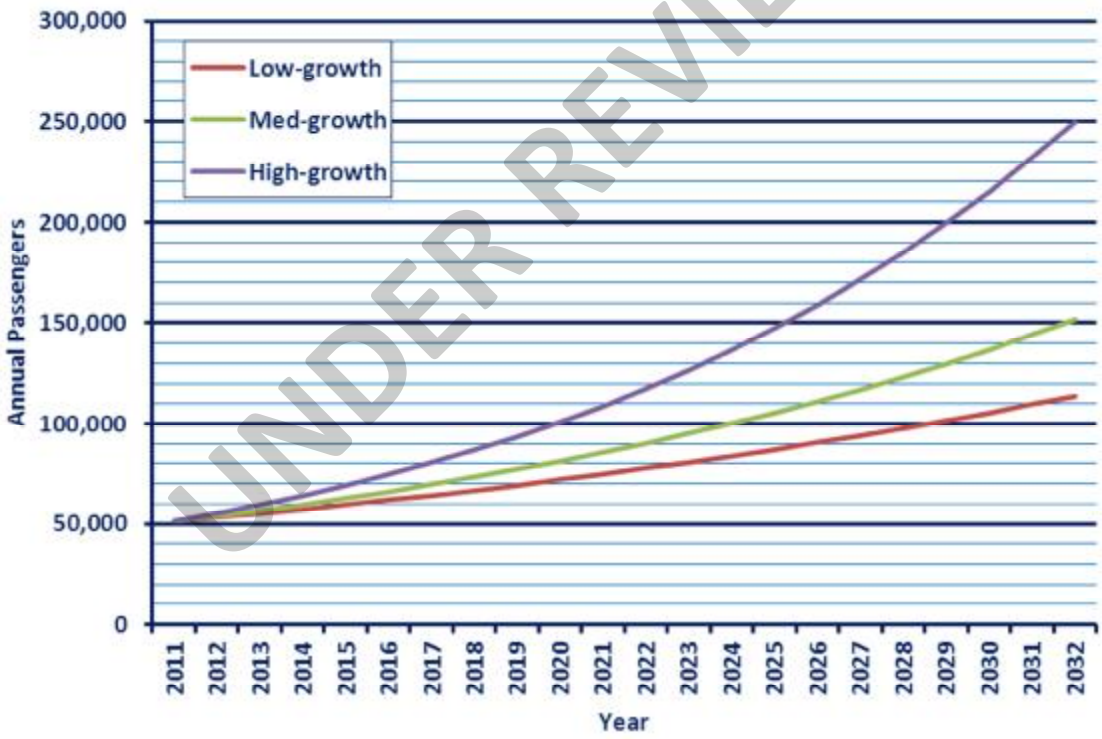
This results in an average annual growth rate of approximately 7.9% over the 20 year planning horizon, resulting in a total of approximately 250,000 passengers by 2033. Despite this relatively high growth factor, this forecast produces an overall passenger volume that is well within the demand estimations undertaken as part of the Merimbula Airport Demand, Route Profitability and

Airport Charges Study. This study estimates total unconstrained demand for FY2016 as 640,000 passengers per annum.

It should be noted that this high-growth scenario has been developed to understand the maximum potential of the airport and provides the basis for the infrastructure planning included within this Master Plan. This ensures that the Master Plan safeguards sufficient land to accommodate infrastructure development to support the anticipated maximum level of aviation activity, if it were to occur. It represents the most demanding scenario in terms of infrastructure requirements in the future. In reality, actual passenger numbers are more likely to be closer to the medium-growth scenario, however the Master Plan provides a framework that is sufficiently flexible to accommodate a higher or lower level of activity but at the same time does not preclude any possible outcome in the future.

Chart 4 presents projected annual passenger numbers for the High, Medium and Low passenger growth scenarios for the forecast period, 2012 to 2033.

Chart 4: Forecast Passenger Traffic 2013 – 2033



These forecasts are for planning purposes only and should not be used as justification for the development of any aspect of the infrastructure included within this Master Plan. Section 9.1 of this Master Plan sets out staging of the infrastructure developments included within this Master Plan including trigger points that should be met prior to development. In addition, separate business cases should be developed for each future infrastructure project. Section 9.4 indicates the steps to be undertaken for infrastructure development.

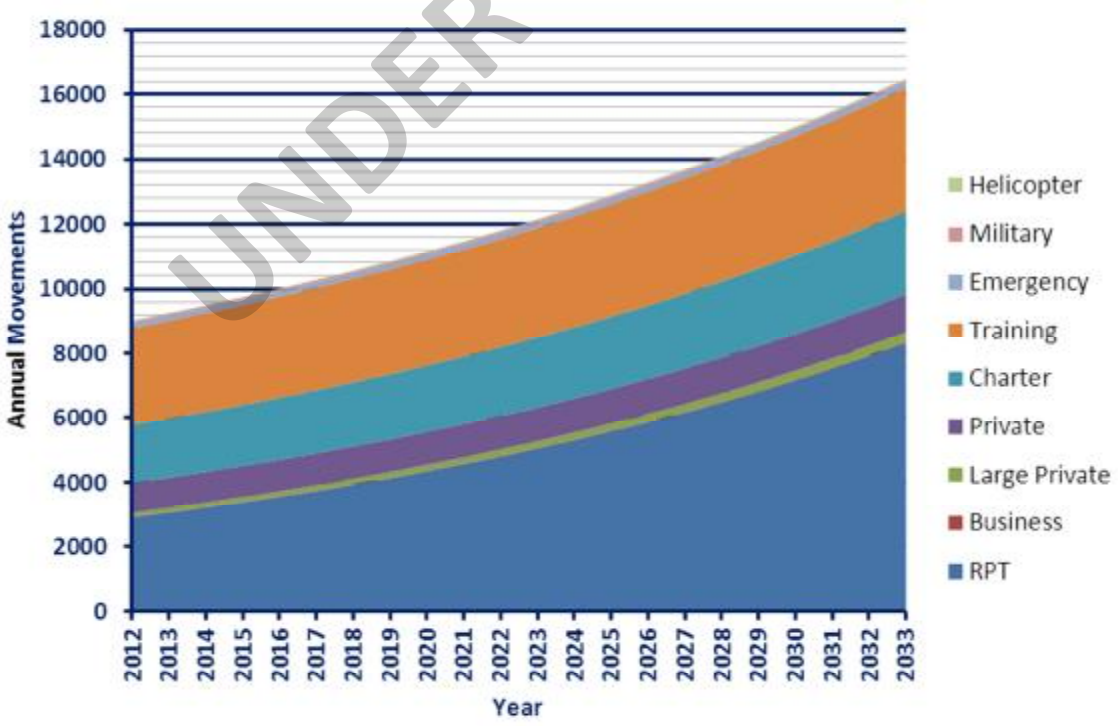
4.2.2 AIRCRAFT MOVEMENTS

Projections of annual aircraft movement numbers have been developed by segmenting aviation activity into the principal component sectors, each of which has differing drivers and prospects for growth at Merimbula Airport. These sectors are:

- Training;
- Regular Public Transport (RPT);
- Charter;
- Private;
- Large Private;
- Emergency;
- Business;
- Military; and
- Helicopters.

The forecast aircraft movement growth in each segment is shown in Chart 5 and discussed overleaf. The forecast movements represent a high-growth scenario and totals approximately 16,500 movements per year by 2033.

Chart 5: Forecast Aircraft Movements 2011 – 2013



The following paragraphs describe the basis for the aircraft movement forecasts by sector.

Training

It is assumed that currently the majority of training movements at the airport are as a result of trainee pilots from the local area. Without any more detailed historical training movements to understand the trend over the last five years, training movements have been forecast to grow at approximately the rate of population growth in the area. This is forecast to be approximately 1.1%[4]. This results in approximately 3,800 training movements by 2033.

Regular Passenger Transport

Regular Public Transport (RPT) movements were estimated with reference to the forecast passenger numbers for the high-growth scenario to ensure that the greatest number of movements considered likely are accounted for in the movement forecasts. An assumed flight schedule appropriate to that of the overall level of traffic, and with consideration of the assumed increase in aircraft size, was developed.

By 2033, in the high-growth scenario, there are estimated to be approximately 250,000 passengers per annum serviced by approximately 830 RPT aircraft movements including 30 to 34 seat turboprop aircraft as well as larger 50-75 seat turboprop aircraft such as the Dash 8-300, ATR72 and Q400. However, if the passenger numbers were to be carried on a mix of aircraft offering a greater frequency of services, movements would be higher.

Charter

Assuming that the majority of current charter movements are scenic flights operated by local charter operators, it is estimated that these types of flights will increase as tourism increases in the area. The Sapphire Coast Tourism Heritage Strategy identifies growth in cultural and heritage tourist activities in the Sapphire Coast region as a key objective. On this basis, charter movements have been forecast at the same rate forecast for growth in cultural and heritage activities across Australia by Tourism Australia, which is 1.7%. This results in approximately 2,600 charter movements per annum by 2033. This rate could potentially be considered as conservative. The Sapphire Coast has great potential for the development of these activities considering the natural attractions it has.

Private

On the basis that most of the private aircraft movements are recreational pilots and this will continue over the planning horizon, it is forecast that these movements will grow at a similar rate to population growth of 1.1%. Those private movements operated by larger aircraft are assumed to be business-related and have been forecast based on the forecast economic growth of the area which stands at 4%. Overall, this results in a 2033 total of approximately 1,200 movements per annum.

[4] Forecast2.id.com.au

Emergency

Emergency operations are assumed to grow at the same rate as population growth of 1.1%. This may increase slightly if tourism in the area increases considerably and the RFDS is required to support a larger seasonal population.

Business

Current business traffic, which includes movements by business jets, is assumed to occur largely as a result of local business and economic activity. On this basis, the growth rates used to forecast business movements at Merimbula Airport to 2033 have been based on the forecast growth in the local economy. It is estimated that the local gross domestic product for industry will grow at approximately 4%[5] per year over the planning period. As a result of the low levels of business jet movements currently, the proportion of this traffic of total movements remains low even in 20 years with an estimated 40 movements per annum.

Military

Little information is available on the existing military movements and their potential future at Merimbula. It has therefore been assumed that these will remain largely flat over the planning period with no growth.

Helicopters

Helicopters currently represent a very small proportion of all aircraft movements and are assumed to stay as such. Helicopter movements are currently likely to be private or charter but assuming the local economy grows as it is forecast to at 4%, helicopter movements may be stimulated by this increased economic activity. On this basis helicopter movements have been forecast to grow at 4% resulting in a total number of movements of 40 by 2033.

[5] Economy.id.com.au

5.0 AERONAUTICAL INFRASTRUCTURE DEVELOPMENT

The proposed aeronautical development concept, covering airfield and terminal infrastructure requirements and development staging, has been prepared on the basis of satisfying a set of critical planning parameters. Section 5.1 sets out the critical planning parameters upon which the aeronautical development proposals are based. This is followed by presentation of the proposals and development concepts for the runways, taxiways, aprons and passenger terminal. Figure 3 to Figure 6 set out the concepts described in this section and can be found in Appendix B.

5.1 CRITICAL PLANNING PARAMETERS

Whilst the forecasts of overall passenger traffic and aircraft movements described in Section 4.0 are useful for gaining an understanding of likely future activity levels, they are of only limited value as inputs to the planning of individual aeronautical facilities. Therefore, more specific key planning parameters have been developed consistent with these overall forecasts.

To determine the key planning parameters, which include terminal sizing requirements and aircraft parking capacity, the potential impacts of varying combinations of passenger traffic and operating aircraft size/frequency were considered in order to plan for the worst case scenario in terms of infrastructure development.

Likely aircraft types, operating frequencies and schedules were determined through discussion with BVSC and the incumbent RPT airline Rex, together with reference to the 'Merimbula Airport Demand, Route Profitability and Airport Charges' report, other industry knowledge and the application of a general understanding of airline operations to determine nominal future flight schedules for three operational scenarios.

For each scenario a base schedule detailing the typical weekly airline operations including airline, origin/destination, scheduled arrival/departure time and operating aircraft type was developed. These nominal schedules with peak aircraft load factors were used to determine the maximum number of passengers in the terminal at one time and maximum concurrent aircraft parking requirements.

5.1.1 TERMINAL AND AIRCRAFT PARKING REQUIREMENTS

The operational scenarios were used to determine the maximum number of passengers in each key element of the passenger terminal. The maximum number and mix of RPT aircraft on the apron at any one time was also identified at key years. This provided the critical planning parameters for the passenger terminal, RPT apron and the components of the runway and taxiway systems used by RPT aircraft.

The RPT requirements are summarised in Table 1.

Table 1: Key RPT Planning Parameters

Stage	Key Terminal Design Parameters (No. of Passengers*)	Max. Apron Parking Requirements (No. of aircraft)			
	Max. Total	Saab 340/J41	ATR72	Q400	Total
1	162	3			3
2	400	1	1	2	4

**Includes both arriving and departing passengers and assumes 80% load factor*

Functional space requirements for the terminal were then developed by reference to the International Air Transport Association (IATA) *Airport Development Reference Manual* (9th Edition) for a Level of Service C. Level of Service C represents a good balance between passenger comfort and space efficiency and is generally adopted as the appropriate level for planning purposes. It should be noted that design parameters for passenger and checked baggage security screening, where considered to be required, have been based on current Commonwealth requirements and experience at other regional airports in Australia.

5.1.2 DESIGN AIRCRAFT CHARACTERISTICS

ICAO Reference Code

The dimensions, shape and layout of basic aerodrome facilities such as runways, taxiways and aprons are essentially determined by the performance capability and size of the aircraft that are intended to use them. The planning and design of these facilities therefore begins by identifying the most demanding or critical aircraft that will use them.

In Australia, like most countries, this is achieved by using an ICAO reference code system. The reference code has two elements, a number and a letter, which are derived by grouping aircraft with similar performance capability and key physical dimensions. Thirteen aircraft groupings, each with a unique code number and letter combination such as 1A, 2B, 3C and 4D have been identified.

The objective is to plan individual facilities for the critical aircraft likely to use them based on the requirements set out in the Manual of Standards Part 139. Different facilities at the airport, such as those intended for RPT services and those intended solely for GA aircraft, are normally planned for their specific critical aircraft. On the other hand, common use facilities such as the primary runway and taxiway system will be planned for the most demanding aircraft envisaged to use the airport.

Pavement Strength

The strength of airfield pavements is classified using the ICAO Aircraft Classification Number/Pavement Classification Number (ACN/PCN) system. The ACN is calculated by the aircraft manufacturer for each aircraft, based on the damaging effect of the aircraft on different types of pavement. The ACN is dependent on both the maximum weight of the aircraft and the number, type and configuration of the landing gear. The ACN also includes a component related to

the tyre pressure of the main gear, which can often become the critical parameter in relation to pavement strength.

Principal Aircraft Parameters

Table 2 summarises the principal relevant planning parameters that relate to aeronautical facilities for each of the key aircraft types that might conceivably use Merimbula Airport in the future.

Table 2: Principal Design Aircraft Key Parameters

Aircraft Type	Wingspan (m)	Tail Height (m)	MTOW (kg)	ICAO Aerodrome Reference Code	ACN (1)	Typical Passenger Capacity (Pax)
Cessna 172	10.9	2.7	1,160	1A	< 5,700 kg	N/A
Cessna 310	11.3	3.3	2,495	1A	< 5,700 kg	N/A
Beech Super King Air 200	16.6	4.5	5,670	1B	< 5,700 kg	N/A
Pilatus PC-12	16.2	4.3	4,740	2B	< 5,700 kg	N/A
Jetstream 41	18.3	5.7	10,443	3C	5	30
Dash 8-300	27.4	7.5	18,645	2C	9	50
Saab 340	21.4	7.0	13,155	3C	7	34
ATR 72	27.0	7.7	22,000	3C	12	68
Dash 8- Q400	28.4	8.3	29,260	3C	16	74

(1) For flexible pavement on a medium (category B) sub-grade

5.2 RUNWAY CAPACITY

The capacity of the proposed Runway 12/30 configuration has been considered. The number of annual movements forecast for 2036/37 is 16,500, Based on experience from other airports the existing runway configuration will provide more than sufficient capacity for the next 25 years and beyond.

