PORT
MACQUARIE
AIRPORT

"Gateway to the Mid North Coast"

MASTER PLAN 2010

June 2010

ACKNOWLEDGEMENT

This Master Plan has been prepared in consultation with a broad range of airport stakeholders and the local community. Technical input and planning advice has been provided by consultants Aurecon Australia Pty Ltd (previously Connell Wagner) and Airport Master Planning Consultants Pty Ltd. Port Macquarie Airport gratefully acknowledges the cooperation and input from all organisations and individuals who participated in the preparation of this Plan and to those who submitted comments in response to the Master Plan *Discussion Paper* published in June 2009.

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EXECUTIVE SUMMARY

This Master Plan 2010 is the principal planning document for Port Macquarie Airport. It supersedes the previous master plan prepared in June 2004, and follows on from a *Discussion Paper* published by Council in June 2009 which set out a range of development issues, constraints, and potential future development options. The Master Plan presents a 20-year vision for the Airport site considering the requirements for future airline operations, general aviation activities and commercial property development opportunities, and provides the framework and strategic direction to guide the future development of the Airport to underpin the region's economic development and tourism potential.

Strategic Direction

Council's vision for Port Macquarie Airport is:

- ***to be the premier gateway to the NSW Mid North Coast***

Council's mission is:

- ***to continue to grow the Airport's contribution to the regional economy by promoting a range of competitive airline services that underpin the region's business and tourism industries, and by establishing an airport business technology park to attract new employment and inward investment opportunities to the region***

These statements establish the priority objectives for the Master Plan 2010 as being:

- ***to provide adequate infrastructure and facilities to meet the forecast demand for future regular public transport (RPT) airline operations***
- ***to provide opportunity for commercial property development to promote employment opportunities, facilitate economic development, and support the long-term financial viability and sustainability of the Airport business***

Aviation Demand Forecasts

Central to these statements is the aim to ultimately upgrade Port Macquarie Airport to cater for up to Code 4C medium jet aircraft such as the Boeing B737 and Airbus A320 series aircraft in order to maximise the opportunity to attract a range of competitive RPT airline services to the region. For planning purposes, the 180-seat Boeing B737-800W has been adopted as the critical aircraft to guide the geometric planning and design of the future airport infrastructure and facilities.

Recent improvements to the Airport and the introduction of new airline services have resulted in a significant increase in the number of passengers using the Airport. Over the past five years since the publication of the previous master plan, annual passenger numbers have more than doubled to over 200,000 passengers, with average annual growth of over 20 per cent per annum. The Bureau of Infrastructure, Transport and Regional Economics (BITRE) has predicted that passenger movements through Australian airports will

increase on average by four per cent per annum over the next 20 years, resulting in a doubling of passenger movements over the period of this Master Plan. Considering regional population forecasts and high growth ratios of population to passenger movements, it is estimated that annual RPT passenger movements at Port Macquarie Airport could reach in the order of 450,000 passengers per annum by 2030.

With the forecast introduction of larger capacity Code 4C aircraft, it is envisaged that this passenger growth can be achieved without a significant increase in the number of RPT aircraft movements – for master planning and aircraft noise modelling purposes however, it has been assumed that RPT aircraft movements may increase to up to 7,500 movements per annum by 2030 which represents an annual growth rate of approximately 1% per annum and a 25% increase over current levels.

Over recent years there has been increasing demand for general aviation (GA) facilities with GA aircraft movements contributing to over 80% of the total aircraft movements at the Airport. In 2008, approximately 37,000 movements were attributed to GA aircraft with 19,000 movements being 'touch and go' and 'circuit' type pilot training operations. In order to make better use of the available airspace in the region, Council aims to work in partnership with the GA community and Greater Taree City Council and Kempsey Shire Council to promote greater use of the nearby Taree and Kempsey Airports for general aviation activities. Council has developed a formal Memorandum of Understanding with Kempsey Shire Council which will see Kempsey Airport developed as a base for general aviation as part of an overall strategy to promote the establishment of a *Mid North Coast Regional Aviation Centre of Excellence* across the region. The Master Plan 2010 makes provision for a nominal 1% growth rate in GA aircraft movements at Port Macquarie Airport over the next 20 years to approximately 42,500 aircraft movements by 2030. This will result in total aircraft movements of up to 50,000 movements per annum which represents a 25% increase over the planning period of this Master Plan.

Master Plan

In order to achieve Council's strategic direction for the Airport, the Master Plan 2010 incorporates the following key development features:

- an upgrade of the existing main runway 03/21 on its current alignment to Code 4C standard, 1,800 metres long x 30 metres wide, with the pavement strength limited to 68,100kg maximum take-off weight (MTOW) – the 110 metre extension required being provided at the southern end of the runway
- closure or realignment of Tuffins Lane over a section at the northern end of runway 03/21, and acquisition of land to the north of Tuffins Lane, to allow for provision of a runway end safety area (RESA)
- staged construction of a new full length Code C taxiway parallel to and to the east of runway 03/21 (as an extension to the existing taxiway Bravo) to maximise capacity and operational efficiency, and enhance safety

- expansion of the existing regular public transport (RPT) apron to the north of its current location to provide for up to four (4) free moving parking positions for up to Code 4C aircraft
- an extension and upgrade of the existing passenger terminal building and facilities to suit a future 'busy hour' projection of up to 600 passengers (300 arrivals and 300 departures)
- expansion of the current car parking facilities to provide up to 600 parking spaces by 2030 including separate areas for short-term, long-term, premium undercover and staff parking along with areas for the collection and return of hire cars
- identification of an area of land (Development Precinct A) to the south of the existing RPT area, reserved for possible future airport uses including an option for a future RPT Precinct including new apron, passenger terminal and car parking infrastructure
- permanent closure of the existing grass runway 10/28 to reserve land for future airport infrastructure and facilities (Development Precinct A) and future commercial property development opportunities as part of a proposed *Airport Precinct* business park (Development Precinct E)
- identification of an area of land (Development Precinct B) located to the west of runway 03/21 for possible future general aviation uses for up to Code B aircraft (20m wingspan limit), including up to 20 new aircraft hangar sites, as part of the establishment of a *Mid North Coast Regional Aviation Centre of Excellence*
- identification of sites within Development Precinct A for a relocated helicopter landing and parking area, and for the possible future provision of Aerodrome Rescue and Fire-Fighting Services (ARFFS) and Air Traffic Control (ATC) facilities
- identification of areas of land not required for future airport / aviation uses, to be made available for commercial property development as part of the proposed *Airport Precinct* business park
- possible long-term relocation and redevelopment of the existing GA precinct to allow for further development of the proposed *Airport Precinct* business park
- principal road access retained via Hastings River Drive and Boundary Street and Tuffins Lane, with further traffic / transport and land use planning required to identify the scope of road infrastructure improvements necessary to suit future demand
- the requirement for a subsequent utilities planning study to determine the scope of utility (electricity, water, sewerage, telecommunications etc) improvements required to cater for future development

Environmental and Land Use Planning Considerations

The Master Plan also provides guidance on potential environmental impacts and on land use planning considerations in the vicinity of the Airport to ensure that airport operations do not adversely affect nearby communities and environmentally sensitive areas, and to ensure that the operation of the Airport is not constrained by inappropriate off-airport development. This guidance includes detailed assessment of current and future aircraft noise levels, obstacle limitation surface diagrams, flooding and stormwater drainage considerations, public safety issues, and bird hazard and lighting controls. This guidance is provided for interpretation by the community and for use by Council as part of its land use planning and development control functions.

Staging Considerations and Funding Options

The programme of improvements outlined in this Master Plan will be staged as necessary to suit demand brought about through passenger growth and / or the introduction of new aircraft. The work will also need to be planned to suit the level of funding available and a detailed Business Plan will be developed consistent with this Master Plan to ensure the financial viability and sustainability of the Airport business. Funding for major capital projects will be sourced solely through airport operations as a standalone business unit of Council, and the costs associated with upgrading the airport infrastructure and facilities will not affect the level of rates payable by ratepayers in the Port Macquarie – Hastings LGA.

1.0 INTRODUCTION

1.1 Introduction

This Master Plan 2010 is the principal planning document for Port Macquarie Airport and is aimed at facilitating the integration and co-ordination of future on-airport and off-airport planning and infrastructure investment. It supersedes the previous master plan prepared in June 2004, and follows on from a *Discussion Paper* published in June 2009 which set out a range of development issues, constraints, and potential future development options. The Master Plan presents a 20-year vision for the Airport site considering the requirements for future airline operations, general aviation activities and commercial property development opportunities, and provides the framework and strategic direction to guide the future development of the Airport to underpin the region's economic development and tourism potential.