5.3 RUNWAY DEVELOPMENT

5.3.1 POTENTIAL FUTURE RUNWAY REQUIREMENTS

BVSC wishes to develop Merimbula Airport to stimulate and support potential future increases in visitors to the area. As discussed in Section 4.0, increased passenger numbers will potentially be accommodated in larger turboprop aircraft particularly if the current license for the Sydney to Merimbula route, currently held by Rex, passes to an alternative airline at the end of the current license period in 2018 or if a new airline commences operations with larger aircraft on the Melbourne route.

The existing runway length is 1,600m and accommodates the Saab 340 aircraft. Preliminary runway length assessments have been carried out, which generally are conservative, and these suggest that the Dash 8-300 (50 seats) and possibly ATR72 (68 seats) may be able to be

accommodated on the existing runway length. However, additional runway length, up to 1,800m would be required to comfortably accommodate the Q400 (74 seats).

5.3.2 RUNWAY DEVELOPMENT OPTIONS

The Wetland area (SEPP14) and Merimbula Lake on three sides of the airport site limit development options for a runway extension because of the impact on the environment. In addition, there are a significant number of obstacles in the vicinity of the airport that also have to be taken into consideration.

The highly constrained nature of the Merimbula airport site has resulted in a number of options for a longer runway being considered including:

- Extension of the existing runway;
- Realignment of the existing runway and extension to a length of 1,800m; and
- Construction of a new runway to the west of the existing runway at a length of 1,800m.

The realignment of the existing runway and the construction of a new parallel runway were considered in detail during the development of this Master Plan. In consultation with BVSC, neither of these options was considered suitable for runway development at Merimbula in the future due to the significant impact on the SEPP14 Wetland areas and the need to reclaim parts of Merimbula Lake, as well as the significant costs associated with these options compared to extension of the existing runway. In an effort to limit the impact of runway development on the environment whilst also limiting future development costs, extension of the existing runway was selected as the future runway development option.

5.3.3 RUNWAY DEVELOPMENT PROPOSALS

The Master Plan proposes the following runway developments, as shown in Figure 3 at Appendix B:

- Sealing to the end of the Runway End Safety Area (RESA) to the south, achieving an additional 120 metres of runway seal. The additional seal would only be useable for take-off to the north and would provide a total take-off run available (TORA) of 1,720 metres to the north. The landing distance available would remain at the current 1,600 metres;
- Extension of the existing runway to the north by 200 metres. Due to the proximity of the airport site boundary and surrounding obstacles it will not be possible to move the inner edge of the take-off climb surface to the end of the extended runway. The take-off climb surface inner edge must stay in its current position. This means that the extension would only be useable for take-off to the south and would provide a total take-off run available (TORA) of 1,800 metres to the south. The landing distance available would remain at the current 1,600 metres. An interim runway development stage to the north is possible by sealing only to the end of the RESA in the first instance, providing a TORA of 1,720 metres to the south of 1,720 metres similar to the arrangement to the south of the runway. However, due to a number of issues including the economies of constructing the full

extension in one step and requirements for runway lighting and turning and by-pass nodes this interim stage is unlikely to provide any benefits over providing the full 200 metre extension in the first instance.

Extension of the runway to the north by 200 metres as well as only sealing to the end of the RESAs both result in a number of issues that need to be addressed, including:

- The addition of Runway End Safety Areas (RESAs) at both runway ends;
- Requirements surrounding the inner edge of the take-off surface of the OLS for both runways;
- A requirement to increase the runway strip width to 150m;
- The provision of by-pass and turning nodes; and
- Extension of the runway lighting

These issues are discussed in more detail in the following sub-sections

RESAs

Extension of the runway will trigger the need to introduce RESAs. The requirement to add a RESA is triggered by any lengthening of a runway and will arise at both ends. RESAs must be a minimum length of 90m where the runway is suitable for aircraft of Code 3 or above and is to be used by air transport jet aircraft. The RESA may be reduced to 60m length in other cases, including use by Code 3 turboprop aircraft such as those anticipated at Merimbula. The RESA must also be sufficiently strong to limit the risk of damage to an aircraft.

The RESA at the northern end can be accommodated as part of the 200m extension because the area north of the current threshold position would not be available for aircraft departing Runway 03 or landing on Runway 21. This is explained in greater detail below. The RESA at the southern end would be located beyond the end of the existing runway strip. It would require fill to achieve the slope requirements applicable to a RESA. Additional fill will also be required to provide an additional 90 metre wide runway strip area around the RESA area accommodating the additional seal. This additional strip area will need to extend beyond the sealed area by at least 30 metres.

The additional seal, to the south to the end of the RESA, would provide an additional 120 metres on the Runway 03 take-off run. It is proposed that the Runway 21 take-off climb surface inner edge is retained in its existing location to minimise the impact on the Wetlands and lake. Any movement of that inner edge would have the ultimate effect of requiring more construction in the SEPP14 Wetlands area. Therefore, this southern extension would not be useable for take-off on Runway 21 or landing on Runway 03.

Obstacle Limitation Surfaces

The location of the existing take-off surface of the Obstacle Limitation Surfaces (OLS) for Runway 03 and the associated inner edge of the take-off surface is controlled by the proximity of the perimeter fence on the east side of the aerodrome and by the development to the northeast of the aerodrome, both of which currently penetrate the OLS take-off surface.

It might be feasible to realign the fence to permit the inner edge to move north but that would result in a steeper climb gradient being required to clear the buildings and potentially other obstacles further out under the take-off surface. For instance, the climb gradient required at present to clear the Water View Apartments to the northeast is approximately 3.18%. If it was possible to move the inner edge 200m to match a runway extension, the climb gradient required to clear the Water View Apartments would be approximately 6.49% which could not be achieved by most aircraft. Aircraft would have to plan to use a much lesser length of runway which would negate the benefit of increasing the available length. Even a smaller change in location of the inner edge would create difficulties because of the proximity of the perimeter fence and Arthur Kaine Drive.

The result is that the landing threshold for Runway 21 and the end of the take-off run available for Runway 03 would have to remain at the location of the existing threshold.

A further possible limitation related to the OLS arises because the existing take-off surface of the OLS for Runway 03 has an inner edge length of 150m, rather than the 180m mandated by the MOS Part 139 for runways that are Code 3 or higher. The existing inner edge length is permitted pursuant to an exemption to the standards in the MOS. The MOS permits existing facilities to comply with standards which were applicable prior to the introduction of the MOS and allows existing exemptions to remain in force. Replacement or improvement of an existing facility attracts application of the MOS standards, unless there is scope for a continuation of the exemption and CASA agrees to it. However, the scope for CASA to permit such exemptions is limited and could not be assured.

This raises two possibilities. It may be possible to retain the existing 150m inner edge or alternatively, CASA may require or may have no option but to require, that the inner edge at its existing location be extended to 180m. An extension of the width of the inner edge would again raise issues in relation to the location of the perimeter fence and, on the basis that it will be necessary to avoid or limit penetration of the OLS the fence would need to be realigned to the east into the existing Arthur Kaine Drive road reserve. The fence realignment would therefore require a significant realignment of Arthur Kaine Drive. A preliminary assessment suggests that a realignment of Arthur Kaine Drive could be accommodated if additional land was resumed to the east of the road reserve. The new alignment would likely require substantial earthworks to lower the level of the road to minimise the penetration of vehicles on the road penetrating the take-off climb surface. The extent to which this would be acceptable would need to be discussed with CASA. The cost of the road realignment should be factored into the overall cost of the extension of the runway.

The realignment will also have some impact on the proposed two hectare tourism site also located to the east of Arthur Kaine Drive, adjacent to the Water View Apartments. A section of the south west corner of the proposed site, of up to 500m^2, may be required to accommodate the road realignment.

The building heights within the proposed tourist site will also be limited as a result of the take-off climb surface and the increase in terrain heights. Assuming some earthworks would be undertaken

in the development of the site and a resulting average terrain height of 4m AHD, maximum building heights would be limited to between approximately 2.5 metres to 4.5 metres along the section under the take-off climb surface. It is therefore estimated that approximately 4,300m^2 of the proposed tourism site will not be developable with buildings. This leaves approximately 1.5 hectares that could be developed and the remainder, beneath the take-off climb surface, could be used for car parking and gardens. Based on the estimated sales revenue from the tourist site provided in the Merimbula Airport Review and Development Feasibility Report March 2011, and the assumed average revenue per square metre it is estimated that the site is proposed to accommodate approximately 5,000m^2 of total sellable floor space. It is estimated that a development of this size could still be accommodated within the 1.5 hectares not affected by the take-off climb surface and therefore there would unlikely be any impact on the estimated revenue to BVSC from this site.

It is recommended that a detailed survey should be undertaken of this area to understand more accurately the existing terrain heights and the impact of the proposed take-off climb surface on the airport site fence, Arthur Kaine Drive and the proposed tourist site.

Bypass nodes

The location of the take-off surface inner edge has additional implications for both runway ends. The MOS Part 139 links the location of the take-off surface inner edge to the location of the runway end by requiring that the inner edge is a minimum of 60m beyond the runway end. Accordingly, both runway ends would remain at their existing locations, controlled by the requirement to keep the take-off surface inner edges at their current location. The MOS also requires that red runway end lights be provided at a runway end. In most cases, aircraft should not be required to cross a row of red lights. This creates a difficulty for aircraft backtracking to use the full extended take-off distance on both runways.

This difficulty is normally overcome by the provision of a taxiway that connects to the extremity of the runway, so that aircraft using it only have to cross the displaced threshold in one direction. The lights would be showing green in that direction. However, there is no space available for a taxiway at the northern end and the SEPP14 Wetlands may delay development of a taxiway at the southern end. Taxiways would also add significantly to the cost. The second option is to provide bypass nodes adjacent to each runway end, which would permit aircraft to taxi around the red lights rather than over them. It would involve an extension of the existing turning nodes. There is no explicit provision for such a bypass node in the MOS but they have been used in similar situations at other airports. Consultation with CASA on this option would be recommended. When the relevant approvals have been gained, Taxiway B should be extended to the new Runway 03 threshold and the by-pass node at the southern end will no longer be required.

Regardless of the above, the landing distance available on both runways could not be increased to the full extended lengths in both directions, although landing distance is less critical from an operational perspective.

Turning Nodes

The proposals for both ends of the runways, whether that is sealing only to the end of the RESA or the full 200 metre runway extension to the north, will require aircraft turning nodes at both runway ends to allow aircraft to turnaround after back-tracking along the runway as a result of the unavailability of parallel taxiways.

Runway Lighting

Sealing of the RESAs will require extension of the runway edge lighting. To avoid the need to re-space all of the runway edge lights, the runway will need to be extended by a multiple of the current runway edge light spacing. This may slightly limit the full extents of the 200 metre extension.

Extension of the runway seal to the end of the RESA or beyond at both runway ends will also require new runway end and runway threshold lights.

Runway Strip Width

The runway strip width is currently 90m, rather than the 150m stipulated in the MOS for non-precision approach runways of Code 3 where the runway width is 30m. The MOS permits the smaller width where it is not practicable to provide the full width. However, CASA is currently undertaking a project to review the use of terms such as “not practicable” because of the inconsistencies in their use throughout the MOS. The project is likely to result in rewording of the MOS which may result in a different application of the standards. That project or the nature of the upgrade is likely to trigger a need to provide a runway strip width of 150m, which would result in a need to clear and/or shorten trees along the western side of the runway to accommodate the transitional surface of the OLS from the edge of the 150m runway strip. This area of trees and bush is identified to be within a SEPP14 wetland area within the Local Environmental Plan 2012. None of the existing facilities on the eastern side of the runway would be affected by the accommodation of a 150 metre wide runway strip.

It is arguable that the increased width would not be required for the extended portions of the runway as these sections would not be available for landing. The runway strips in these areas, beyond the landing threshold, could be limited to a width of 90 metres. This would avoid the need to introduce fill into Merimbula Lake to accommodate the graded strip to the north and will minimise the fill required to the south.

Conclusion

Based on the above sub-sections, the development proposals for both runway ends, whether they include sealing only to the end of the RESA or the full 200 metre runway extension to the north, result in the requirement for a number of issues to be addressed. Therefore, sealing to the end of the RESA to the north as an interim stage, prior to extending the runway to the maximum possible extension of 200 metres does not offer any real benefits in terms of cost or regulatory requirement over extending the runway by the full 200 metres in the first instance.

Sealing to the end of the RESA to the north as an interim stage will provide 120 metres of the full 200 metres, leaving only an additional 80 metres to be constructed at a later time. Splitting construction up will likely increase construction costs of the overall length. Also, the additional costs of addressing all of the above issues are unlikely to make the interim stage economically viable.

5.3.4 DECLARED DISTANCES

Extension of the runway at both ends without movement of either of the inner edges of the take-off surfaces would in effect mean that the benefit of the extensions would be limited to the take-off run available (TORA), take-off distance available (TODA) and accelerate-stop distance available (ASDA) for each of the runways. The landing distances available (LDA) would be unchanged. The proposed declared distances would be as shown in Table 3.

Table 3: Proposed Declared Distances

Runway	TORA	TODA	ASDA	LDA
03	1,722m	1,782m	1,922m	1,602m
21	1,802m	1,862m	1,922m	1,602m

The maximum TORA distances will only likely be required by larger aircraft such as the Q400, and possibly the ATR72, and there is currently no certainty that these aircraft will operate into Merimbula Airport. This is dependent on an airline operating this aircraft type considering Merimbula to be a viable commercial destination.

The current SAAB 340 operator reports that it does not experience any payload limitations on its operations at Merimbula. Increased runway length may provide a further margin but the controlling factor may be the obstacles which exist under the take-off surfaces of the runways.

The types of aircraft using or likely to use the runway must be certified to achieve a minimum 2.4% climb gradient up to 400 feet above ground level. At present, aircraft can only take advantage of the full existing length if they are able to achieve a climb gradient in excess of 3.8%. If that cannot be achieved, they must plan for a lesser take-off distance than the full distance available. Any new operators or new aircraft types would need to meet these take-off climb requirements in addition to being satisfied with the runway length.

It should also be noted that there may also be some disruption to operations during construction of the runway extensions but it would be reasonably limited and could be managed with temporary reductions in the declared distances.

The potential benefits of the runway upgrade are limited to some extent by the obstacle considerations and the presence of the SEPP14 wetlands. An extended runway length but with associated limitations in terms of distances available and take-off climb requirements may reduce the attractiveness to larger aircraft types that the physical extension is designed to attract.

However, there is likely to be some benefit, including increases in the accelerate-stop distances available and in the provision of RESAs at both ends of the runway.

5.4 PASSENGER TERMINAL

5.4.1 EXISTING PASSENGER TERMINAL

The existing passenger terminal is adequate for the current level of activity with the operation of a single Saab 340 at approximately 50% capacity. An increase in the load factor to 100% would result in the terminal being at capacity. Additional terminal space will therefore be required when there are two or more Saab 340 aircraft, or similar, operating simultaneously (assuming load factors are greater than 50%) or a single Saab340 at 100% load factor.