1.2 Background

Port Macquarie Airport is owned and operated by Port Macquarie – Hastings Council. Council adopted its first formal master plan for the Airport in June 2004, in which it set out the long-term plan to upgrade the Airport to cater for medium jet operations to Code 4C Boeing B737 sized aircraft.

In 2008, Council took the first steps towards this goal, with a $12.2 million program of major maintenance and improvement works which upgraded the Airport infrastructure and facilities to cater for regional jet and larger turbo prop aircraft operations. Since then, Port Macquarie has seen the introduction of Virgin Blue services operating the 78-seat Embraer E170 jet aircraft, and the introduction of the 74-seat Bombardier Q400 and the 30-seat British Aerospace J41 turbo prop aircraft to enhance the existing QantasLink and Brindabella Airlines services respectively.

Over the past five years since the publication of the previous master plan, annual passenger movements at Port Macquarie Airport have more than doubled to over 200,000 passengers, with average annual growth of over 20% per annum. In order to cater for further growth in air services and passenger movements, significant improvements to the existing Airport infrastructure and facilities will be required.

1.3 Location

Port Macquarie Airport is located on the Mid North Coast of New South Wales, approximately 380km north of Sydney and 550km south of Brisbane. The Airport is located 5km west of the Port Macquarie CBD as shown in Figure 1-1 below.

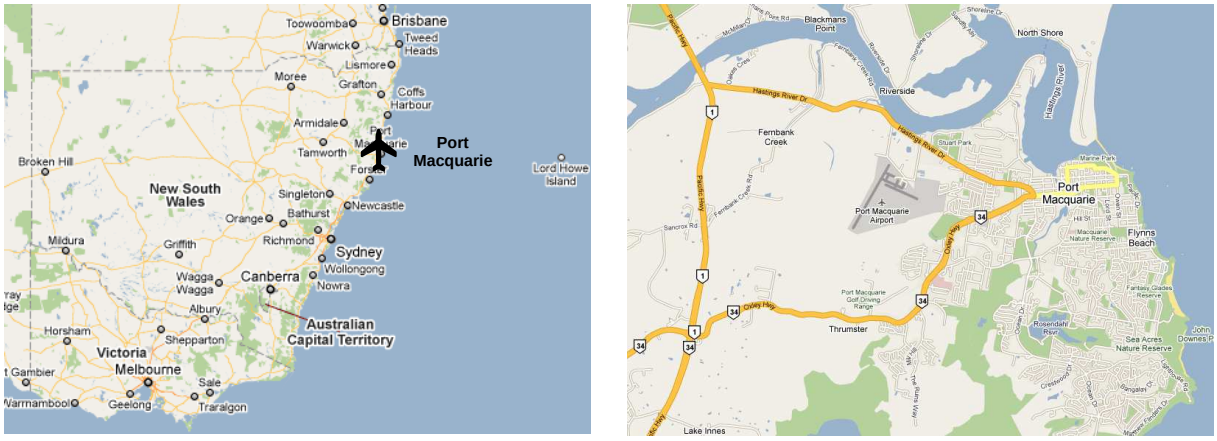

Figure 1-1 Location Plan *Source: Google Maps*

The Airport serves an area that stretches from Forster-Tuncurry in the south to Macksville in the north, and a regional population (within 90 minutes driving time) of over 130,000 people as shown in Figure 1-2 below.

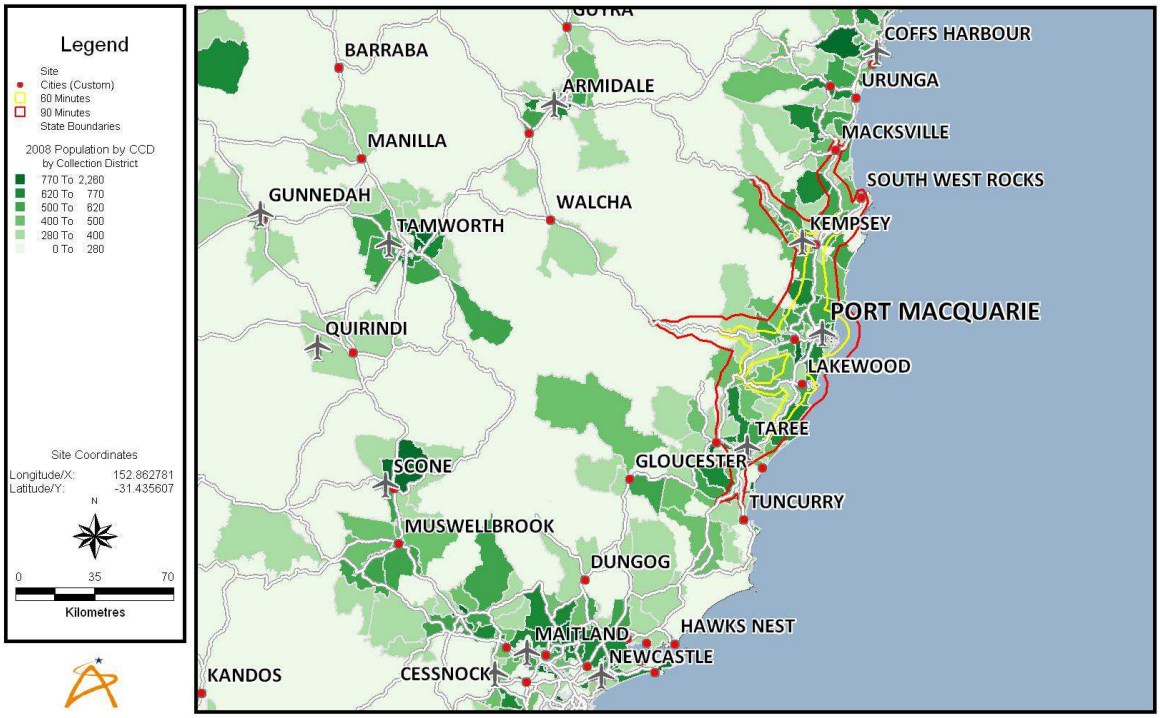

Figure 1-2 Regional Locality *Source: Aspirion Consulting*

1.4 Regional Planning Context

The *Mid North Coast Regional Strategy* published by the NSW Department of Planning in March 2009, identifies the Mid North Coast as a 'region of opportunity' and predicts further sustained growth in the region's population over the coming years. This strong growth offers important opportunities for employment and economic development through the attraction of new businesses to the region. The regional transport network will play a critical role in facilitating the movement of people and freight to and from the Mid North Coast to underpin this growth, and as such Port Macquarie Airport will play an increasingly important role as a key component of the regional transport network.

1.5 Economic Significance

As identified above, Port Macquarie Airport provides an important contribution to the ongoing economic development of the Greater Port Macquarie and wider Mid North Coast region. An *Economic Impact Assessment* conducted in 2008 estimated that a major upgrade of the Airport to cater for up to Code 4C medium jet aircraft such as the Boeing B737 and Airbus A320 series aircraft would result in:

- an additional $65.80 million in gross output per annum
- an additional $29.11 million in value added or GRP per annum
- an additional $18.74 million in wages and salaries paid per annum
- an additional 360 jobs created per annum

It is critical therefore that the Airport is positioned to handle the forecast growth in air services and passengers numbers to realise these benefits.

1.6 Consultation

In June 2009, Council invited submissions from the public and Airport stakeholders on a *Discussion Paper* which set out a range of development issues, constraints, and potential future development options. As part of this process, a number of public information sessions were held, and approximately 1,500 letters and information brochures were delivered to residents living adjacent to the Airport. Valuable feedback was received in response to the *Discussion Paper* and consultation process, and the various issues raised have been considered in the development of this Master Plan.

2.0 STRATEGIC DIRECTION

In reviewing the 2004 master plan, Council has reaffirmed its commitment to develop Port Macquarie Airport as a key element of the regional transport network to underpin the region's economic development and tourism potential.

Accordingly, Council has established the following Vision for the Airport:

- ***to be the premier gateway to the NSW Mid North Coast***

Council's Mission for the Airport is:

- ***to continue to grow the Airport's contribution to the regional economy by promoting a range of competitive airline services that underpin the region's business and tourism industries, and by establishing an airport business technology park to attract new employment and inward investment opportunities to the region***

This statement establishes the priority objectives for the Master Plan 2010 as being:

- ***to provide adequate infrastructure and facilities to meet the forecast demand for future regular public transport (RPT) airline operations***
- ***to provide opportunity for commercial property development to promote employment opportunities, facilitate economic development, and support the long-term financial viability and sustainability of the Airport business***

Whilst this strategic direction places a clear emphasis on RPT airline operations, Council is also committed to meeting the increased demand for general aviation facilities through the establishment of a *Mid North Coast Regional Aviation Centre of Excellence* in partnership with Greater Taree City Council and Kempsey Shire Council. The *Aviation Centre of Excellence* will build on existing strengths in general aviation at Port Macquarie Airport and promote better utilisation of Taree and Kempsey Airports where significant potential and capacity exists for the development of new general aviation infrastructure and facilities to meet both existing and future demand.

In determining the range and extent of new infrastructure and facilities required to achieve Council's vision for the Airport, consideration has been given to the following planning principles:

- safety, security and legislative compliance
- capacity and operational efficiency
- environmental responsibility and compliance
- financial viability and sustainability
- stakeholder impact

Accordingly, Council is committed to the following objectives:

- ***promoting a safe and secure environment for all users of the Airport***
- ***providing adequate infrastructure and facilities to meet the forecast demand for future airport operations***
- ***ensuring that the quality of life of nearby communities and the value of environmentally sensitive areas is not compromised by the development and operation of the Airport***
- ***ensuring the sustainability of the Airport business through the application of sound financial and resource management principles***
- ***establishing and maintaining strong partnerships with the community and key stakeholders***

3.0 EXISTING AIRPORT INFRASTRUCTURE AND FACILITIES

The existing airport infrastructure and facilities are shown in Figure 3-1 included in Appendix A. Key facilities include the runways, taxiways, aprons, navigation aids and other aviation support infrastructure, the passenger terminal, car parking, and general aviation facilities.

The following table lists the key characteristics of the existing runways as published in the *En Route Supplement Australia (ERSA)* published by Airservices Australia:

Runway	Ref. Code	Dimensions (m)	Strip Width (m)	Surface	Strength
Main Runway 03/21 *(north – south)*	3C	1,600 x 30	150 (90 graded)	Asphalt (Flexible) - Grooved	PCN16/F/C/1000 (145PSI)
Grass Runway 10/28 *(east – west)*	1A	696 x 18	60	Grass	Unrated

The asphalt pavement of the main 'north – south' runway 03/21 is suitable for regular daily operations of aircraft up to approximately 35 tonne maximum take-off weight (MTOW), which includes the existing Embraer E170 jet and the Dash8-Q400 turboprop (29 tonne) aircraft. Limited operations of aircraft up to the Embraer E190 jet are also possible under pavement concession restrictions. The 'east – west' grass runway 10/28 is only suitable for light aircraft in dry weather conditions.

Taxiways adjoining the main runway 03/21 provide access to the RPT apron and general aviation precinct. The Code C taxiway Alpha (TWY A, 15m wide) provides the main access to the RPT apron. Taxiway Charlie 1 (TWY C1, Code C, 15m wide) and taxiway Bravo (TWY B, Code C, 15m wide) provide an alternate access to the RPT apron for aircraft up to 20 tonne MTOW. Taxiway Charlie 2 (TWY C2, Code B, 10.5m wide) provides access to the GA precinct for up to Code B aircraft with a maximum take-off weight of up to 5,700kg.

The RPT apron was expanded in 2008 to provide three (3) free moving parking positions for RPT aircraft adjacent to the passenger terminal building. Bays 1 and 2 located immediately in front of the terminal building are suitable for aircraft up to the Embraer E190 / E170 and Dash8-Q400. Bay 3 is suitable for up to one Dash8-300 or two Jetstream J41 / Metro 3 aircraft. The general aviation aprons GA1 and GA2 provide access to the GA hangar facilities and parking facilities for up to Code B aircraft. Natural ground (grassed) surface areas adjacent to taxiway Charlie 2 are also available for parking for local and itinerant GA aircraft.

The RPT passenger terminal is located to the south of the RPT apron. The terminal provides facilities for arriving and departing passengers, including passenger and baggage check-in, departure lounges, arrivals and baggage collection areas, along with a café and desks for seven (7) car hire companies. In early 2008 a new departure lounge was provided with passenger and carry-on baggage security

screening facilities as required for jet services. In November 2008, additional security screening and baggage handling system facilities were provided to enable EDS x-ray screening of checked baggage.

The public car park is located adjacent to the passenger terminal and provides parking for up to 175 vehicles including three (3) spaces reserved for disabled persons car parking and 29 spaces reserved for rental car parking. Both short and long-term parkers use the car park, including passengers, visitors dropping off or picking up passengers, car rental companies, and airport and airline staff. In October 2008 a new car park management system was installed and parking fees were introduced (for parking durations greater than two (2) hours). Access to and egress from the car park is controlled via barrier gates linked to the car park management system.

The general aviation precinct located to the east of the passenger terminal and car park includes 17 leased property sites, which comprise aircraft hangars, the Hastings District Flying Club clubhouse, and other aviation related business enterprises. Parking areas for local and itinerant GA aircraft are available on the GA aprons and on grassed areas adjacent to taxiway Charlie 2.

The airport also has facilities for helicopters, with a helicopter landing area and area for helicopter parking located to the north of the RPT apron.

Other key aviation support facilities include:

- aviation fuel farms located adjacent to taxiway Bravo and the RPT apron, and adjacent to taxiway Charlie 2 within the GA precinct
- paved areas adjacent to the RPT apron for storage of ground support equipment
- a non-directional radio beacon (NDB) located to the south of runway 10/28
- a weather station located to the south of runway 10/28.

The principal vehicular access to the airport is via Hastings River Drive and Boundary Street or Tuffins Lane.

4.0 AVIATION DEMAND FORECASTS

4.1 RPT Passenger Movement Forecast

Based on annual statistics prepared by the Bureau of Infrastructure, Transport and Regional Economics (BITRE) as shown in Figure 4-1 below, Port Macquarie Airport was the sixth largest regional airport in NSW in 2009 with 203,922 passenger movements.

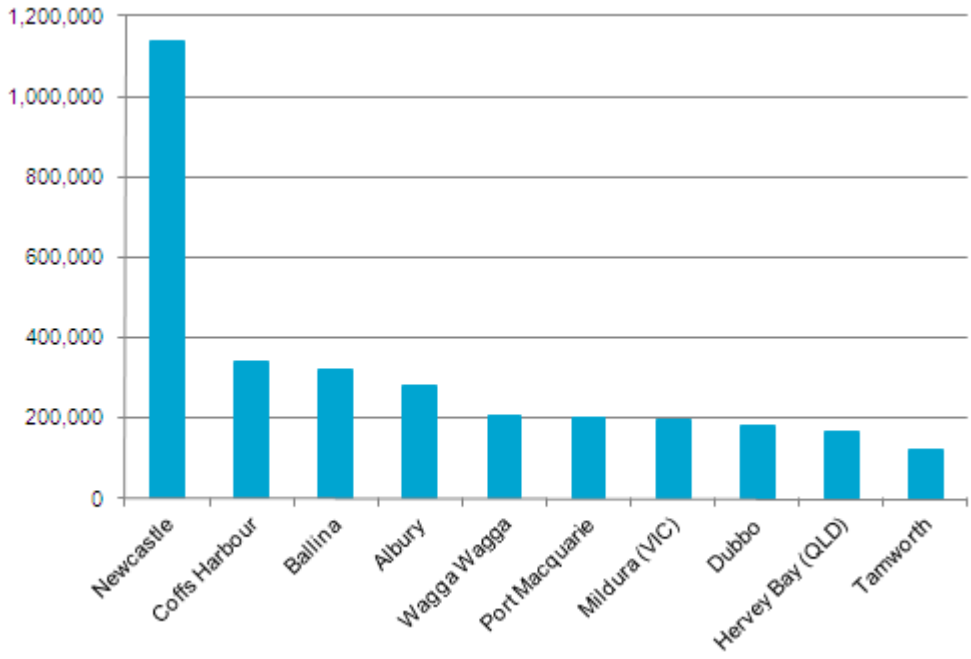

Figure 4-1 Annual Passenger Movements 2009 *Source: BITRE*

Despite the significant growth in passenger movements recorded over the past five years, the ratio of passengers to the regional population remains relatively low at approximately 1.5 compared to over 2.0 at airports such as Newcastle, Ballina, and Coffs Harbour. This suggests that there is still significant potential for growth in passenger numbers at Port Macquarie Airport and further opportunities to:

- stimulate demand for air travel through the introduction of lower fares brought about as a result of enhanced competition
- grow the tourism / 'visiting friends and relatives' market (current mix is 53% business, 47% VFR / holidays / other)
- consolidate and grow services on the existing Sydney and Brisbane routes, as well as developing new services / routes (for example, to Melbourne)
- reduce 'leakage' of passengers to neighbouring airports such as Newcastle and Coffs Harbour.