The existing building has been upgraded in the past with extensions to the original building. There is potential for some further expansion into the available area to the west of the existing terminal building where the existing open space is located. The terminal could expand to have a terminal footprint of approximately 500m^2 at a limited cost to accommodate up to three simultaneous Saab 340 or Jetstream 41 aircraft (assuming 50% load factor).

The Air Transport Security Regulations (ATSRs) require all passengers and baggage travelling on aircraft greater than 20,000kg Maximum Take-Off Weight (MTOW) operating RPT services to be security screened. The Saab 340, Jetstream 41 or Dash 8-300 do not currently fall into this category. However it does apply to the Q400 and ATR 72. It is anticipated however, that the security screening requirements will become more stringent and may well in time include aircraft that are currently exempt.

Any upgrades to the existing terminal to accommodate security screening, either as a result of larger aircraft being operated to Merimbula or as a result of more stringent regulations being put in place, will require significant reorganisation and redevelopment of the existing terminal. The scale of work required will likely warrant a complete, or near to complete, rebuild of the existing terminal building. Considering the constrained nature of the current terminal and RPT apron location to accommodate larger and more aircraft, this may provide an opportune time to relocate the passenger terminal precinct to the south where available land exists to accommodate a wider range of future scenarios including aircraft frequency, size and the resultant facilities required to support this. This also provides the opportunity for the existing passenger terminal and RPT apron to be redeveloped for other uses which is discussed later.

5.4.2 NEW PASSENGER TERMINAL

The trigger for relocation of the terminal precinct would be the operation of larger aircraft including Q400 or ATR74 or a change in the current regulation to require security screening for smaller aircraft such as those already operating to Merimbula. Although the existing terminal, with the expansion described in Section 5.4.1, could potentially be made to accommodate passenger screening, this would provide a sub-optimal solution and should only be considered for a limited interim period while the new terminal is being constructed.

The new terminal location, as shown on Figure 6 at Appendix B, would provide sufficient space to accommodate the forecast high growth passengers of 250,000, estimated to be approximately 1,500m^2, and the anticipated peak period for passengers and aircraft within the terminal building and on the RPT apron. This would provide a dedicated GA area on the existing apron and provide space for additional hangars.

Construction of the new terminal building could be developed in stages, an initial terminal footprint of 1,000m^2 would comfortably accommodate the simultaneous operation of two Q400 aircraft.

To allow maximum space for the development of leasable hangar space to the north of the proposed new passenger terminal precinct the Master Plan proposes that the RPT passenger terminal and apron be located adjacent to the Runway 03 threshold. However, this area is included within the SEPP14 Wetlands area and may therefore result in a more lengthy and difficult approvals and planning process to develop this area. There will also be a development cost implication as a result of constructing on a low lying wetland area and the earthworks that will be required to make this feasible. It should be noted that location of the new passenger terminal as far north as possible (closer to the existing terminal) may result in a less complicated and cheaper development option but at the cost of the revenues raised by the leasable hangar sites that could alternatively be developed at this location. It may be more difficult to gain approvals for construction of commercial hangar sites within the SEPP14 Wetlands, therefore it is unlikely that those hangars included in Stage 2 will be possible to construct prior to gaining approval for the relocation of the passenger terminal to the SEPP14 area. It is anticipated that the passenger terminal will carry more weight in achieving these approvals.

5.5 AIRCRAFT PARKING

5.5.1 EXISTING RPT APRON

The existing RPT apron has sufficient capacity to accommodate two Saab 340 or Jetstream 41 aircraft. Whilst blocking access to the existing hangar occupied by Air Sapphire, a third Saab 340 could potentially be accommodated on the existing apron. This would match the maximum capacity of the existing terminal with expansion into the existing outdoor area to the west (without security screening). On the basis that the third parking bay would not be in constant use, the option of accommodating three parking bays on the existing apron would provide an interim measure, with agreement from the leaseholder, prior to the new terminal construction.

However, if the new terminal is not anticipated to be constructed for some time the existing RPT apron would need a small expansion to the south to accommodate the third parking bay whilst leaving access to the Air Sapphire hangar clear. This would require a total pavement expansion of approximately 300m^2 as shown on Figure 4 at Appendix B.

5.5.2 NEW RPT APRON

With the development of a new passenger terminal to the south, a new RPT apron is proposed to be located adjacent to the Runway 03 threshold. Based on the high-growth scenario with a medium

level of frequency, it is anticipated that there could be up to four simultaneous RPT aircraft at the airport including a possible mix of Q400, ATR72, Saab 340 and Jetstream 41 aircraft. Including the possibility of a delayed RPT aircraft at this time also, the proposed new RPT apron shown in Figure 6 at Appendix B has five aircraft parking bays and has an area of approximately 15,000m^2.

The development of the new RPT apron could also match the new terminal building with only a proportion of the ultimate development constructed if required. Three parking bays for two Q400s and an additional bay for delayed aircraft would require an initial construction of approximately 10,000m^2.

5.5.3 GA APRON

The existing area of sealed GA parking to the west of the RPT apron will be affected by the provision of Taxiway G. Therefore, a new area of GA parking is proposed to the south of Taxiway G. This will have capacity for approximately 20 Code A aircraft and 4 Code B aircraft such as the Cessna 172 and King Air 200. It is proposed that this aircraft apron be grass initially with the option to seal if deemed necessary.

A further grass light aircraft tie down area could be accommodated to the north of this area if required, utilising an area of airport land that cannot be used for anything else due to its size, shape and proximity to the runway. This has capacity to accommodate approximately 20 Code A aircraft.

In Stage 2, with the relocation of the passenger terminal and RPT apron, some of the existing RPT apron can also be used for GA parking. This will have capacity for approximately 8 Code A aircraft such as the Cessna 172 or 4 Code B aircraft, such as the King Air 200. The northernmost grass GA parking area will still be available.

The extension of Taxiway B, between Taxiway A and Taxiway D, to provide Code C parallel access, would result in many of the proposed Stage 1 GA parking positions being lost. It should be noted however that this taxiway extension may never be required, depending on the future level of aircraft activity. It is anticipated that the proposed Stage 1 GA aircraft parking positions are unlikely to be affected within the 20 year planning horizon of this Master Plan thus maintaining more than sufficient GA parking. The extension of Taxiway B in this area should only be developed if absolutely necessary.

5.6 TAXIWAY SYSTEM

Taxiway A

Taxiway A is proposed to remain as it is currently providing Code C aircraft access to the RPT apron. When the RPT apron is relocated to the south, it is proposed that Taxiway A be extended to provide Code B taxiway access to the proposed Code B GA parking area on the southern side and the proposed hangars on the northern side.

Taxiway B

For the ultimate layout (Stage 2) the Master Plan proposes the development of a new part parallel taxiway from the Runway 03 threshold to approximately 730 metres form the Runway 21 threshold. The extent of this taxiway towards the Runway 21 threshold has been limited as a result of the nature of the existing terrain, the proximity of the airport site boundary fence and Arthur Kaine Drive. Ultimately this taxiway is proposed to Code C standards and the layout of the surrounding facilities has been planned based on this to ensure it can be accommodated in the future, however this taxiway may be constructed to Code A or Code B taxiway width initially. Taxiway C and Taxiway D are proposed to be new taxiway connectors from Taxiway B to the Runway 03 threshold and Runway 03/21 further to the north, respectively.

In Stage 1, it is proposed that only the necessary sections of the ultimate part parallel taxiway be developed including the section between Taxiway A and proposed Taxiway E, to Code B standard. The section between Taxiway E and Taxiway F may also be developed to Code A standard. In Stage 2, the full extents of Taxiway B to the north may not be required within the lifetime of this Master Plan and should only be constructed is necessary to leave the proposed Stage 1 GA parking area unaffected.

Taxiway E

Taxiway E is proposed to be sealed and provide Code B taxilane access to the proposed Stage 1 hangars and the Avgas Fuel Dispenser from Taxiway B.

Taxiway F

Taxiway F is proposed to provide Code A aircraft access to the proposed Stage 1 hangars in this area. This taxiway remains outside of the SEPP14 Wetland area. It is proposed that this taxiway be developed with a grass surface with an option to seal if deemed necessary.

Taxiway G

Taxiway G is proposed to provide Code A aircraft access to the proposed hangars to the north of the terminal as well as to the new GA parking area in Stage 1. It is proposed that this taxiway be developed with a grass surface with an option to seal if deemed necessary.

Taxiway H

Taxiway H is actually an apron taxilane providing Code A access to the new GA parking area in Stage 1. It is proposed that this taxiway will have a grass surface.

Taxiway I

Taxiway I provides Code B taxilane access to the existing Merimbula Aircraft Maintenance hangar and the proposed new Stage 1 hangars to the south of the passenger terminal building. It is proposed that this taxiway be developed with a grass surface with an option to seal if deemed necessary.

Taxiways J & K

Taxiways J & K will provide Code B taxilane access to the new GA parking area and hangars on the existing RPT apron following relocation of the RPT operations to the south in Stage 2. Much of this taxiway will be located on the existing RPT sealed apron.

Taxiways L & M

Taxiways L & M will provide Code A taxilane access to the proposed hangars to the north of the proposed new RPT area in Stage 2. It is proposed that this taxiway be developed with a grass surface with an option to seal if deemed necessary.

5.7 OTHER AIRFIELD FACILITIES

5.7.1 AERDROME RESCUE AND FIRE FIGHTING SERVICES

It is not anticipated that Merimbula Airport will accommodate a sufficient number of aircraft movements over the planning horizon to require aerodrome rescue and fire fighting services (ARFFS).

5.7.2 BUREAU OF METEOROLOGY WEATHER STATION

The BoM weather station is not affected by any of the Master Plan proposals and can remain in its current location.

5.7.3 VISUAL AND NAVIGATIONAL AIDS

The co-located NDB and DME located to the south of the existing terminal is not anticipated to be affected by any of the development proposed in this area. In planning the layout for this area, the relevant height limitations on structures and objects in the vicinity of the NDB have been considered and the buildings and aircraft parking areas have been located appropriately.

Wind Indicators

The illuminated wind indicator located adjacent to the existing RPT apron will require relocation to make way for the proposed hangars and aircraft parking in Stage 1. It is proposed to be relocated to the opposite side of the runway at a location approximately 400 metres beyond Runway 03 threshold where it can be sighted from the RPT apron also. This location can also be sighted from the proposed new RPT apron in Stage 2.

The secondary wind indicator currently located to the west of Runway 21 threshold can remain in its current location despite the widening of the runway strip to 150 metres.

Lighting

Runway lighting is discussed in Section 5.3.3.

Taxiways B and C will require edge lighting, certainly from the Runway 21 threshold to the proposed new RPT apron initially, with potential expansion along Taxiway B to meet Taxiway A in the longer term.

The new RPT apron will also require flood lighting.

5.7.4 FUEL FACILITY

The existing fuel facility is not anticipated to be affected. This facility is anticipated to continue to provide Avgas over the planning period and would also have the ability to continue to provide Jet A1 to the RPT apron by tankers after the relocation of the terminal precinct to the south. However, if the existing Avgas fuel dispenser was relocated to the east, to the edge of the fuel facility, an additional hangar site with airside access could be gained.

If considered necessary closer to the time of relocation, the Master Plan allows for an area to the south of the proposed new passenger terminal precinct for the location of a new fuel facility. This location is in close proximity to the RPT apron as well as any potential aviation activity that may occur further to the south in the commercial development precinct.

5.7.5 FREIGHT FACILITY

A dedicated area for the development of a freight facility to the north of the new passenger terminal precinct has been allowed for within this Master Plan. This area could be sub-divided and offered for lease for other aviation support facilities that may require convenient access to the RPT apron and may wish to locate here.

5.7.6 AIRPORT DEPOT/WORKSHOP/STORAGE

Allowance has been made within this Master Plan for the relocation of the existing airport depot, workshop and storage area, which is currently located to the south of the existing passenger terminal building. A new location has been identified adjacent to the new passenger terminal building.

6.0 AIRSPACE

6.1 OBSTACLE LIMITATION SURFACES

The airport elevation is approximately 2 metres (7 feet) AHD. The airport site is relatively flat. The elevation at the threshold of Runway 03 is 1.76 metres and at Runway 21 threshold it is 1.88 metres.

Obstacles on or in the vicinity of an airport, whether natural features or man-made structures, may prevent its optimal utilisation by aircraft through:

- Reducing the runway distances available for take-off or landing;
- Reducing the authorised take-off and landing weights for some aircraft;
- Restricting certain types of aircraft; and/or
- Limiting the range of weather conditions in which aircraft can operate.

The shape and dimensions of the OLS for an airport are determined on a case by case basis and needs to be assessed by CASA to determine its operational impact. No structure located on an airport should be allowed to exceed the vertical limits of the OLS unless required to do so to serve its operational purpose.

6.1.1 EXISTING OLS

There are several obstacles that penetrate the existing Obstacle Limitation Surfaces (OLS) at several locations. To the north, there are penetrations of the take-off climb and approach surfaces by several trees. The most critical obstruction is a tree which increases the take-off climb gradient to 3.38%. In addition, approximately 391 metres from the end of the clearway, the take-off climb surface of Runway 03 is penetrated by a TV aerial on the Water View Apartments building with a take-off climb gradient of 3.18%. A number of trees also penetrate the transitional surface. The take-off climb and approach surfaces to the south are also penetrated by trees, the critical obstacle increases the take-off climb on Runway 21 to 3.81%.

A lit tower penetrates the inner horizontal surface approximately 2.4 nautical miles to the north west of the airport. A further lit tower, approximately 3,900m to the north also presents an obstacle penetrating the OLS.

6.1.2 FUTURE OLS

With respect to the future OLS, which is shown in Figure 8 at Appendix B, this has been based on the proposed extended runway to the north and south with a TORA on Runway 21 of 1,800 metres and a TORA on Runway 03 of 1,720 metres, as discussed in Section5.3.

Removal or shortening of a significant number of trees along the western side, some of which appear to be located within the SEPP14 Wetland area, would be required to accommodate the transitional surface.

Some existing terrain, buildings or approved developments may penetrate the proposed future OLS, and the impact of these on future aviation operations will need to be assessed in accordance with the Civil Aviation Safety Regulations at the appropriate time. However, to minimise any further restrictions on future operational flexibility, the proposed future OLS should be adopted within the Local Environment Plan (LEP) at the earliest opportunity and once adopted should henceforth form the basis of assessment of any future development proposals.

Despite the relocation of the runway end and the take-off climb surface inner edge, the climb gradient to some obstacles will increase and may nonetheless result in limitations on the useability of the full length of the runway.

6.2 INSTRUMENT PROCEDURES

6.2.1 EXISTING PROCEDURES

Current published instrument approach procedures for Merimbula include Distance Measuring Equipment (DME) or Global Positioning System (GPS) Arrivals; a Non-Directional Beacon (NDB) approach to circling minima; and Area Navigation (RNAV) non-precision runway approaches based on the Global Navigation Satellite System (GNSS). The published approach procedures are authorised for use by category A, B and C aircraft.

6.2.2 FUTURE PROCEDURES

No specific allowance has been made within this Master Plan for the development of new instrument procedures. However, extension of the existing runway or the construction of a new realigned runway will require review or redesign of all published instrument approach procedures. In order to ensure that future development in the vicinity of the airport does not introduce unacceptable constraints on future instrument procedures that may include precision approaches, it is recommended that suitable future PANS-OPS (Procedures for Air Navigation Services - Aircraft Operations protection surfaces) be developed. Proposed developments can then be reviewed against these surfaces as well as the OLS to ensure future airport operations remain protected.