BITRE has predicted that passenger movements through Australian airports will increase by four per cent per annum over the next 20 years, resulting in a doubling of passenger movements over this period. As shown in Figure 4-2 below, adopting this growth rate, passenger movements at Port Macquarie Airport are forecast to reach around 450,000 passengers per annum by 2030. This figure corresponds with a high growth forecast and ratio of 2.5 passengers to population. For comparison, the figure below also shows a medium growth forecast at a ratio of 2.0 passengers to population, and a low growth forecast based on the current ratio of 1.5 passengers to population.

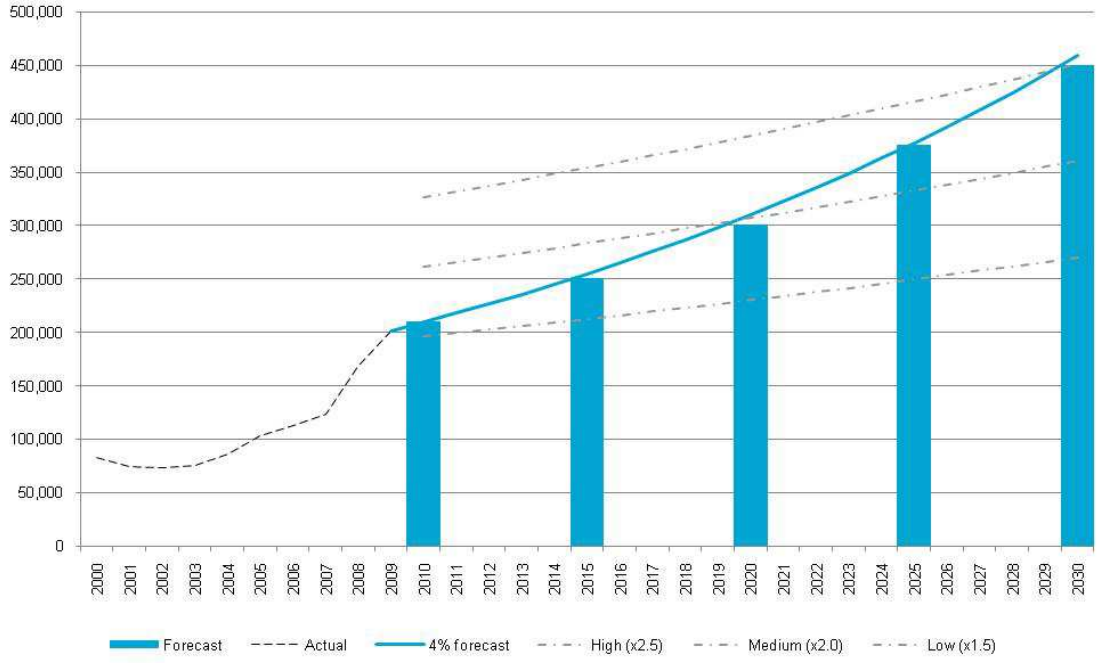

Figure 4-2 RPT Passenger Movement Forecast

Over the past five years, the average annual growth in passenger movements has exceeded 20 per cent per annum. Subject to demand, the introduction of new airline services and the corresponding staging of infrastructure upgrades, the figure above shows that over the next five to ten years, the potential exists for continued rapid growth in passenger movements with a short-term forecast of 300,000 to 350,000 passenger movements per annum being possible.

4.2 RPT Aircraft Movement Forecast

Port Macquarie Airport currently handles up to 19 regular public transport (RPT) aircraft movements per day (114 per week or up to 6,000 movements per annum) including operations of Embraer E170 (78-seat) jet aircraft, Bombardier Dash 8 Q400 (74-seat) and 300 series (50-seat) turbo prop aircraft, and British Aerospace J41 (30-seat) and Fairchild Metro 3 series (19-seat) turbo prop aircraft.

The 2004 master plan identified Code 4C aircraft as the critical aircraft for master planning purposes. Based on an assessment of a range of current and future Code 4C aircraft, limited to a 68,100kg certified take-off weight (see Section 6.1) the 180-seat Boeing B737-800W (35.8m wingspan, 39.5m

length, and 12.6m fin height) has been adopted as the critical aircraft to guide the geometric planning and design of the future airport infrastructure and facilities. Further analysis of the critical aircraft dimensions will be undertaken during detail design of the proposed expansion of the RPT apron to determine the feasibility of providing limited capacity for larger Code 4C aircraft up to the Boeing B737-900W and Airbus A321.

With the forecast introduction of larger capacity Code 4C aircraft, it is envisaged that the forecast passenger growth can be achieved without a significant increase in the number of RPT aircraft movements – for master planning and aircraft noise modelling purposes however, it has been assumed that RPT aircraft movements may increase to up to 7,500 movements per annum by 2030 which represents an annual growth rate of approximately 1% per annum and a 25% increase over current levels.

4.3 GA Aircraft Movement Forecast

In 2009, Port Macquarie Airport catered for a total of around 30,000 aircraft movements (RPT and GA), of which 24,000 movements or 80% were attributed to general aviation aircraft. Approximately 10,000 movements or 30% related to 'touch and go' and 'circuit' type pilot training operations.

This level of activity was lower than the peak observed in 2008, when approximately 43,000 aircraft movements were recorded, of which 37,000 related to GA aircraft with 19,000 or 45% being 'touch and go' and 'circuit' type movements. The reduction in 2009 was a result of the main pilot training school at the Airport being placed into administration and ceasing trading for a period of time.

As stated in Section 2.0, Council aims to work in partnership with the GA community and Greater Taree City Council and Kempsey Shire Council to promote greater use of the nearby Taree and Kempsey Airports for general aviation activity and in particular to reduce the proportion of 'touch and go' and 'circuit' type operations at Port Macquarie Airport. This strategy is aimed at making better use of the three Council-owned airports and their associated airspace, and is fundamental to the establishment of a *Mid North Coast Regional Aviation Centre of Excellence* across the region. Council has developed a formal Memorandum of Understanding with Kempsey Shire Council which will see Kempsey Airport developed as a base for general aviation as part of this strategy.

Assuming a return to near 2008 activity levels in the short term, and a nominal 1% growth rate over the next 20 years, it is envisaged that GA aircraft movements in 2030 will reach approximately 42,500 movements per annum. This would result in total aircraft movements at Port Macquarie Airport of up to 50,000 movements per annum which represents a 25% increase over the planning period of this Master Plan.

5.0 DEVELOPMENT CONSTRAINTS

Whilst the majority of the Airport site is zoned as *Zone 5(a) Special Uses – Airport LEP 2001 (Zone SP2 Infrastructure – Air transport facility draft LEP 2010)*, some areas of the Airport site are unavailable or unsuitable for development due to environmental constraints and associated land use zonings. As shown in Figure 5-1 in Appendix A, this includes areas identified as:

- environmental protection zoning – *Zone 7(a) Wetlands* and *Zone 7(h) Habitat LEP 2001 (Zone E2 Environmental Conservation draft LEP 2010)* which includes areas of coastal wetlands and other areas of high ecological and habitat value
- containing endangered ecological communities and / or threatened fauna species including land identified as core koala habitat
- being flood prone in a 1 in 100 year flood event.

Areas identified as coastal wetlands are protected under State Environmental Planning Policy (SEPP) 14. Development within these areas will constitute 'designated development' requiring the preparation of a detailed environmental impact statement and assessment in accordance with the *Environmental Planning and Assessment Act 1979* and the *Environmental Planning and Assessment Regulations 2000*. Development within these areas may only be carried out with the consent of the local Council and the agreement of the Director-General of the Department of Planning following consideration of the environmental assessment and mitigation strategies.

Ecological studies conducted by consultant GHD in 2008 have identified various threatened fauna specifies and endangered ecological communities as being present, or potentially present, on the land to the west of the main runway 03/21. It is likely that planning approval for any proposed development in this area would be subject to the implementation of appropriate mitigating strategies to compensate for the development of the potentially environmentally sensitive areas.

Figure 5-1 also shows the extent of flood prone areas in a 1 in 100 year flood event. Any development proposed within these areas would require detailed studies and investigations to be undertaken to determine the appropriate flood and stormwater management strategies required. This assessment will need to consider the potential effects of climate change on the currently adopted flood levels and in particular potential impacts identified in the *NSW Sea Level Rise Policy Statement* published in October 2009.

There are a number of other environmental considerations that must also be taken into account in reviewing the master plan and assessing the Airport's impact on the surrounding areas. Two of the key considerations are aircraft noise and constraints imposed on surrounding development through the requirement for obstruction free minimum take-off gradients as defined by the Airport's obstacle limitation surface (OLS). These issues are discussed further in Section 12 of the Master Plan.

6.0 AIRCRAFT MOVEMENT AREAS

6.1 Runway 03/21

The existing main runway 03/21 is a Code 3C runway 1,600 metres long and 30 metres wide. As previously identified, the Master Plan has adopted Code 4C aircraft as the critical 'design' aircraft for master planning purposes. In order to cater for these types of aircraft, a major upgrade of the main runway will be required, including an extension to the runway length, and an increase in the pavement strength.

The *Manual of Standards (MOS) Part 139 – Aerodromes* specifies a 45 metre runway width for Code 4C aircraft. CASA has advised however that in accordance with *Civil Aviation Regulation CAR 235A*, Code 4 aircraft are permitted to operate on a 30 metre wide runway, providing the certified take-off weight does not exceed 68,100kg. Accordingly, the Master Plan has adopted this standard for runway 03/21 and no widening of the runway beyond its current 30 metre width is proposed.

In accordance with *MOS Part 139*, the runway length must be adequate to meet the operational requirements of the proposed aircraft. Based on an assessment of a range of current and future Code 4C aircraft, limited to a 68,100kg certified take-off weight, a future runway length of 1,800 metres has been adopted. As an example, this runway length is suitable for Boeing B737 type operations from Port Macquarie to Melbourne. Land is available to the south of the existing runway for the additional 110 metre length required.

The *Discussion Paper* published in 2009 put forward four development scenarios based on two principal options for the future upgrade of runway 03/21, these being:

- **Option 1 –** to upgrade the existing runway on its current alignment (to 1,800m and 68.1t MTOW) (and construct a new parallel taxiway), or
- **Option 2 –** to construct a new 1,800m long x 30m wide runway (to 68.1t MTOW) parallel to, and to the west of the existing runway (with the existing runway converted to a parallel taxiway).

A detailed options analysis was undertaken with consideration given to the relative merits of each option against the planning principles of safety, security, and legislative compliance; capacity and operational efficiency; environmental responsibility; financial viability and sustainability; and stakeholder impact. This analysis identified that whilst Option 2 offered some operational benefits, Option 1 provided a greater range of benefits at a significantly lower capital cost ($17.0 million compared to $24.75 million for the Option 2 runway – estimates in 2010 $ excl. GST).

As part of the options analysis, a detailed runway usability and wind assessment was also conducted using Bureau of Meteorology records covering the period 1995 to 2010. This assessment confirmed that the current alignment of runway 03/21 is well placed with respect to the prevailing wind directions and realignment of the runway either clockwise or anti-clockwise would not provide any tangible benefits to aircraft operations at Port Macquarie Airport.

Accordingly, Option 1, the upgrade of the existing runway, has been adopted as the preferred runway development option. In order to upgrade the existing runway to Code 4C standard, it will also be necessary to provide for a 150 metre wide graded strip, 3 metre wide sealed shoulders on both sides of the runway, and new runway end safety areas (RESAs). The requirement for a RESA at the northern end of the runway will necessitate closure or realignment of Tuffins Lane (subject to Council traffic / transport planning considerations), and acquisition of land to the north of Tuffins Lane.

To allow for staging of future taxiway infrastructure (see Section 6.3) it is also proposed to provide runway turning areas at each end of runway 03/21 to allow larger aircraft to turn and taxi back along the runway as is the current practice.

6.2 Runway 10/28

The existing east – west grass runway 10/28 is suitable for Code 1A light aircraft only and is typically used for recreational and pilot training purposes. As identified in the *Discussion Paper* published in 2009, runway 10/28 is used infrequently and is closed for up to a third of each year due to wet weather making the ground unsuitable for aircraft movements. As part of the review of the master plan and preparation of the *Discussion Paper*, it was identified that the grass runway potentially constrains future development of the Airport and an option to permanently close the grass runway has been assessed. This assessment has examined both technical and economic factors, including:

- the useability of runway 03/21 under various crosswind conditions
- the availability of alternate crosswind runways at the nearby Taree and Kempsey Airports
- the recommendations of a CASA Office of Airspace Regulation report *Airspace Review of Port Macquarie* released in August 2009
- the economic justification for retaining the grass runway at the expense of other development requirements

The detailed runway usability and wind assessment examined the usability of the main runway 03/21 for light aircraft operations based on a 10kt crosswind and 0kt downwind limit appropriate for Code 1 aircraft. This assessment identified that runway 03/21 provides a usability factor under these conditions greater than the International Civil Aviation Organisation (ICAO) standard of 95% (see Figure 6-1 below) which indicates that there is no specific technical requirement or safety imperative to provide a cross runway alignment at Port Macquarie Airport. A further analysis using a 15kt crosswind and 5kt downwind limit indicated a usability factor of close to 100%.

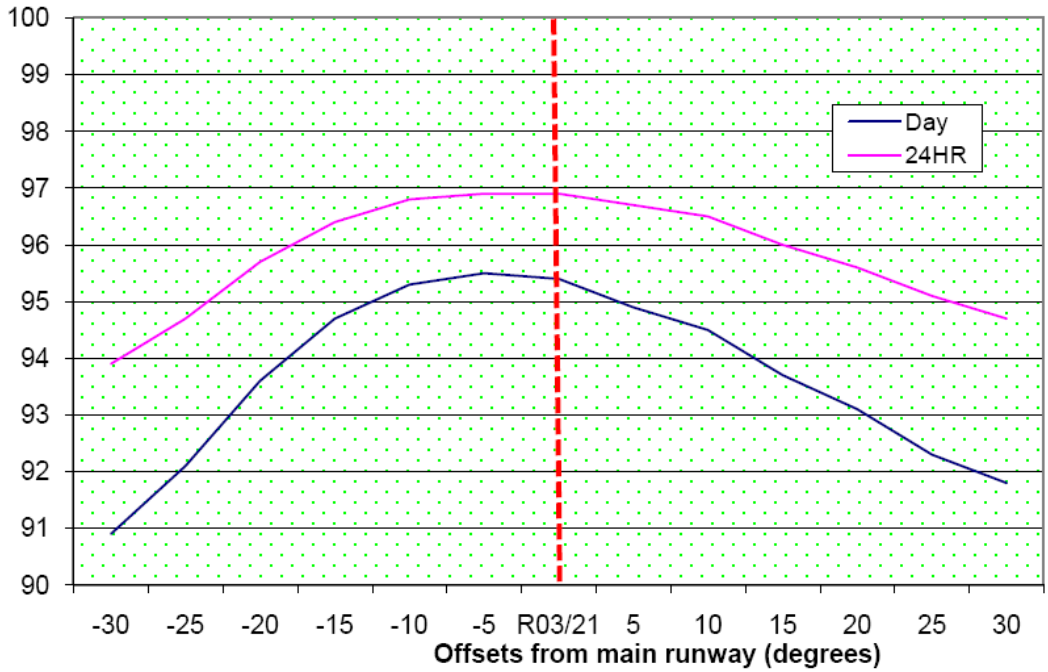

Figure 6-1 Runway 03/21 Usability Factor (10kt crosswind)

The assessment also considered the close proximity of the nearby Taree and Kempsey Airports which provide alternate crosswind runways within short flying times (typically less than 20 minutes) from Port Macquarie. These runways could be used for crosswind flying training purposes or as an alternate aerodrome in the unlikely event that runway 03/21 was unavailable for light aircraft operations due to the prevailing weather conditions. This is consistent with the strategy to make better use of Taree and Kempsey Airports as part of an integrated *Mid North Coast Regional Aviation Centre of Excellence*.

A further consideration examined concerns raised by the CASA Office of Airspace Regulation in its report *Airspace Review of Port Macquarie* released in August 2009. In the report CASA raised concerns about the possible simultaneous use of the two runways at Port Macquarie Airport and made a number of recommendations including the possibility of placing restrictions on the operation of the grass runway 10/28.