7.0 AIRCRAFT NOISE

The consideration of the impact of aircraft noise is an important factor in the development of individual Airport Master Plans. An understanding of the noise impact on land adjoining the airport provides valuable information to local government authorities for planning of adjacent land uses. A thorough understanding of both existing and future noise impacts from airport operations is essential to the development of compatible land use zoning in planning schemes around airports. It is also important for the general public to be able to understand possible future noise impacts in a wider sense, to assist individuals in making their own assessment for their acceptability.

The provision, in this section of the Master Plan, of information on projected noise impacts for Merimbula Airport, is intended to enable BVSC to make informed decisions for the development and implementation of future Airport Master Plans and Local Environmental Plans to ensure that:

- Sensitive receptors are located in areas of acceptable aircraft noise;
- The amenity of other surrounding developments is not adversely affected by aircraft noise; and
- Airport operations are protected, in the long-term, from stakeholder conflicts due to the encroachment of inappropriate development into noise affected zones.

7.1 THE ANEF SYSTEM

The principal means of assessment of potential aircraft noise exposure at a given site in Australia is based on the Australian Noise Exposure Forecast (ANEF) system. The ANEF system was developed in the early 1980s based on a social survey of the reaction of people around several Australian airports to noise from aircraft. The ANEF combines the effects of the intensity, duration and number of noise events as well as incorporating a penalty for events at night which is illustrated by contours.

The ANEF is intended to be used to guide the long-term decisions of land-use planners about types of compatible development in areas that may be subject to significant levels of aircraft noise in the future. Additionally, the ANEF system is the basis of *Australian Standard AS 2021-2000 Acoustics – Aircraft noise intrusion – Building siting and construction* (AS2021-2000) which provides guidance on the protection of new buildings against aircraft noise intrusion and on the acoustical adequacy of existing buildings in areas near aerodromes.

Although the ANEF system is considered suitable for land-use planning purposes it is not without limitations. The ANEF system is a ‘one size fits all’ approach to land use planning. The ANEF criteria for acceptable land use are the same whether the land is in the vicinity of a major international airport or a small regional aerodrome without jet aircraft. The system does not take into consideration local conditions, for example an airport on a Greenfield site is treated as one which has already been developed.

The ANEF is a complex metric which combines the effects of loudness, duration and frequency of noise events to develop a measure of the cumulative noise dose. Although a technically complete measure of noise impacts, it does not illustrate noise in a way to which the non-expert can easily relate. Nevertheless, the ANEF remains the only aircraft noise metric for which land use planning guidelines and requirements (as set out in AS2021:2000) have been developed.

7.2 NOISE MODELLING SOFTWARE

7.2.1 INTEGRATED NOISE MODEL

The ANEF for Merimbula Airport was prepared using the Integrated Noise Model (INM) version 7.0(b). The INM software has been developed and progressively refined by the United States Federal Aviation Administration to enable the estimation of noise impacts around airports resulting from aircraft operations.

The INM calculates noise impacts by applying standard or user defined aircraft flight profiles, performance data and noise curves to the specific runway configuration and flight tracks. Under the ANEF system, the time of day at which operations take place is also factored into the noise computation. This allows for varying sensitivity in people's reaction to noise.

In interpreting the output of the model it should be noted that:

- Aircraft movements are allocated as a day or night operation, defined as being the hours between 7.00 am to 7.00 pm and 7.00 pm to 7.00 am respectively;
- The number of approach and departure operations modelled relate directly to the actual number of approach and departure movements; and
- The INM requires touch and go (TGO) training to be modelled as a circuit, the initial take-off coupled with the final landing, in conjunction with a number of TGO operations (i.e. each INM circuit or TGO corresponds to two aircraft movements).

The model has been constructed to produce the Australian Noise Exposure Forecast (ANEF) metric defined in AS2021:2000.

INM only considers noise from aircraft taking off, landing and in-flight. Ground-based noise, such as that from taxiing aircraft or engine run-ups or that from ground vehicles or equipment is not included in the model, and therefore cannot be represented in the ANEF. Individual developments which have the potential to generate significant ground-based noise, such as engine run-up facilities or the development of a new RPT terminal and apron, should incorporate further, more detailed, studies to provide an assessment of the noise impacts of these proposals. Airport operational matters influencing noise from ground-based sources should be managed in consultation with local residents through a community consultation strategy.

7.2.2 TNIP

The Transparent Noise Information Package (TNIP) has been produced by the Department of Infrastructure, Transport, Regional Development and Local Government (DITRDLG) to enable aircraft noise disclosure information to be rapidly produced for individual airports. The software

takes data outputs from INM (discussed in Section 7.2.1) to produce a range of flight path and aircraft movement based noise descriptors or to produce and manipulate conventional noise contours. The 'Number Above' noise contours are produced using TNIP.

7.3 AUSTRALIAN NOISE EXPOSURE FORECAST

An Australian Noise Exposure Concept (ANEC) contour map has been produced to illustrate the results of the ANEF, it is based on the forecast aircraft movements in 2033 as presented in Section 4.0. Overall, the 2033 forecast has been estimated to reach approximately 16,500 movements per annum.

The Merimbula ANEC contours developed as part of this Master Plan are shown in Figure 9 and included at Appendix B. These contours and the ANEF model behind them have been developed to a standard that would enable them to be submitted to Airservices Australia to be endorsed for technical accuracy in the manner of endorsement approved by the Minister for Infrastructure, Transport, Regional Development and Local Government.

The ANEC shows the significant contours including the 20, 25 and 30 ANEF. In terms of the ANEF contours that are significant under AS2021-2000:

- The 30 and 35 ANEF contour does not extend beyond the airport site boundary.
- The 25 ANEF contour extends beyond the airport boundary only to the northeast of the airport site, the contour sits adjacent to the site boundary of the proposed tourist site on the opposite side of Arthur Kaine Drive; and
- The 20 ANEF contour extends beyond the site boundary to the northeast of the airport site over the proposed tourist site on the opposite side of Arthur Kaine Drive. The contour sits adjacent to the boundary of the existing Water View Apartments site. To the north the contour narrowly avoids the existing development to the east of Fishpen Road. The contour also extends beyond the airport site boundary to the east over undevelopable land.

AS2021-2000 classifies the construction of residential development between 25 and 30 ANEF to be unacceptable, however, the development of hotels, motels and other short-term residential facilities are classified as conditionally acceptable. For construction of new residential developments between 20 and 25 ANEF, AS2021-2000 classifies it as conditionally acceptable, however some people may find that this land is not compatible with residential or educational uses. 'Conditionally Acceptable' means that the relevant aircraft and the required noise reduction should be determined and the aircraft noise attenuation to be expected from the proposed construction should be in accordance with the construction guidelines set out in the document.

Council should incorporate the ANEF contours into their local planning scheme to ensure future development is aligned with airport's forecast development.

7.4 N60 AND N70 CONTOURS

The ANEF system is generally recognised as being the most technically complete description of aircraft noise in use in the Australian context and the ANEF is the only metric recognised under

AS2021:2000. However, it is also widely recognised that the ANEF system is not easily translated into the important factors which affect how individuals react to aircraft noise: the number of over flights and the loudness of individual events. This is due to the way the ANEF combines the effects of loudness, duration and frequency of noise events to develop a measure of the cumulative noise dose.

'Number above', or 'N', contours illustrate the average number of events per day louder than a certain sound level. In the case of the N60, this level is 60 Db(A). The single event level of 60 Db(A) is specified in Australian Standard AS2021:2000 as the indoor design sound level for normal domestic areas in dwellings and 70 Db(A) is the noise level at which conversation is disturbed within a house with the windows open.

Contours such as the N60s and N70s assist the community to better understand the impacts of aircraft noise by giving individuals the ability to interpret aircraft noise based on actual counts of aircraft with a noise profile greater than a certain level over a range of flight paths. The provision of 'Number Above' contours has been recently recommended by Department of Infrastructure, Transport, Regional Development and Local Government (previously the Department of Transport and Regional Services) in a discussion paper entitled *Guidance Material for Selecting and Providing Aircraft Noise Information*. They have also proven to be a good way to produce a 'whole of airport' picture of single event aircraft noise patterns which is easy for the general public to understand.

N70 and N60 maps for Merimbula Airport have therefore been produced based on the 2033 forecast traffic, as set out in Section 4.0. The N60 and N70 contours are shown on Figure 10 and Figure 11 respectively, at Appendix B.

Figure 10 at Appendix A shows the noise events above 60 Db(A) on an average day. The following areas are anticipated to be affected:

- The residential area to the north and northeast of Merimbula Airport is expected to experience up to 25 events including the proposed tourist site and the existing holiday homes and apartments in this area;
- Areas of Merimbula town centre are expected to experience up to 20 events, this includes residential areas;
- The majority of Merimbula may experience between 5 and 20 events;
- Residents to the east of the airport will also experience between 5 and 10 events; and
- Pambula and South Pambula to the south of the airport could be expected to be affected by between 5 and 15 events.

Figure 11 at Appendix B shows the noise events above 70 Db(A) on an average day. The following areas are anticipated to be affected:

- The residential area to the north and northeast of Merimbula Airport is expected to experience up to 25 events including the proposed tourist site and the existing holiday homes and apartments in this area;
- Areas of Merimbula town centre are expected to experience up to 10 events this also includes residential areas;
- To the south, Pambula could experience between 5 and 10 events on an average day.

8.0 COMMERCIAL DEVELOPMENT & LANDSIDE ACCESS

Airports with available land that is not required for future aeronautical infrastructure have the potential to generate diverse revenue streams and produce economic generators. Revenue raised through the use of this land can be used to pay for major investments and expenditure growth. The airport also has a wider economic benefit to the area. The airport and the businesses located there employ local people. Furthermore, airports also invest relatively large amounts to meet new requirements, maintain their infrastructure and expand capacity. These investments often comprise both local construction and equipment.

BVSC would like to continue to take advantage of the available land at the airport to develop aviation-related activities and businesses whilst not infringing on the aeronautical requirements of the airport.

8.1 DEVELOPMENT OPPORTUNITIES

During consultation with key stakeholders including BVSC a number of possible opportunities for development at Merimbula Airport were identified including:

- Airline headquarters/base;
- Visitor information centre including Indigenous Cultural Centre & National Parks Centre;
- Fire/Ambulance/Police located on airport
- Private aircraft storage
- Aviation-related business park; and
- Non-aviation related business park.

As businesses begin to locate at the airport, opportunities exist to exploit potential synergies between businesses. For example, the establishment of a light aircraft maintenance business at the airport may attract other charter operators and private aviators to locate to the airport.

8.2 PROPOSED DEVELOPMENT PRECINCTS

To accommodate the above identified opportunities, precincts have been identified based on their specific requirements, likelihood, timing, synergies with other activities at the airport and the available land. Three potential development precincts have been identified within the existing airport boundary. These are:

- Precinct 1: General Aviation Precinct;
- Precinct 2: Commercial Precinct; and
- Precinct 3: Visitor Information and Cultural Centre.

The precincts are indicated on Figure 3 at Appendix B.

The proposed precincts are those that have been identified during the preparation of this Master Plan, through the stakeholder consultation process. Demand for particular land uses is the key factor which will determine the extent to which the proposed development may occur.

8.2.1 PRECINCT 1: GENERAL AVIATION (HANGAR DEVELOPMENT)

Ideally aeronautical infrastructure and non-aeronautical activities would be segregated into individual precincts. However, due to the limited available space at the airport and the location of some critical existing facilities, the proposed areas for aviation-related activities, which largely consist of private hangar space and aviation-related commercial activities such as aircraft maintenance and charter operator bases, are dispersed amongst the GA parking areas.

Stage 1

Stage 1 hangar site development has been planned on the basis of avoiding the SEPP14 Wetland areas. Up to 12 new hangar sites (approximately 15 metres by 15 metres) to the north of the Merimbula Aircraft Maintenance hangar are proposed as shown on Figure 5 at Appendix B. These hangars do not affect any of the existing developments and could be the initial stage of the commercial development of the airport.

To maximise leasable land, hangar sites have been proposed either side of the RPT apron. It is recommended that the hangars away from the RPT apron are developed first to delay development directly adjacent to the RPT apron for as long as possible so that as much flexibility in the use of the RPT apron can be maintained. However, even with the full Stage 1 hangar development as shown on Figure 5 at Appendix B, three Saab 340 aircraft or two Q400/ATR 72 aircraft can still be accommodated on the existing apron if required.

Hangar sites are proposed opposite the existing Merimbula Aircraft Maintenance hangar, to the north of the RPT apron, to which Code B aircraft access is provided. One of these sites will be accounted for with the realignment of the existing Air Sapphire aircraft hangar. The realignment of this hangar will allow for one additional Code B hangar site (30 metres by 15 metres) to be accommodated in this area. The two existing buildings adjacent to the Air Sapphire hangar are proposed to be removed. To the south of the RPT apron, a combination of Code A and Code B hangar sites are proposed. This will include the realignment of the two existing private hangars in this area to ensure the available space can be maximised.

The existing Merimbula Air Services lease site will be unaffected. The existing Tyres & More shed is proposed to be retained and will remain without airside access. This lease can continue to be used for a non-aviation activity or it may be attractive to an aviation-related business that does not require airside access.

Stage 1 proposals will provide the following aviation-related lease site areas:

- Approximately 23 lease sites (including 6 existing);
- 20 sites with airside access and 2 without; and
- A total leasable area of 9,200m^2 including 2,500m^2 existing leased areas.

Stage 2

Following the development of the new passenger terminal precinct, to maximise the leasable area and therefore possible future revenues at the airport, as much of the existing RPT apron and surrounding area has been proposed for future commercial and private hangar development as possible.

An additional row of hangars either side of the RPT apron is proposed with Code B airside access. A further three rows of hangars between the hangars developed in Stage 1 and the new passenger terminal and RPT apron are proposed. These will have Code A aircraft access. These hangars are located within the SEPP14 Wetland area and are unlikely to be developed prior to the new passenger terminal and RPT apron due to the approvals process required for to be met prior to development in this area.

The existing airport depot/workshop area is proposed to be relocated to the south of the proposed new passenger terminal building and the existing site can be reused as a lease site. The Merimbula Air Services building is proposed to be retained in its current location.

As shown on Figure 6 at Appendix B, Stage 2 proposals will provide the following aviation-related lease site areas (in addition to Stage 1):

- Approximately 22 lease sites;
- 21 sites with airside access and 1 without; and
- A total leasable area of 7,300m^2.

8.2.2 PRECINCT 2: COMMERCIAL

Precinct 2 has been identified for the development of aviation-related and potentially non-aviation-related commercial activities. It is located to the far south of the airport site beyond the threshold of Runway 03. This is located within an area identified as SEPP14 Wetlands for which the relevant planning approvals process will have to be completed prior to the commencement of any development in this area. Due to the low lying nature of this area any development will require earthworks to ensure the required slopes are adhered to on the airside infrastructure as well as the landside.

Precinct 2 has the potential to accommodate airline support facilities including an airline headquarters/base if required or other activities requiring access and parking for aircraft up to Code C size. Figure 6 at Appendix B shows a possible layout with possible hangars/other buildings fronting on to an aircraft apron that can accommodate up to Q400 aircraft. Airside access is provided to the apron via an extension to Taxiway B.

Further leasable areas are also provided along the airport site boundary edge. These do not have airside access but could potentially be attractive for the location of aviation-related businesses that support the other activities in the precinct and across the airport. If agreeable to BVSC, these lease areas could be occupied by non-aviation related commercial activities.

Based on the indicative layout shown on Figure 6, there is potential for a total leasable area of approximately 24,000m^2.

BVSC should consider carefully how the available land will be made available to developers. Council has the option to lease or sell freehold the individual sites. It should be considered that the lease of sites within the airport boundary is generally favourable on the basis that BVSC maintains long-term control of the land. Several sites held on freehold purchase basis may restrict future plans for the adjacent sites and could reduce the flexibility of the surrounding land. Through projects at other regional airports, REHBEIN Airport Consulting has also witnessed regional council's difficulties in developing airports based on past decisions to sell land on a freehold basis.

8.2.3 PRECINCT 3: VISITOR INFORMATION AND CULTURAL CENTRE

Following the relocation of the passenger terminal precinct, the Master Plan proposes that the existing passenger terminal building potentially be reused as a visitor information centre that could include an Indigenous Cultural Centre and/or National Parks Centre.

8.3 LANDSIDE ACCESS

8.3.1 EXTERNAL ACCESS

With the relocation of the passenger terminal precinct to the south of the airport site and the possible commercial development in Precinct 2, it is proposed that a new intersection with Arthur Kaine Drive be developed in this vicinity. The new intersection is proposed at a location that provides sufficient sight distances to the south for the current standard of road with a limit of 90 kilometres per hour. A detailed traffic impact study for the site would need to be undertaken, however due to the level of passenger traffic that is anticipated at the airport when the new passenger terminal precinct is developed, the new intersection may need to be controlled or a roundabout implemented to ensure the safe movement of traffic through the intersection. The Master Plan assumes that the existing airport access from Arthur Kaine Drive can be retained as a secondary access for the proposed Visitor Information Centre to be located within the existing passenger terminal building.

8.3.2 INTERNAL ACCESS

The Master Plan proposes the development of the internal access road network to support the proposed aeronautical and non-aeronautical facilities, particularly in the south eastern corner of the airport site. From the new intersection with Arthur Kaine Drive an access road loop around the proposed short-stay car park will provide access to the passenger terminal building. A one-way passenger set-down and pick-up area will be provided at the front of the terminal. This new internal access road loop will connect with internal roads providing access to the commercial development precinct to the south as well as the proposed long-stay car parking, hangar development, GA area and Visitor Information Centre to the north.

The existing location of the Air Sapphire hangar, and the two buildings directly north of this hangar, so close to the eastern airport site boundary results in a pinch point in the access route to the area

to the north. As discussed in Section 8.2.1, these buildings are proposed to be relocated or removed which will enhance access to the proposed hangar development to the north.

8.3.3 CAR PARKING

Existing Passenger Terminal Precinct

As passenger numbers increase whilst operations remain at the existing passenger terminal building, the current parking provision may reach capacity. Currently some of the parking at the airport has a 3 hour limit, in the short-term BVSC may wish to extend this limit to more of the existing parking in the vicinity of the terminal to increase the capacity of short-stay parking if required and encourage long-stay parking in the paid, secure car park. Any parking spaces not time limited should be dedicated as long-stay parking spaces; these should generally be located further away from the passenger terminal than the short-stay spaces. If further long-stay parking spaces are required, additional car parking can be developed to the south of the existing secure car park. The existing secure car park could potentially be redeveloped and integrated into the new car park.

Any car park development to the south of the existing could potentially be merged with the proposed long-stay parking for the new passenger terminal. Additional parking for the GA and aviation-related activities at the airport could also occur in this area.

Following the development of the new passenger terminal precinct and the reuse of the existing terminal building for a Visitor Information Centre, a dedicated parking area opposite the existing passenger terminal building on the opposite side of Arthur Kaine Drive could be developed for this purpose. This parking could include accommodation of long-vehicles such as campervans and vehicles with caravans. Suitable mitigation measures would need to put in place to ensure pedestrian safety whilst crossing Arthur Kaine Drive to access the Visitor Centre, such as a pedestrian crossing.

As is happening at several other regional airports, BVSC may wish to introduce a fee for parking at the airport. This could potentially be introduced in the short-term and a fee charged for both short-stay and long-stay parking. To facilitate this a time limited free parking area for passenger drop-off and set-down would need to be accommodated in the vicinity of the terminal. The Master Plan proposes that this should be located directly adjacent to the terminal for ease of access for these passengers. Car parking fees, structures and revenues are considered further in Section 9.0.

New Passenger Terminal Precinct

Based on the high-growth scenario, it is estimated that by 2033, approximately 350 parking spaces may be required at the airport for passengers. It is proposed that the area directly south of the proposed passenger terminal be dedicated short-stay spaces and the area directly to the north of this be used as long-stay parking. This area can potentially provide more than 400 spaces which is estimated to be more than sufficient to support passenger operations at the airport.

In stage 2 it is proposed that the existing secure car park will be upgraded with a boom gate, ticket system and CCTV. At this stage there would be an opportunity to relocate the secure car park closer to the new passenger terminal to provide a 'Premium' parking product.

8.4 ENGINEERING SERVICES

The Master Plan proposes an upgrade to the water supply to the airport in Stage 1 through the provision of a new water main capable of providing sufficient water to support the ultimate airport development. This will provide sufficient supply to ensure all requirements in relation to fire-fighting are met. The new water main is proposed to be located along Arthur Kaine Drive and connected to the existing system at the northern extremity of the airport site.

The existing sewer pumping station and related infrastructure are assumed to be adequate for Stage 1, however the Master Plan proposes the upgrade of the pumping station and rising main to the waste water treatment plant in Stage 2. This will ensure adequate capacity is provided for the ultimate development of the airport.

Details have not been attained on the power supply to the airport, however, based on the current activities and to provide a conservative cost estimate, the Master Plan safeguards for the upgrade of the current power infrastructure with a new connection at the northern extremity of the airport site to support the ultimate airport development.

9.0 IMPLEMENTATION PLAN

9.1 DEVELOPMENT STAGING

9.1.1 AERONAUTICAL INFRASTRUCTURE

The anticipated staging of the proposed aeronautical development concept described in the preceding sections is summarised in the following sub-sections. Development staging is subject to a range of external factors as well as demand. The timing and location of developments as set out below will need to be subject to periodic review and adjustment as a result of these factors. The Master Plan, whilst setting out the optimum long-term land-use arrangement for the airport site, incorporates flexibility to adjust the location and timing of particular developments as necessary to suit specific constraints.

Stage 1

The key components of the aeronautical concept proposed in Stage 1 are summarised in Table 4. Expected trigger points for implementation of each component and anticipated lead time including design and construction are also indicated (the stated lead time does not include the planning approvals process). On the basis of the anticipated growth and development in aeronautical activities current at the time of the preparation of this Master Plan, Stage 1 development is expected to occur sometime time between 2013 and 2023. Actual development timeframes will depend on a number of factors including the preparation of detailed business cases for each element.

Table 4: Proposed Stage 1 Development

Proposed Development	Anticipated Trigger	Lead Time
Expand existing terminal	2 simultaneous Saab 340/Jetstream 41 aircraft or 50,000 - 60,000 pax per annum	6 months
Expand existing RPT apron	2 simultaneous Saab 340/Jetstream 41 aircraft or 50,000 - 60,000 pax per annum	6 months
GA Apron	Hangar development	6 months
Part Taxiway B from Taxiway H to Taxiway J	Hangar development	6 months
Taxiway access to proposed hangars (incl. Taxiways F, G, H & J)	Hangar development	6 months
Existing runway 200m extension to the north	Operation of larger turboprop aircraft or approx.. 100,000 pax. per annum*	6 months
Existing runway 120m extension (south)	Operation of larger turboprop aircraft or approx.. 120,000 pax. per annum*	6 months

*Passenger numbers have been provided to indicate when in the future larger aircraft may begin operations however, these passenger numbers could theoretically also be achieved by a higher frequency schedule with smaller aircraft.

Stage 2

The key components of the aeronautical development concept proposed in Stage 2 are summarised in Table 5. Expected trigger points for implementation and lead time of each component are also indicated. On the basis of the anticipated growth and development in aeronautical activities current at the time of preparation of this Master Plan, Stage 2 development is expected to occur at some point between 2023 and 2033. Actual development timeframes will depend on a number of factors including the preparation of business cases for each element.

Table 5: Proposed Stage 2 Development

Proposed Development	Anticipated Trigger	Lead Time
Develop new passenger terminal precinct to the south incl. terminal building and car parking	Operation of larger turboprop aircraft (ATR72/Q400) or approx. 120,000 pax. per annum*or requirement to implement passenger and baggage screening	1 year
Extend Taxiway B south of Runway 03 threshold	Commercial Precinct development	6 months
Commercial Precinct apron development	Demand for commercial sub-division with airside access	6 months
Expand new passenger terminal precinct	More than 2 simultaneous ATR72 or Q400 aircraft or 200,000+ pax. per annum	6 months

*Passenger numbers have been provided to indicate when in the future larger aircraft may begin operations however, these passenger numbers could theoretically also be achieved by a higher frequency schedule with smaller aircraft.

9.1.2 COMMERCIAL & LANDSIDE ACCESS

The optimum staging of the non-aeronautical development is in part linked to the proposed aeronautical development concept staging.

Stage 1 (2013 to 2022)

Stage 1 should include the development of infrastructure to accommodate opportunities which are considered likely and which also represent low to moderate development costs.

Stage 1 non-aeronautical development should therefore be concentrated in those areas that do not impact upon the existing aeronautical facilities including the passenger terminal precinct and RPT apron.

Stage 2 (2023 to 2033)

Stage 2 should see the development of infrastructure to accommodate opportunities that are considered less certain than those included in Stage 1 and which have a moderate to high cost.

Stage 2 of the non-aeronautical development will include expansion of the hangar development in the area on and surrounding the existing RPT apron as well as the development of commercial development in Precinct 2.

Stage 2 will also include expansion of aviation-related commercial development without airside

Table 6 provides a summary of the non-aeronautical development proposals within each stage together with anticipated trigger points.

Table 6: Commercial & Landside Access Development Staging

Proposed Development	Anticipated Trigger
STAGE 1(2013 - 2022)	
Precinct 1 – General Aviation (hangar development)	Immediate
Long-stay car park on opposite side of Arthur Kaine Drive	On demand
STAGE 2 (2023 - 2033)	
Precincts 1 Expansion	Development of new passenger terminal precinct
Precinct 2 – Commercial	On demand
Long and short-stay car park development	Development of new passenger terminal precinct

9.2 INDICATIVE DEVELOPMENT COSTS

The costs have been developed based on REHBEIN Airport Consulting's experience from similar projects at other regional airports as well as unit rates provided in Rawlinson's Australian Construction Handbook 2011. All costs have been adjusted for inflation as appropriate, as well as the impact of the regional location with a 1.12 multiplier on Sydney rates.

The indicative costs for each stage of development are presented in Table 7.

Table 7: Indicative Development Cost Estimates

Proposed Development STAGE 1	Indicative Cost ($ million)
Aeronautical Infrastructure	
Expand existing terminal building	1.0
Expand existing RPT apron	0.04
GA Apron – sealed & grass	1.6
Taxiway G	0.4
Taxiway B between Twy A & F	0.4
200m runway extension - north (Stage 1a)	2.0
Arthur Kaine Drive realignment (Stage 1a – if required)	0.95
Seal to end of RESA - south (Stage 1b)	1.2
Non-Aeronautical Infrastructure	
Precinct 1 – General Aviation (Hangar development)	2.5
Long-stay parking (on opposite side of Arthur Kaine Drive)	0.41
Water main upgrade	1.0
STAGE 2	Indicative Cost ($ million)
Aeronautical Infrastructure	
New terminal building (1,000m^2)	4.0
Parallel Taxiway B	2.27
New RPT Apron	1.53
New terminal building expansion (500m^2) (Stage 2B)	2.0
New RPT Apron Expansion (Stage 2B)	0.53
Non-Aeronautical Infrastructure	
Precinct 1 – General Aviation (Hangar development Expansion)	0.86
Precinct 2 – Commercial including airside and landside access and services	2.6
Power supply upgrade	1.5
New sewer pumping station and upgrade to rising main to treatment plant	0.81
Internal Access Roads	0.26
New Long & Short-stay Parking	1.52

A range of assumptions and exclusions were made in order to produce the indicative development costs, there are as follows:

- Runway development costs includes allowances for earthworks, pavement and required changes and additions to runway lighting;
- Costs included for the development of the General Aviation and Commercial precincts do not include ground improvements or the construction of hangars, it is anticipated that this will be carried out by the lessee/owners. Costs for engineering services (power, water, telecommunications, sewer and stormwater drainage), taxiway access (where relevant) and landside access to the subdivided sites have been considered only. However, BVSC may want to consider undertaking the ground work depending on the commercial model being followed;
- Engineering services for the new subdivided sites will be connected to the existing services at the airport site;
- Upgrades to the power, water and sewer connections to the airport site have been considered separately;
- GST has not been included;
- An allowance of 15% for preliminaries and 10% for design costs has been made; and
- No allowance for construction contingency has been made.

9.3 CAR PARKING REVENUE

As discussed in Section 8.3.3, the Master Plan proposes the future expansion and development of short- and long-stay parking at the airport. The airport currently has a secure, long-stay car park for which $11 per day is charged for its use. The remainder of the parking is free.

Commercial realities now make it imperative for regional airports to diversify their revenue streams in order to operate with minimal burden on rate payers. This has led to increasing pressure to introduce a form of paid parking to act as both a demand regulator and a source of valuable revenue. Although Merimbula Airport already has one form of paid parking, with the development of the parking infrastructure at the airport, there is potential for paid parking to be implemented across more of the parking available.

In order to begin to estimate the potential revenue that could be achieved through the introduction of parking fees now and in the future it is important to understand a number of parameters, including:

- Parking products;
- Parking duration; and
- Pricing.

9.3.1 PARKING PRODUCTS

Currently the airport provides free short-term parking, limited to 3 hours, free long-stay parking (no limit) and paid secure parking at $11 per day.

Whilst the terminal remains in its current location, the existing secure, paid, long-stay car park could be expanded to the south if demand requires it. In addition, to provide additional non-secure car parking, an additional car park on the opposite side of Arthur Kaine Drive could also be developed. There is potential to introduce charges for all short and long-stay car parking in the short-term.

Based on the Master Plan proposals, the development of a new passenger terminal precinct will require the construction of new car parking areas including short-stay and long-stay and potentially the development of a new 'premium' parking product which offers secure, long-stay parking in a convenient location to the new terminal building. Fees for this parking could also be implemented.

9.3.2 PARKING DURATION

Paid car parking demand and revenue are driven by outbound traffic. There is no breakdown of inbound and outbound traffic available for Merimbula Airport, however there are other figures from which the outbound market can be derived.

In FY11, there were a total of approximately 51,300 passenger movements. In that same year, approximately 760,000 visitors arrived in the Bega Valley area and the penetration of air travel for inbound tourists was said to be 1.4%. On those figures, approximately 10,600 tourists arrived by air, equating to approximately 21,200 of the annual movements. It can be assumed that these tourists would not utilise the parking facilities at the airport, with the exception of car rentals.

The remaining 30,100 movements are attributable to outbound passengers, the majority of which are understood to be for business purposes.

Information on the duration of those trips is not available but the Webber Quantitative Consulting report of February 2011 estimated travel durations for all outbound trips. That report estimated that approximately 97% are day trips, 2% are overnight trips and 1% are for longer periods. These figures do not necessarily translate comfortably to outbound trips by air but provide some basis for estimating the time outbound passengers may require car parking. Given the current flight schedule, day trips to Sydney are possible but are only feasible one day per week to Melbourne. Accordingly, for the purpose of this assessment, it is not unreasonable to assume that 90% of trips are day trips or overnight trips and the remaining 10% are for longer periods.

9.3.3 PRICING

Regional airports adopt a range of different pricing models for car parking. The most appropriate model depends on a number of factors including the distance to the airport from its major population catchments and alternative means of transport that may be available.