In addition to the technical assessment, consideration was also given to the economic justification of either retaining or closing the grass runway. This assessment considered the results of a detailed cost – benefit analysis (CBA) model prepared on the various development options presented in the Master Plan *Discussion Paper*. This assessment demonstrated that the areas of land currently occupied by the grass runway provided greater economic and financial potential through being made available for other aviation uses and commercial property development purposes. A summary of the CBA results is provided in the following table:

Table 6-2: Summary of Cost – Benefit Analysis

Option	A	A*	B	B*	C*	D*
Rank	**2**	**1**	**4**	**3**	**5**	**6**
CAPEX	$ 48,000,000	$ 48,000,000	$ 52,850,000	$ 52,850,000	$ 54,950,000	$ 59,800,000
PV Costs	$ 46,614,851	$ 46,614,851	$ 54,305,328	$ 54,305,328	$ 61,286,651	$ 68,977,127
PV Benefits	$ 50,155,030	$ 53,578,135	$ 50,155,030	$ 54,007,231	$ 53,578,135	$ 54,007,231
NPV	$ 3,540,179	$ 6,963,283	$ (4,150,297)	$ (298,097)	$(7,708,516)	$(14,969,896)
BCR	1.08	1.15	0.92	0.99	0.87	0.78
FYRR	9.7%	9.7%	7.3%	7.3%	5.6%	4.7%

Option A upgrade of existing runway, new parallel taxiway, expansion of existing RPT apron, expansion of existing passenger terminal and car parking facilities

Option A* as Option A with closure of the grass runway 10/28

Option B new runway, existing runway converted to a parallel taxiway, new RPT apron, expansion of existing passenger terminal and car parking facilities

Option B* as Option B with closure of the grass runway 10/28

Option C* upgrade of existing runway, new parallel taxiway, new RPT apron, new passenger terminal and new car parking facilities (requires closure of the grass runway 10/28)

Option D* new runway, existing runway converted to a parallel taxiway, new RPT apron, new passenger terminal and new car parking facilities (requires closure of the grass runway 10/28)

CAPEX Capital expenditure (indicative cost based on Master Plan estimates)

PV Costs Present Value of Costs represents the capital and operating costs over the 20 year assessment period after the allowance for discounting

PV Benefits Present Value of Benefits represents the discounted benefits accruing over the 20 year assessment period

NPV Net Present Value represents the net discounted value (ie present value of benefits minus present value of costs) over the assessment period. A positive NPV indicates that the project is economically justified under the set of assumptions in the cost-benefit model

BCR Benefit Cost Ratio represents the total present value of benefits over the present value of costs. BCR greater than 1.0 indicates that the project is economically justified under the set of assumptions in the cost-benefit model

FYRR First Year Rate of Return represents the percentage of return estimated in the first year of operation. FYRR is equal to discounted benefits in the first operating year, divided by the sum of the discounted costs (CAPEX and OPEX) from first year of construction to first year of operation. A FYRR less than the discount rate indicates that the project is being implemented too soon. An 8% discount rate has been used in this cost-benefit model

The results from the cost-benefit model demonstrate that only Options A / A* are economically justified at this point in time, based on the set of assumptions used in the model, with Option A* providing greater economic and financial potential over the 20 year assessment period.

Based on a combination of the technical and economic considerations, it is proposed to permanently close the grass runway 10/28. It should be noted that there are a number of airports with a similar traffic mix to Port Macquarie that have only a single runway, including Ballina, Albury, and Hervey Bay.

6.3 Taxiways

The existing taxiway system consists of the Code C taxiway Alpha (TWY A, 15 metres wide) which provides the main access to the RPT apron, Taxiway Charlie 1 (TWY C1, Code C, 15 metres wide) and taxiway Bravo (TWY B, Code C, 15 metres wide) which provide an alternate access to the RPT apron for aircraft up to 20,000kg MTOW, and Taxiway Charlie 2 (TWY C2, Code B, 10.5 metres wide) which provides access to the general aviation precinct for Code B aircraft up to 5,700kg.

Stakeholder feedback including the CASA Office of Airspace Regulation report *Airspace Review of Port Macquarie* has suggested the need for a new taxiway parallel to the main runway 03/21 in order to improve safety and maximise the capacity and operational efficiency of the runway. Currently aircraft are required to use the main runway as a taxiway to position for take-off or to taxi back to the RPT apron or GA parking positions on landing, which results in the runway being occupied for longer periods of time and subsequently constrains airspace capacity.

As such, a new full length parallel taxiway is proposed to the east of the main runway on the extension to the existing Taxiway Bravo. For Code C infrastructure, the minimum separation distance between the runway and taxiway is 93 metres. The existing Taxiway Bravo is located at the Code D separation distance of 101 metres, and a decision of the final offset alignment will be subject to detailed design and an assessment of potential aircraft operations at that time.

MOS Part 139 specifies that Code C taxiways should be 18 metres wide, although where the taxiway is only intended to serve aircraft with a wheelbase of less than 18 metres, the width may be reduced to 15 metres. Ultimately the Master Plan provides for the full width taxiway construction to 18 metres, although this width may be constructed in stages to suit the proposed aircraft operations.

In terms of pavement strength, ultimately the Master Plan provides for full construction of the new taxiway to support aircraft operations up to the 68,100kg TOW limit of runway 03/21, allowing for all aircraft operations to use the taxiway. This requires a significant capital investment ($14.75 million - estimate in 2010 $ excl. GST) and it is envisaged that the taxiway construction will therefore be staged over the period of the Master Plan to suit runway capacity demands.

A section of the new parallel taxiway will also be required to the north of the existing Taxiway Bravo to serve the future expanded RPT apron area. This section of taxiway will be provided with a connection to the runway 21 threshold position to provide access directly to and from the expanded RPT apron area.

6.4 RPT Apron

The existing RPT apron was expanded in 2008 to provide three (3) free moving parking positions for up to Code 3 aircraft adjacent to the passenger terminal building. In order to cater for up to Code 4C aircraft a significant expansion of the apron area will be required to provide additional and larger free moving parking positions for the design aircraft. To provide flexibility over the planning period of this Master Plan, two options have been reserved:

- an expansion of the current RPT apron to the north, to provide up to four (4) free moving parking positions, subject to relocation of the current helicopter landing and parking area
- construction of a new RPT apron in Development Precinct A (which has been reserved for future airport uses) located to the south of the current RPT precinct – development in this area will be subject to demand for a new passenger terminal building and associated facilities

It is envisaged that expansion of the current RPT apron will be the preferred development option in the short to medium term. An upgrade of the existing apron will also require an increase in the pavement capacity to cater for aircraft up to the 68,100kg TOW limit. The indicative capital investment required for this infrastructure is $4.75 million (estimate in 2010 $ excl. GST).

As identified in the *Discussion Paper*, an expansion of the apron to the north is likely to result in significant walking distances for passengers to and from the terminal building. As such, provision of a covered passenger walkway around the apron to protect passengers during periods of inclement weather will be considered as part of the detailed design of the expanded apron area.

Jet blast fencing may also be required adjacent to Tuffins Lane subject to detailed analysis of jet blast issues.

6.5 GA Facilities

The existing general aviation (GA) precinct is located to the east of the RPT passenger terminal and car parking area. The precinct consists of two u-shaped cul-de-sac aprons GA1 and GA2 which provide access to the adjacent aircraft hangar facilities. Parking areas for local and itinerant GA aircraft up to Code B are available on the GA aprons and on natural (grassed) surface areas located adjacent to taxiway Charlie 2. A refuelling facility for GA aircraft is located adjacent to the GA1 apron.

In recent years there has been increasing demand for general aviation facilities at the Airport to cater for both business and recreational activities. The existing GA precinct however offers little opportunity for further development and in order to cater for future demand, a new development area will be required for general aviation purposes.

As identified in Section 2.0, it is expected that the increasing demand for general aviation facilities will be met in partnership with Greater Taree City Council and Kempsey Shire Council through the establishment of a *Mid North Coast Regional Aviation Centre of Excellence* across the three airports at Port Macquarie, Taree and Kempsey. The *Aviation Centre of Excellence* will aim to promote better utilisation of Taree and Kempsey Airports where significant potential and capacity exists for the development of new infrastructure and facilities specifically focused on general aviation activities.

To provide for expansion at Port Macquarie Airport as part of the proposed *Aviation Centre of Excellence*, a new 10-hectare development site located to the west of runway 03/21 (Development Precinct B) has been identified. Preliminary planning for this area has been based on a Code B design aircraft, with a 20 metre wingspan and 5,700kg MTOW limit. Figure 13-1 in Appendix A shows an indicative layout for this area, including:

- ultimate development of up to 20 new hangar sites (typically 1,000m^2 each) located within three u-shaped cul-de-sac modules with scope for the provision of T-hangars subject to demand
- a common use Code B (20 metre wingspan limit) taxiway from runway 03/21
- a Code B (20 metre wingspan limit) passing / engine run-up bay at the eastern end of the development area
- natural (grassed) surface areas adjacent to the taxiway for the parking of Code A aircraft
- a common use refuelling area and wash down bay

The Master Plan makes no provision for expansion of the general aviation facilities adjacent to the existing GA precinct as these areas have been identified for commercial property development purposes as part of an *Airport Precinct* business technology park (see Section 10.0). Subject to demand, a long-term option to redevelop the existing GA precinct in the future for further development as part of the *Airport Precinct* has been reserved in this Master Plan.