There is an existing secure parking area at Merimbula for which the daily charge is $11. Paid parking, either short-or long-stay, in an area that is not secure obviously has to be priced relative to

that option. The pricing structure must also not make alternative means of transport sufficiently attractive in a relative sense that people who currently drive stop doing so. Those who currently use taxis will not change to driving themselves if charges are imposed and the same is true of those who are presently dropped off and picked up by others. The likely effect on travel choices by passengers following the imposition of charges is difficult to predict but business travellers are less likely than leisure travellers to change behaviour because of a relatively small charge.

Merimbula is the major population centre of the area, followed in size by Bega and Eden which are 32km and 26km away by road respectively. Taxis or trips with family or friends are the alternative to self-drive for transport to and from the airport. Estimated taxi costs from Bega or Eden are around $60, while a taxi from the Merimbula/Pambula area is likely to cost approximately $10 to $20.

A review of other regional airports revealed reasonably similar pricing structures, with only small variations. Generally, but not consistently, a free parking period is provided for the first 30 to 60 minutes. After that, the rates tend to increase based on one hour increments. However, the number of vehicles which stay for periods of between 1 hour and 6 hours would be very low. An alternative is to have slightly higher charges at the short end of the range and then jump quickly to a daily rate.

Benchmarking of other regional aerodromes puts daily rates in the range of $8 to $12. Weekly rates were found to be in the range of $55 to $70. The full day parking rate (for one or two days) is likely to be the most frequently used on the basis of the assumed pattern of travel. The rate needs to be competitive with the return taxi fares to the Merimbula area, which we estimate to be $20 to $40. The likely share of the market for people staying more than overnight is small and therefore this price point is less important as a revenue generator but both the daily and weekly rates should be set relative to the secure parking fee of $11 per day and $55 per week. There may be a degree of trading between the two car parks depending on the level at which rates are set.

A car parking price structure which takes into account the local demographics, and the existing secure parking rates, is set out in Table 8.

Table 8: Possible Car Parking Price Structure

Time	Cost
Up to 30 minutes	Free
30 minutes to 1 hour	$2.00
1-2 hours	$4.00
Daily (in excess of 2 hours, and up to 24)	$8.00
Weekly	$40.00

9.3.4 REVENUE

Estimating the resulting revenue is not possible without some information on the current transport choices made by outbound passengers and the current car park usage pattern. To gain an accurate understanding, a car parking survey should be undertaken.

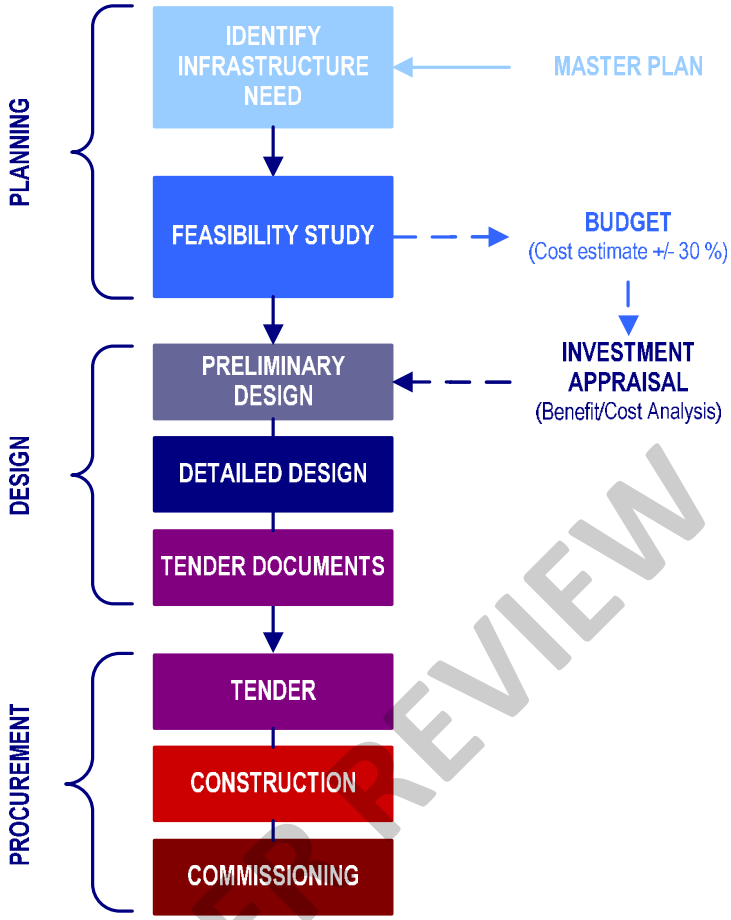
However, based on some general assumptions regarding transport mode and length of stay, the potential revenue for 2012 could have been in the region of $110,000 over the year based on the price structure shown in Table 8.

To model car parking revenue over future years, more detail would be required on current parking habits. It should be noted that car parking revenue does not necessarily correlate exactly to the increase in passenger numbers, if growth in passenger numbers is driven by an increase in inbound tourism this is unlikely to have such a significant on the number of passengers parking at the airport.

9.4 NEXT STEPS

The proposed infrastructure developments set out within this Master Plan are conceptual only and a feasibility study as well as an investment appraisal should be carried out prior to the design of any aspects. Chart 6 sets out the general process for the development of any of the proposed infrastructure items within this Master Plan. The achievement of the trigger points set out in Sections 9.1.1 and 9.1.2 identifies the need for a development item. The following stages within Chart 6 should then be followed to enable the development of the airport; they form the next steps following this Master Plan.

Chart 6: Infrastructure Development Process



The following issues should be specifically investigated as part of a runway extension feasibility study:

- Contact CASA to discuss in more detail the future of the current grandfather provisions in relation to the proposed extension of the runway and the possible retention of the 150 metre-wide inner edge with consideration of Merimbula Airport's surrounding constraints and land availability. The potential for the use of runway end by-pass nodes should also be discussed;
- If a 180 metre wide take-off climb surface inner edge for Runway 03 is required, a detailed survey of the existing terrain heights and obstacles beneath the new take-off climb surface will be required to understand the extent of the relocation of the airport boundary fence to the east and the resulting realignment of Arthur Kaine Drive. The area within the proposed tourist site should also be surveyed together with the adjoining Water View Apartments; and
- Investigate required planning approvals and mitigation measures for construction of RESA and runway strip in SEPP14 Wetland area beyond Runway 03 threshold.

10.0 ECONOMIC SIGNIFICANCE

Airports are key economic and community facilities that provide significant employment opportunities, vital business and community services as well as valuable recreation and tourism facilities.

As identified in Section 3.0 and Section 4.0 of this Master Plan, a range of activities, typical for a regional airport, are undertaken at Merimbula Airport. The airport already provides employment, vital business and community air services as well as valuable recreational and tourism facilities and services. The airport also has a number of local aviation-related businesses on site.

As indicated by *The Economic and Social Contribution of Australia's Airports, May 2012* prepared for the Australian Airports Association by Deloitte Access Economics, there are a number of elements to consider in understanding the contribution of an airport to the local and regional economy including:

- Core airport activities, activities that are undertaken within airport precincts,
- The wider role of the airport in raising productivity, attracting inward investment and facilitating tourism; and
- The social contributions in promoting regional inclusion as well as enhancing social outcomes.

Through the implementation of this Master Plan, together with growth in passenger and aircraft movements, there is great potential for the level and type of activities to grow and increase the contribution the airport has to the local and regional economy.

10.1 ECONOMIC IMPACTS

Airport economic impacts can be defined as:

- Direct impacts resulting from businesses directly involved in airport activities;
- Indirect impacts resulting from business generated by airport businesses and passengers at other local business;
- Induced impacts as a result of the multiplier effect where the activity generated at the airport produces further flow-on benefits through the economy; and
- Catalytic impacts resulting from the existence of an airport and air services which boosts the performance of other industries and the overall economy as well as improve social connections across a region, country and abroad

The following paragraphs describe Merimbula Airport's current and potential future economic impact.

10.1.1 DIRECT

The direct economic impact of the airport itself and airport businesses is indicated by total turnover and number of employees. Due to the lease of the airport and the management of the operations it

is not possible to understand the turnover at the airport. This may be indicated by the business plan work that is being undertaken. It has been estimated that there may be a current total of 14 employees, it is not known what proportion of these are part-time or full-time. It is estimated that there are a further 8 FTEs employed by the businesses on the airport site.

10.1.2 INDIRECT

Off-airport businesses that benefit from activity at the airport may include businesses that supply equipment to the airport itself and businesses located there. It is extremely difficult to quantify this.

Other businesses that benefit from activity at the airport include car rental companies, restaurants and hotels as a result of inbound visitors to the area. In FY11, there were a total of approximately 51,300 passenger movements at Merimbula Airport. In that same year, approximately 760,000 visitors arrived in the Bega Valley area and the penetration of air travel for inbound visitors was said to be 1.4%. On those figures, approximately 7,844 visitors arrived by air. The Webber Quantitative Consulting report of February 2011 estimated that the majority of visitors to the area were for leisure purposes at 69%, with 22% visiting friends and relatives and 5% business. Assuming that leisure and business visitors require accommodation and food during their stay, approximately 9,650 visitors per year stay in local accommodation and spend money in local restaurants, super markets and shops as well as purchase other services such as car rentals and tours.

Based on the results of the Sapphire Coast Visitor Profile and Satisfaction Survey undertaken by Tourism Research Australia during January to March 2011, visitors to the region spent an average of 4 nights. On average overnight visitors spent approximately $72 per night including accommodation costs. This number may be somewhat lower than that for those travelling by air as the average spend per night is likely to be skewed by the high proportion of visitors self-driving and staying in relatively low cost caravan or campgrounds. Those travelling by air are more likely to stay in hotel/motel accommodation. The survey identified that the vast majority of expenditure was on accommodation and food. It is estimated that average spend for inbound air passengers is likely to be more in the region of $140 per person per night.

The Sapphire Coast Visitor Profile and Satisfaction Survey also indicated that average length of stay for leisure visitors to the area is 4 nights. Due to the decreased travel times, average stay for inbound air passengers is likely to be less. It is estimated that the average stay is more likely to be in the region of 3 nights.

Based on this it could be estimated that currently visitors to the region arriving through the airport spent a total of $3,300,000 in the region.

Based on the medium-growth forecast, it is possible to estimate the future indirect impact of the airport. The forecasts assume that the proportion of passengers visiting for leisure purposes will grow. This increase has been estimated by applying the forecast economic growth factor to the current level of business passengers. The remaining passengers for each forecast year are

therefore assumed to be leisure passengers. Based on these assumptions the overall spend could be expected to grow to $9,500,000 in 2022 and possibly $19,000,000 by 2032.

10.1.3 INDUCED

Direct and indirect impacts do not alone equate to the total economic impact of the airport. They lead to induced impacts. Induced impacts are as a result of the multiplier effect where the activity generated at the airport produces further flow-on benefits through the economy. The multiplier effect is generated by successive rounds of spending enabled by the income and employment supported by the airport. Direct, indirect and induced impacts together total the overall economic impact of an airport and together are generally greater than the benefit generated by the airport alone. Detailed economic modelling would be required to understand the multiplier effect of Merimbula Airport.

10.1.4 CATALYTIC

In addition to this, and has highlighted by *The Economic and Social Contribution of Australia's Airports, May 2012* prepared for the Australian Airports Association by Deloitte Access Economics, the increased accessibility that is provided to a region through the existence of an airport and air services can boost the performance of other industries and the overall economy of a region as well as improve social connections across a region, country and abroad. These may be known as catalytic impacts and include:

- Accessibility and trade;
- Productivity;
- Inward investment;
- Tourism; and
- Commercial activity.

These impacts occur because of the reductions in transport costs and improvements in transport quality, due to aviation. The airport improves the connectivity of the region with the rest of Australia and the world allowing both inward and outward business and leisure trips.

Increased air services at Merimbula would allow for:

- Lower costs of doing business due to the ease of travel over the long distance to Sydney and Melbourne;
- Improved access to personnel and a more flexible labour market;
- Better access for tourists at a lower cost allowing for more shorter (long-weekend) trips; and
- Attraction of visitors to the area that are more likely to have a higher spend per person per night.

As has been outlined in economic impact studies for other airports, such as the *Economic Impact of Canberra Airport 2010 to 2030* by ACIL Tasman, aviation is a driver of economic growth as well as a beneficiary of it. Over time there is a dynamic impact on the economy. The initial effects on

productivity lead to expansion of the more productive sectors relative to the rest, and to higher economic growth.

It is extremely difficult to quantify this impact accurately. It has been suggested in some overseas studies of airports that the catalytic impacts are at least as important as the direct and indirect impacts and possibly considerably more.

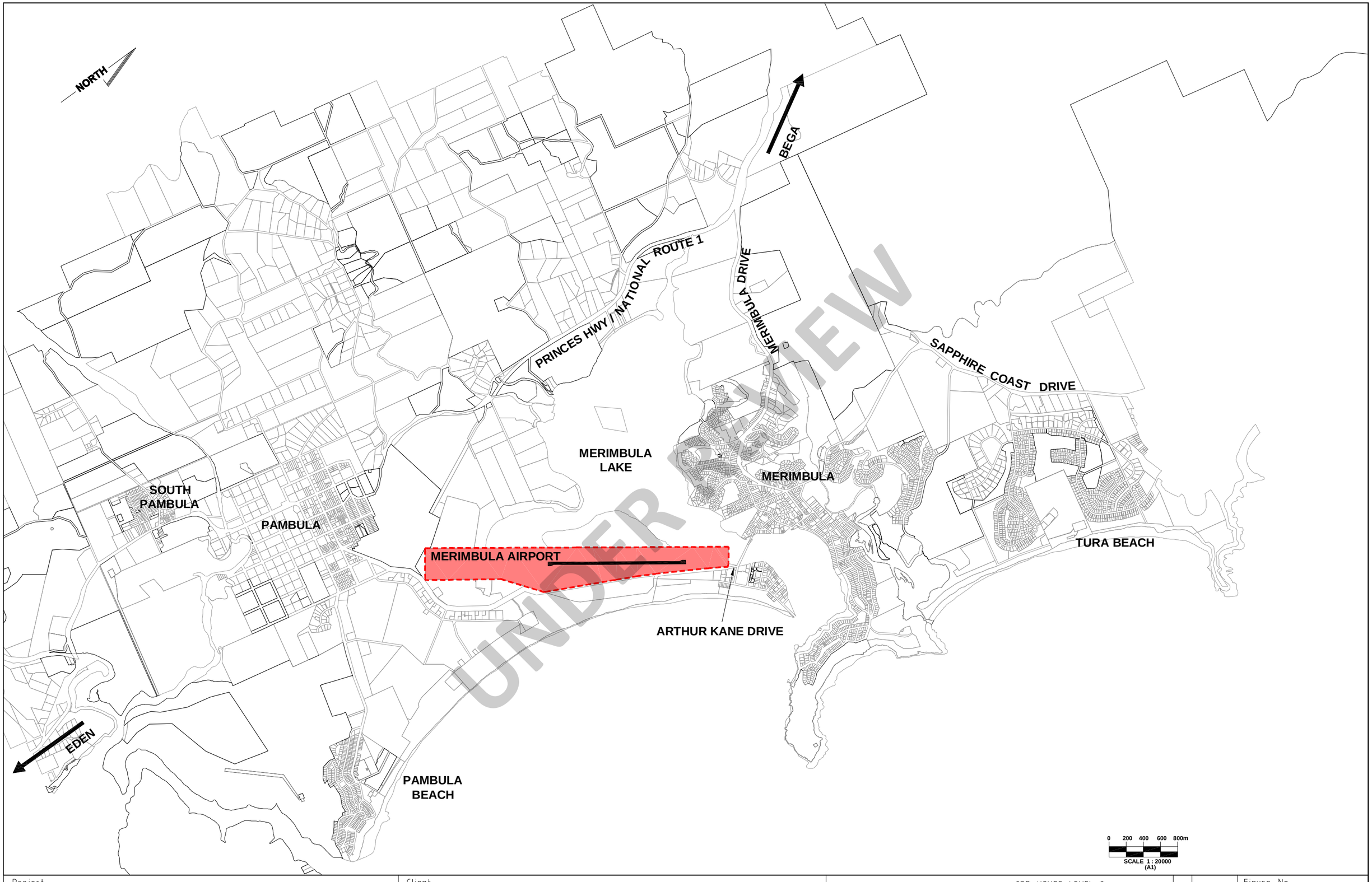
APPENDIX A

STAKEHOLDER CONSULTATION SCHEDULE

Organisation	Name	Title	Date	Location
Bega Valley Shire Council	Peter Tegart	General Manager	03/12/2012	Sydney
	Wayne Sartori	Group Manager Infrastructure, Waste & Water	04/12/2012	Merimbula
Airport User Group	Rex Koerbin	President	04/12/2012	Merimbula
	Robert McCombie		04/12/2012	Merimbula
	Andrew Campbell		04/12/2012	Merimbula
Airport Agencies Pty Ltd	Ian Baker	Airport Manager	04/12/2012	Merimbula
Regional Express (Rex)	Warrick Lodge	General Manager – Network Strategy & Sales	30/01/2013	Telephone
Chamber of Commerce Merimbula	Natalie Godward	President	24/01/2013	Telephone
Sapphire Coast Tourism	Anthony Osbourne	Tourism & Marketing Manager	30/01/2013	Telephone
Bega Valley Business Forum	Robert Hayson	President	23/01/2013	Telephone
College of Intelligence Studies	Don McDowell	Director & Principal	21/01/2013 & 20/02/2013	Telephone/ Merimbula

APPENDIX B

FIGURES



Project: MERIMBULA AIRPORT MASTER PLAN	Client: BEGA VALLEY SHIRE COUNCIL Title: LOCALITY PLAN	REHBEIN Airport Consulting The Association of Consulting Engineers Australia CBD HOUSE LEVEL 3 120 WICKHAM STREET PO BOX 112 FORTITUDE VALLEY QLD 4006 TELEPHONE (07) 3250 9000 L&R (SEQ) Pty Ltd FACSIMILE (07) 3250 9001 A.C.N. 110685160 EMAIL mail@lar.net.au ABN. 77126939768	Figure No: FIGURE 1
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Project:
MERIMBULA AIRPORT MASTER PLAN

Client:
BEGA VALLEY SHIRE COUNCIL

Title:
EXISTING SITUATION

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The Association of Consulting Engineers Australia
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01 Oct, 2013 – 4:30pm

Project:	MERIMBULA AIRPORT MASTER PLAN
Client:	BEGA VALLEY SHIRE COUNCIL
Title:	OVERALL LANDUSE CONCEPT

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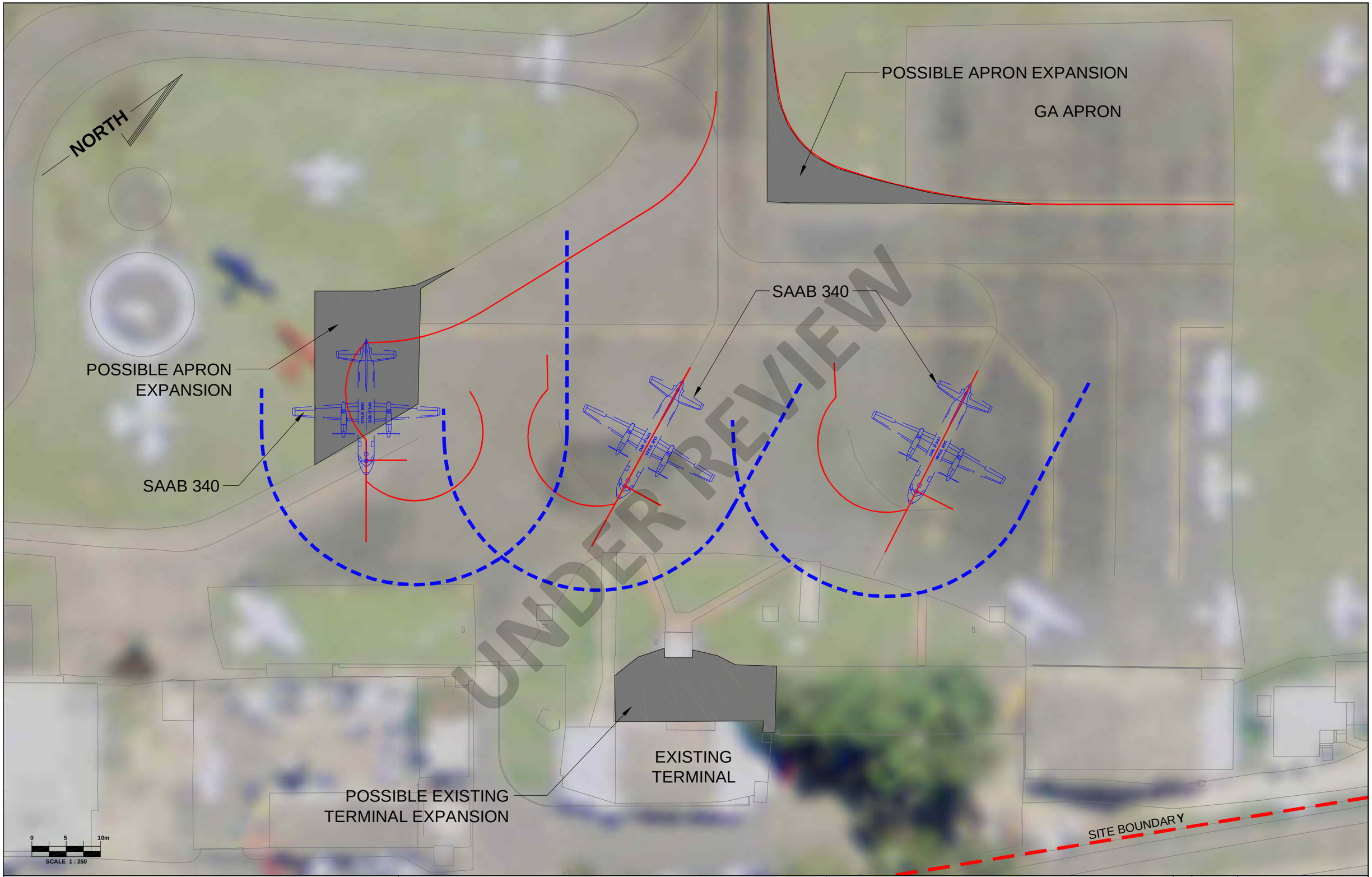

Project:	MERIMBULA AIRPORT MASTER PLAN
Client:	BEGA VALLEY SHIRE COUNCIL
Title:	EXISTING TERMINAL PRECINCT DEVELOPMENT (STAGE 1)

REHBEIN Airport Consulting
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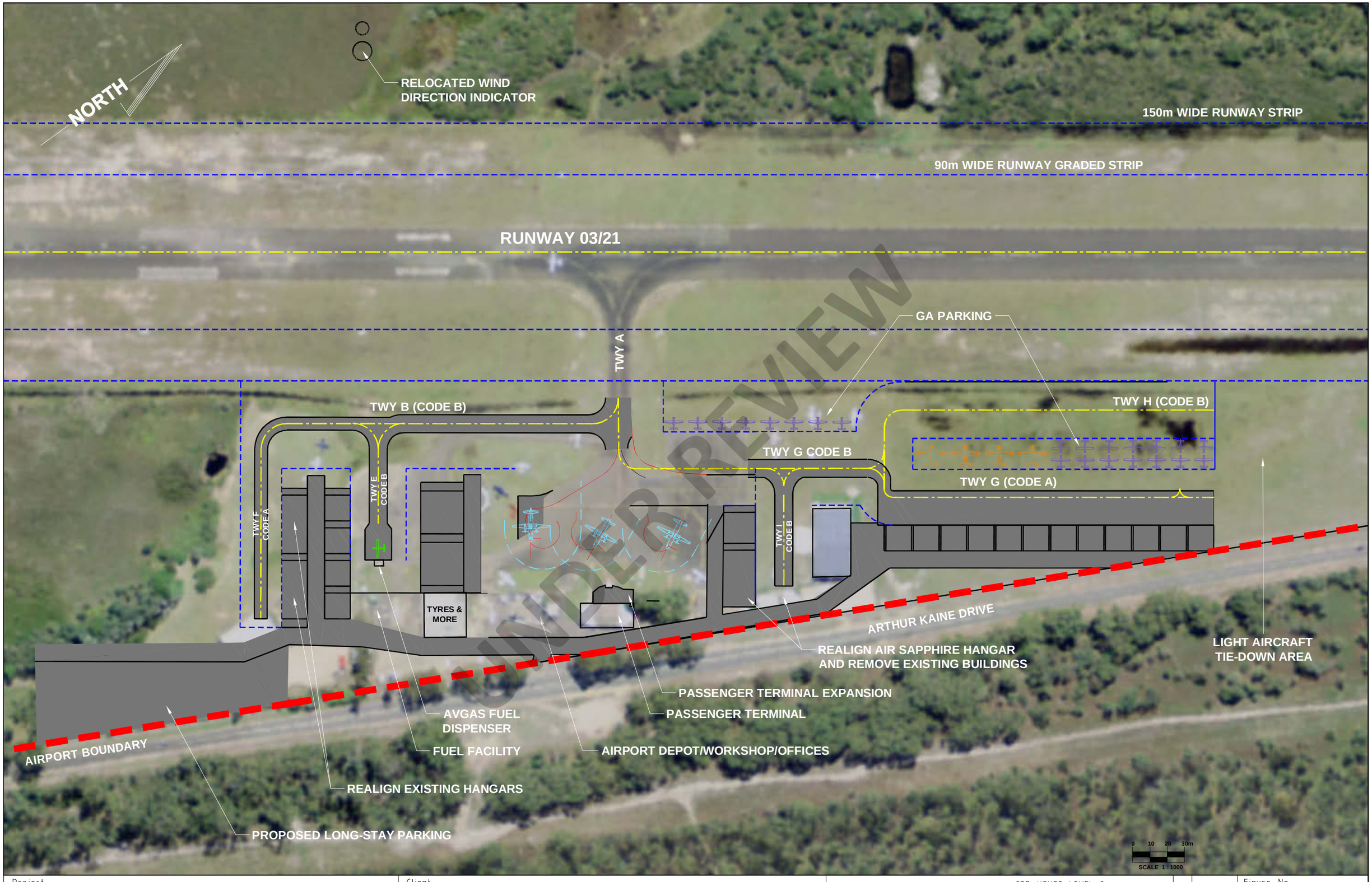

Project:
MERIMBULA AIRPORT MASTER PLAN

Client:
BEGA VALLEY SHIRE COUNCIL

Title:
PROPOSED DEVELOPMENT CONCEPT
STAGE 1

REHBEIN Airport Consulting
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2	17/04/13
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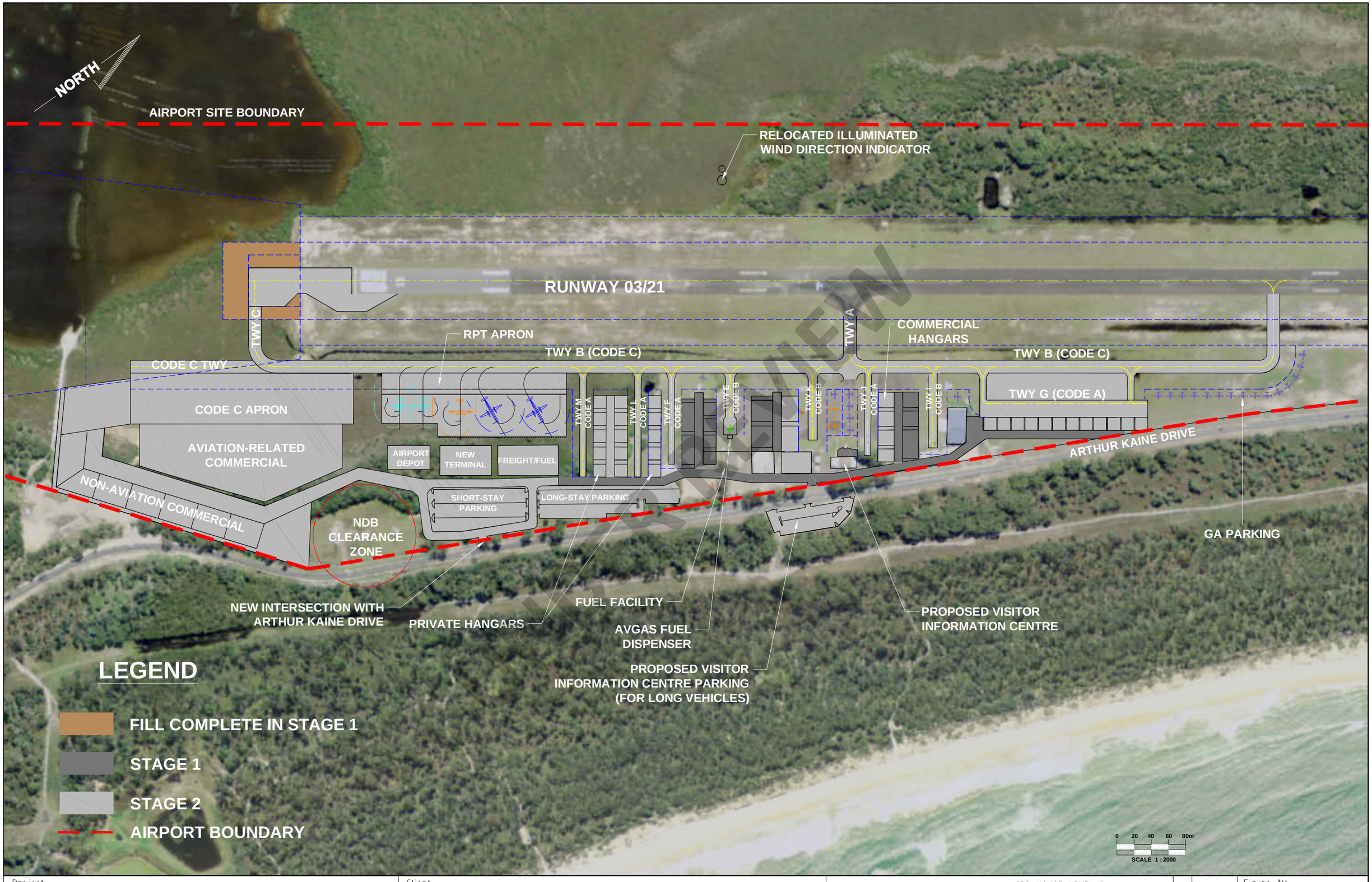