6.6 Helicopter Facilities

The existing helicopter landing and parking area is located to the north of the RPT apron. With the proposed expansion of the RPT apron into this area, a new site for helicopter operations will need to be provided. In determining the future location for helicopter operations at the Airport, consideration has been given to the following principles:

- separating the operations of fixed wing and rotary wing (helicopter) aircraft
- providing ease of access to the existing RPT and GA facilities for pilots / crew

Accordingly, an area in the vicinity of the existing grass runway 10/28 located within Development Precinct A has been reserved for future helicopter operations, subject to closure of runway 10/28.

Based on an assessment of current helicopter operations including those typically used by the emergency services, the dimensions of a medium twin turbine helicopter (such as the Bell 412EP) have been adopted as the critical dimensions for the geometric planning of the new helicopter facilities. The nominal parking area indicated on Figure 13-1 will allow for the parking of up to four medium helicopters or five of the smaller light single turbine helicopters (such as the Bell 206). The final approach and take-off area (FATO) site indicated provides omni-directional capability with a minimum obstacle free gradient of 1 in 8 to the edge of the FATO through 360 degrees.

7.0 AVIATION SUPPORT FACILITIES

7.1 Refuelling Facilities

The existing RPT fuel farm is located adjacent to taxiway Bravo and the RPT apron, immediately west of the passenger terminal building. The facility contains two 37,000 litre underground tanks for AVTUR / Jet A-1 fuel (suitable for jet and turboprop aircraft). Based on current airline refuelling practices, the existing facility has sufficient capacity to support forecast future RPT airline operations.

The location of the fuel storage facility may constrain the long-term future expansion of the passenger terminal building given that the Master Plan proposes an expansion of the existing terminal in its current location (see Section 8.1). In the short to medium term however, it is envisaged that expansion of the passenger terminal building will be possible without relocation of the fuel farm facility. Should it be necessary to relocate the fuel farm in the future, a suitable site will be identified at that time in consultation with the aviation fuel provider.

The existing general aviation fuel farm is located adjacent to Hangar 1 and the GA1 apron. The facility contains three 55,000 litre underground tanks (two operational, one spare / decommissioned) for AVGAS fuel (suitable for piston-engine GA aircraft). It is envisaged that the existing GA fuel farm will remain in its current location in the short to medium term, with possible future relocation as part of the development of the new GA precinct identified west of runway 03/21 (Development Precinct B).

The possible relocation of the two fuel storage facilities is considered a long-term plan and will be re-evaluated during the next major review of the master plan.

7.2 Ground Support Equipment Storage Areas

With the forecast introduction of new aircraft types over the planning period of the Master Plan, provision will be made for additional storage areas for airline ground support equipment (eg aircraft stairs, baggage carts, belt loaders etc) in conjunction with the detailed planning and design of the expanded RPT apron.

7.3 Navigation and Approach Aids

The Airport is equipped with a non-directional beacon (NDB), located to the south of runway 10/28, and precision approach path indicators (PAPI), which provide radio and visual directional guidance respectively to assist pilots on a straight-in approach to the main runway 03/21 (classified as an instrument non-precision approach runway). GPS approach procedures are also available on runway 03/21. The airport is equipped with pilot activated lighting (PAL), which provides low intensity runway lighting and edge lighting on TWY Alpha. The PAL also activates the PAPI and illuminated wind indicators (IWI) located at both ends of the main runway. These facilities are consistent with regional airport operations across Australia. The CASA Office of Airspace Regulation report *Airspace Review of Port Macquarie* confirmed that the current navigation and approach aids at Port Macquarie Airport

are suitable for the current traffic and conditions, and as such, no change to these facilities is envisaged in the short to medium term.

Airservices Australia has advised that the NDB is part of the Australia wide Conventional Navigation Backup Network and will be required until at least 2025. Consideration will be given to decommissioning the facility between 2025 and 2030 subject to user requirements and the adoption of satellite navigation technologies. As such, the NDB and its associated 150 metre radius buffer zone will continue to be a constraint on adjacent development options during the planning period of this Master Plan.

7.4 Weather Information Service

An automatic aerodrome weather information service (AWIS) is currently provided from the existing Bureau of Meteorology (BoM) weather station located to the south of runway 10/28. The weather station is located within Development Precinct A which has been reserved for possible future airport infrastructure and facilities. As such it is not envisaged that the weather station will need to be relocated in the short term.

7.5 Aerodrome Rescue and Fire-Fighting Services

The criteria for Aerodrome Rescue and Fire-Fighting Services require the establishment of ARFFS facilities when annual passenger numbers exceed 350,000. Based on the forecast passenger growth outlined in Section 4.1, ARFFS facilities are likely to be required during the 20-year planning period of this Master Plan. An area to the east of runway 03/21 in Development Precinct A has been identified as a possible location for a future ARFFS facility (see Figure 13-1 in Appendix A). A site to the west of Development Precinct B has also been identified as a possible future fire training area.

7.6 Air Traffic Control

There are no air traffic control (ATC) facilities at Port Macquarie Airport, being a non-towered aerodrome operating in uncontrolled Class G airspace. The Airport operates on a Common Traffic Advisory Frequency (CTAF(R)) for the mandatory radio broadcast of all aircraft movements. On 3 June 2010, new rules were introduced by CASA (under Civil Aviation Regulation CAR 166) making it mandatory to carry and use VHF radio at non-towered aerodromes. The new rules also involved changes to standard traffic circuit procedures to improve aircraft separation and safety at regional aerodromes.

Airservices Australia has advised that it is unlikely that an air traffic control tower will be warranted at Port Macquarie Airport over the period of this Master Plan. A possible future site has however been reserved within Development Precinct A (see Figure 13-1 in Appendix A) should air traffic control facilities need to be provided in the future.

8.0 PASSENGER FACILITIES

8.1 Passenger Terminal

The existing passenger terminal building is located to the south of the RPT apron. The building is operating at near capacity during the current morning 'busy hour' peak period in which the terminal caters for up to 250 passengers (125 arrivals and 125 departures) travelling on the 78-seat E170 and 74-seat Q400 aircraft. With continuing growth in passenger movements, it is clear that expansion of the terminal facilities will be required in the short-term to cater for current demand, with a major upgrade of the terminal ultimately required in the future to cater for the introduction of larger capacity Code 4C aircraft (for example, the 180-seat B737-800) and the corresponding forecast growth in passenger movements identified in Section 4.1.

Passenger terminal design is based on International Air Transport Association (IATA) Level of Service standards which set out functional requirements based on a range of levels of service from A to F, with A being the highest (excellent service), and F being the lowest (unacceptable congestion). Most Australian airports adopt level of service C which represents a:

- good level of service, conditions of stable flow, provides acceptable throughput, related sub-systems in balance

Based on the functional requirements for level of service C, and a future 'busy hour' projection of up to 600 passengers (300 arrivals and 300 departures), it is envisaged that a future passenger terminal building area of up to 3,300m^2 may be required (the current building area, including external areas, is 1,400m^2).

A number of options for the expansion and upgrading of the terminal facilities have been considered, including an expansion to the current terminal building or development of a new building on a 'greenfield' site. Both options have been retained as part of the Master Plan 2010, although it is expected that expansion and redevelopment of the current terminal building will be the focus of further planning in the short-term. Areas to suit possible future terminal locations have been reserved as part of Development Precinct A to allow for future development of a new terminal should demand require.