Project:
MERIMBULA AIRPORT MASTER PLAN

Client:
BEGA VALLEY SHIRE COUNCIL

Title:
PROPOSED DEVELOPMENT CONCEPT
STAGE 2

REHBEIN Airport Consulting
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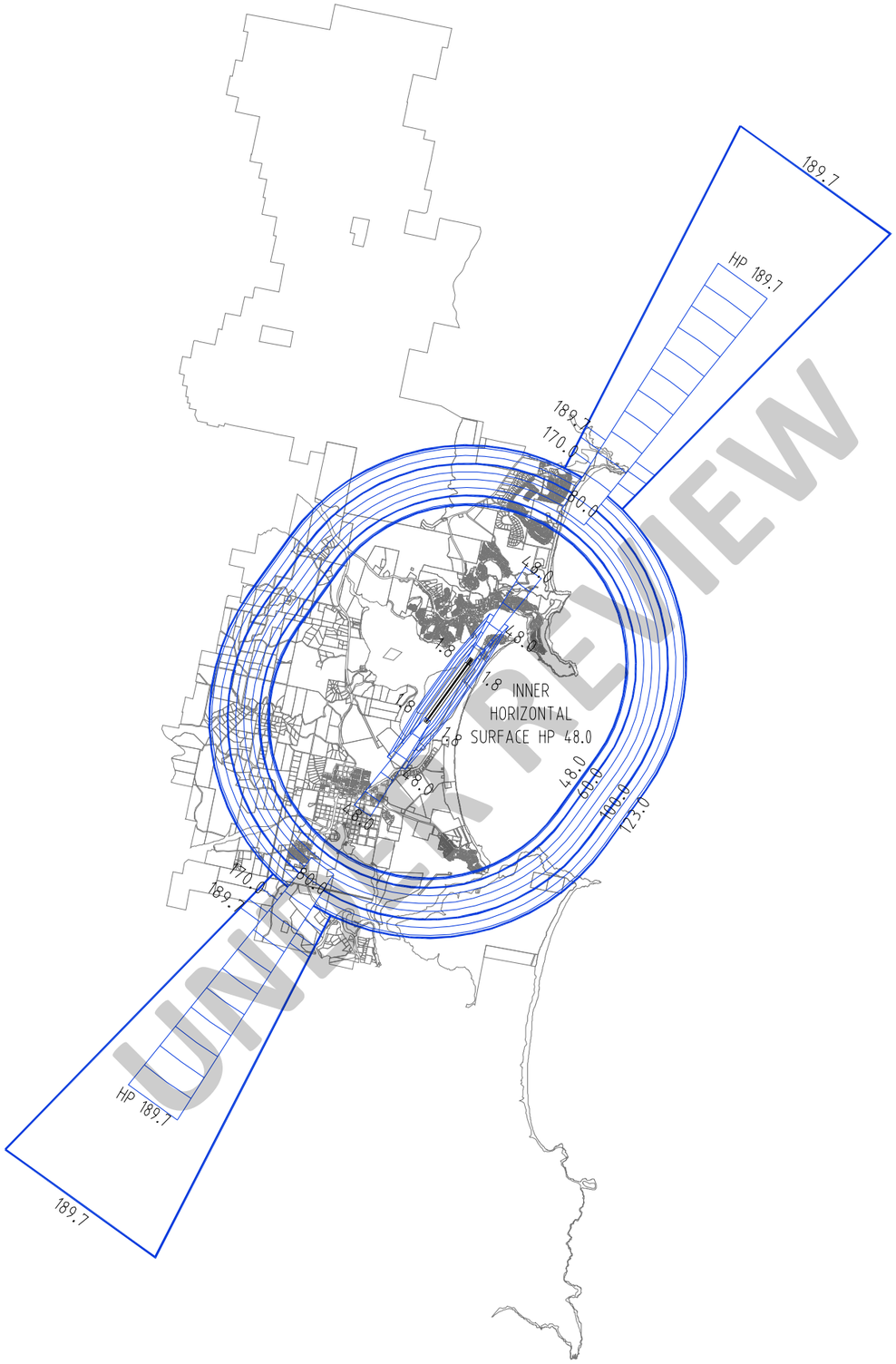

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Project:
MERIMBULA AIRPORT MASTERPLAN

Client:
BEGA VALLEY SHIRE COUNCIL

Title:
FUTURE OBSTACLE LIMITATION SURFACE

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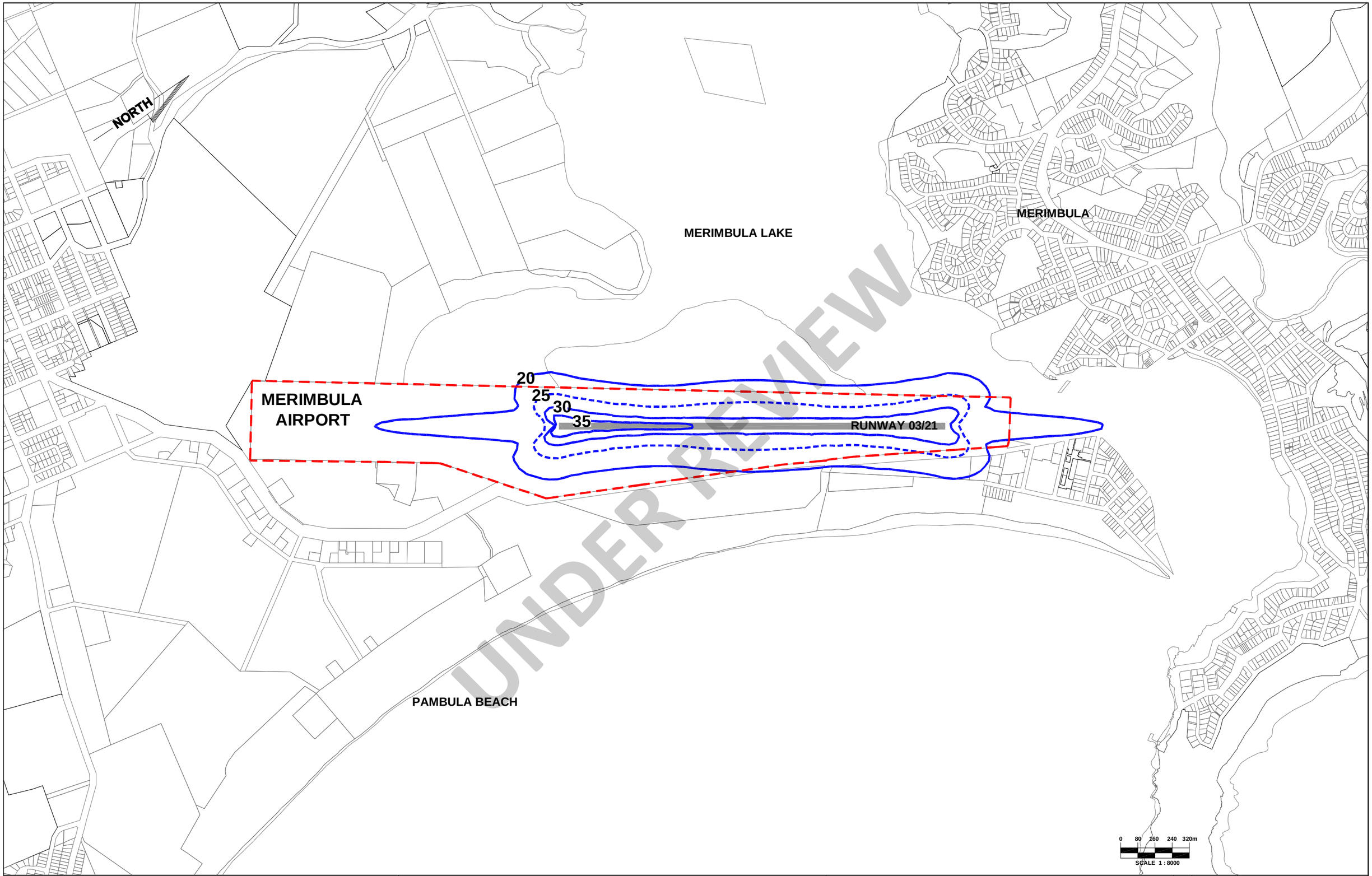

Project:
MERIMBULA AIRPORT MASTER PLAN

Client:
BEGA VALLEY SHIRE COUNCIL

Title:
ANEF CONTOURS

REHBEIN Airport Consulting
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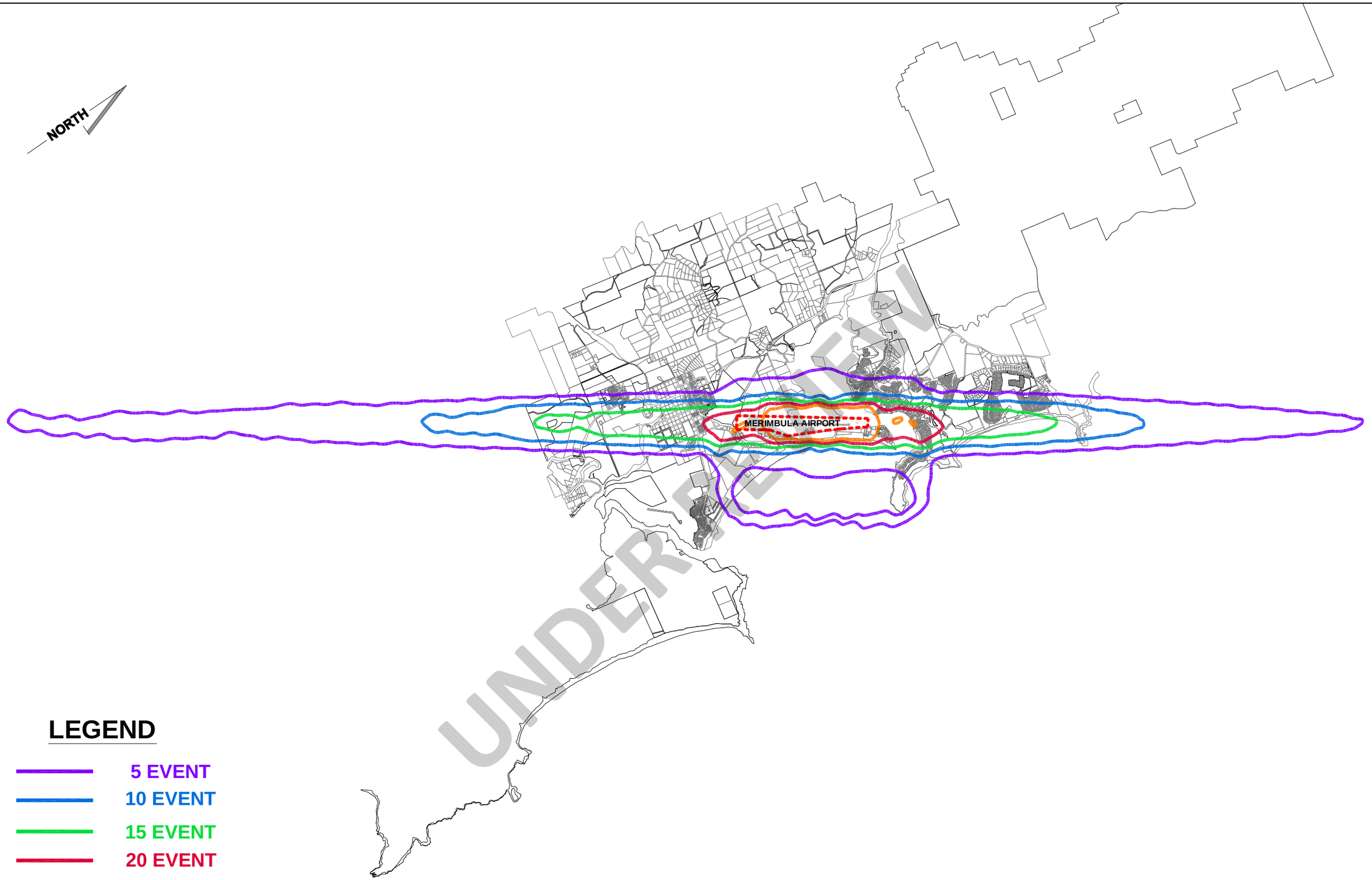

Project:
MERIMBULA AIRPORT MASTER PLAN

Client:
BEGA VALLEY SHIRE COUNCIL

Title:
2033 N60 CONTOURS

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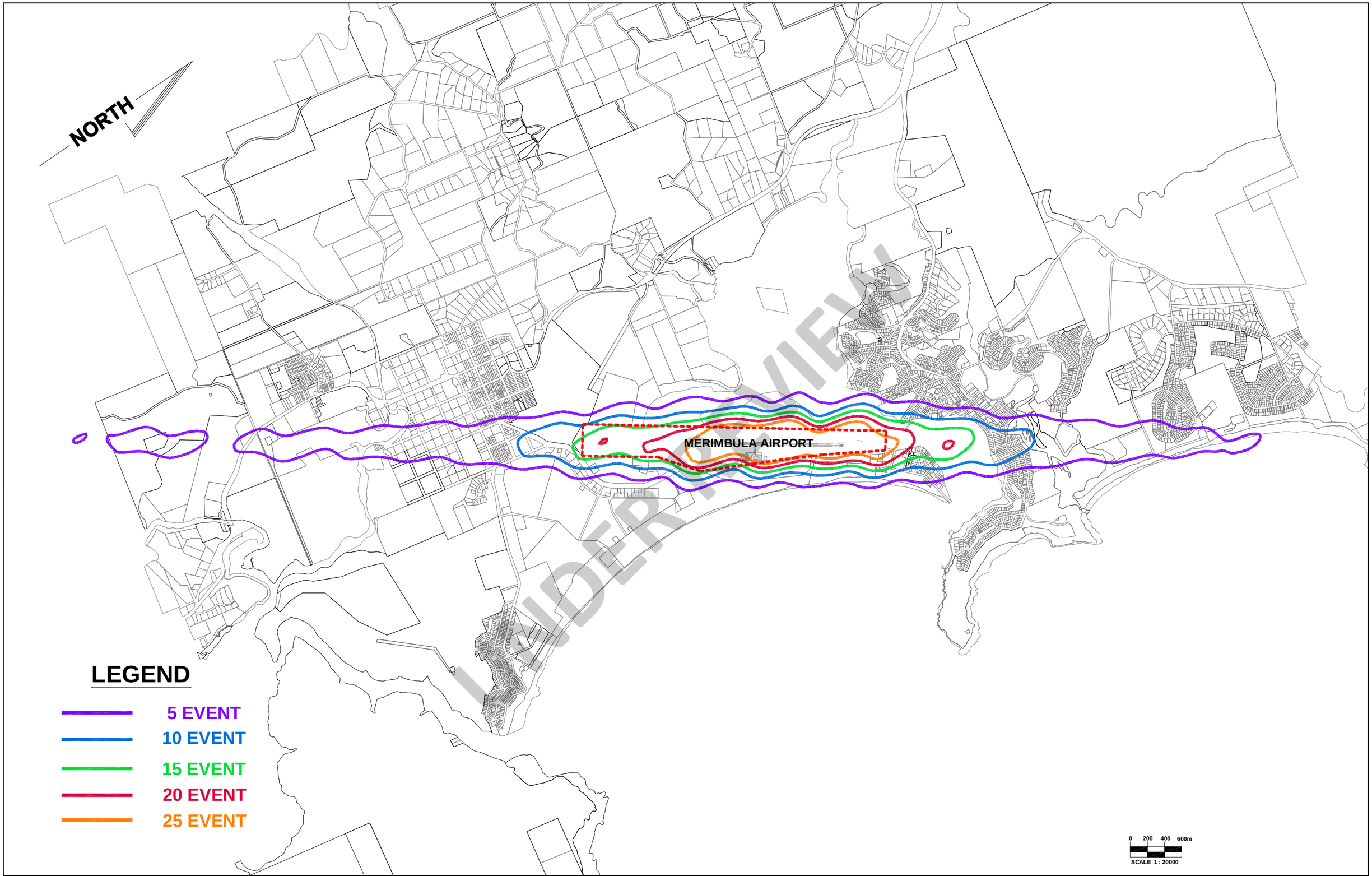

Project:
MERIMBULA AIRPORT MASTER PLAN

Client:
BEGA VALLEY SHIRE COUNCIL

Title:
2033 N70 CONTOURS

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