Subject to a detailed terminal planning process, the future terminal concept will aim to incorporate:

- an expanded passenger check-in area with provision for self check-in kiosks
- expanded departures and arrivals areas, including additional retail outlets and toilet facilities and opportunity for airline lounges
- an expanded main concourse area with additional retail outlets and upgraded passenger facilities, including car rental and tourist information counters
- expanded passenger and checked baggage security screening areas

- an expanded baggage claim area with provision of a baggage claim carrousel (conveyor) and allowance for further expansion if necessary
- provision of airport and airline office space
- revised 'front-of-house' pedestrian areas and access road / car park interface

Timing of the various improvements will be staged to meet demand and future 'busy hour' projections. Preliminary planning and staging considerations are shown in Figure 8-1 in Appendix A, including:

- Stage 1: construction of a new permanent departures lounge with security screening, toilet, and retail facilities to replace the existing temporary lounge constructed in 2008. The new lounge area will be constructed to enclose the existing external arrivals and departures area located between the current terminal building and RPT apron
- Stage 2a: construction of a new check-in hall to the west of the current terminal building (where the existing temporary departures area is currently located). This will allow continued operation of the existing check-in area during construction
- Stage 2b: construction of a new checked baggage security screening and baggage make-up area
- Stage 3: decommissioning of the existing check-in and checked baggage areas, and redevelopment as part of an expanded main concourse area with additional retail facilities, and expanded departures lounge (and/or with provision of an airline lounge)
- Stage 4: construction of a new arrivals hall with baggage breakdown and reclaim areas to the east of the current terminal building, with provision of a baggage claim carrousel
- Stage 5: redevelopment of the 'front-of-house' pedestrian areas and access road / car park interface in conjunction with an upgrade of the car parking facilities

The provision of additional retail opportunities and other concessions is a key strategy to provide access for passengers to a wider range of services as well as enhance the Airport's non-aviation revenue stream to support the Airport's long-term financial viability and sustainability.

8.2 Car Parking Facilities

The existing car park provides parking for up to 175 vehicles including three (3) spaces reserved for disabled persons car parking and 29 spaces reserved for hire cars. As with the passenger terminal, the existing car park is operating at capacity during current peak periods.

The Master Plan identifies a number of areas within Development Precinct A for future car parking facilities. It is envisaged that based on future 'busy hour' projections and the forecast growth in passenger movements that up to 600 car parking spaces may ultimately be required by 2030, with up to 450 spaces being required in the short to medium term (next 5 to 10 years).

In the short-term the existing car park will be expanded to the south towards taxiway Charlie 2 which will necessitate relocation of the current general aviation aircraft parking area located in this area. Space is available in this location for an extra 100 parking spaces, providing up to 275 spaces in total in front of the passenger terminal building (see Figure 8-2 Sh. 1 in Appendix A).

An area to the east of the RPT apron and adjacent to Tuffins Lane has also been identified for future car parking facilities. This area will provide for up to 175 additional car parking spaces, giving a total car parking provision across both areas of 450 parking spaces (see Figure 8-2 Sh. 2 in Appendix A). These areas are expected to cater for the short to medium term growth in passenger movements.

As part of the detailed design for future parking areas, consideration will be given to the provision of separate areas for:

- short-term and premium undercover parking located in close proximity to the passenger terminal building
- long-term and staff parking, and areas for the collection and return of hire cars, located away from the passenger terminal building (though easily accessible)

Access to all parking areas will be controlled via an expansion to the existing car park management system and subject to the payment of parking fees as determined by Council. Revenue raised from car parking will be retained by Port Macquarie Airport and used to fund ongoing airport operations and future improvements as set out in the Master Plan.

As identified in Section 8.1 above, as part of the redevelopment of the current passenger terminal and car parking precinct, revised 'front-of-house' areas will be provided to separate the terminal building from the main vehicular access road and enhance safety and security in the vicinity of the terminal building. Requirements for public transport (taxi, bus and shuttle bus) services will be incorporated in to the planning and redesign of this area.

The redesign of the expanded parking area in front of the passenger terminal building will also aim to incorporate an external 'bypass' lane, outside the control of the car park management system, to allow for the picking up and dropping off of passengers without having to enter the parking system.

9.0 GROUND TRANSPORT SYSTEM

9.1 Access Roads

The principal vehicular access to the airport is currently provided via Hastings River Drive and Boundary Street or Tuffins Lane.

An upgrade of the Hastings River Drive – Boundary Street intersection will be required in the short to medium term to cater for traffic generated from the Airport and the proposed *Airport Precinct* business park.

Flooding of Boundary Street in 2009 highlighted the need for improved 'all-weather' access to the Airport. Planning for the required upgrade of Boundary Street will be conducted in conjunction with the long-term planning for a future Outer Link Road, linking the proposed Area 13 Thrumster development to Hastings River Drive via the proposed *Airport Precinct* business park.

A future Outer Link Road may also provide for an alternative principal access route to the Airport should development of a new passenger terminal and associated RPT apron (in Development Precinct A) be undertaken in the future. Planning for this option will need to be considered as part of the structure planning process for the proposed *Airport Precinct* business park. The structure planning process will also consider the need for additional internal access roads to serve the various potential development areas identified.

The upgrade of runway 03/21 and the requirement for a northern runway end safety area will necessitate closure or realignment of Tuffins Lane at the end of the runway. Realignment of Tuffins Lane would provide an alternative access to the Airport in the event of a temporary closure of Boundary Street. Further consideration of these options will be given by Council as part of its ongoing traffic / transport planning program.

An additional access road off Tuffins Lane will also be required to serve the future Development Precinct B located to the west of runway 03/21.

10.0 DEVELOPMENT PRECINCTS

A key objective of this Master Plan is to maximise the value of the Airport site by providing opportunity for future development for both aviation facilities and commercial property development purposes. This strategy is aimed at supporting the long-term financial viability and sustainability of the Airport business by providing a balance between the Airport's aviation and non-aviation revenue streams.

The majority of the Airport site is currently zoned as *Zone 5(a) Special Uses – Airport LEP 2001 (Zone SP2 Infrastructure – Air transport facility draft LEP 2010)*, with a 16-hectare area of land in the north-east of the site zoned as *Zone 4(t) Industrial Technology LEP 2001 (Zone B7 – Business Park draft LEP 2010)*. As described in Section 5.0, some areas of the Airport site are unavailable or unsuitable for development due to environmental constraints and associated land use zonings, including areas subject to flooding, land identified as core koala habitat, and land zoned for *environmental protection LEP 2001 (environmental conservation draft LEP 2010)* due to the location of wetlands or other areas of high ecological and habitat value. Despite this, there are substantial areas of land available for development within the Airport site.

The identification of land suitable for commercial property development purposes is consistent with Council's *Industrial Land Strategy* published in July 2007 which set out a plan to develop an *Airport Precinct* business technology park. This strategy is aimed at providing for continued growth in the region's industrial sector and providing new business, employment and economic development opportunities.

Accordingly, a number of potential future development precincts have been identified for aviation facilities and commercial property development purposes as shown in Figure 10-1. To provide capacity for growth and flexibility in this Master Plan to meet the demand for future aviation purposes, the following development areas have been reserved:

- ***Development Precinct A*** – a 12-hectare area of land located to the east of runway 03/21 and south of the current RPT precinct, currently zoned as *Zone 5(a) Special Uses – Airport LEP 2001 (Zone SP2 Infrastructure – Air transport facility draft LEP 2010)*, reserved for possible future airport infrastructure and facilities including a new passenger terminal building and associated RPT apron and car parking facilities, relocated helicopter landing and parking areas, new Aerodrome Rescue and Fire-Fighting Services and Air Traffic Control Tower facilities, and including the existing non-directional beacon (NDB) and Bureau of Meteorology weather station facilities (following closure of runway 10/28)

- ***Development Precinct B*** – a 10-hectare area of land located to the west of runway 03/21 in the runway 10/28 approach / take-off area, currently zoned as *Zone 5(a) Special Uses – Airport LEP 2001 (Zone SP2 Infrastructure – Air transport facility draft LEP 2010)*, reserved for future general aviation purposes with direct access to the Airport runway and taxiway system (following closure of runway 10/28 and subject to detailed environmental investigation)

Development Precinct B will provide for a new general aviation business precinct at the Airport as part of the proposed *Mid North Coast Regional Aviation Centre of Excellence*, aimed at consolidating existing and attracting new aviation businesses which have the potential to provide significant employment and economic benefits to the region. It is envisaged that this precinct will be developed under a community title arrangement whereby individual development sites will be made available for either purchase or long-term lease with an annual management fee covering the ongoing operational and maintenance costs.

The following areas have been identified for commercial property development purposes as part of an *Airport Precinct* business technology park:

- ***Development Precinct C*** – a 9-hectare area of land located in the north-east of the Airport site, currently zoned as *Zone 4(t) Industrial Technology LEP 2001 (Zone B7 – Business Park draft LEP 2010)*, identified as a possible Stage 1 development for the establishment of the *Airport Precinct* business park

- ***Development Precinct D*** – a 6-hectare area of land located to the north of development precinct C, currently zoned as *Zone 5(a) Special Uses – Airport LEP 2001 (Zone SP2 Infrastructure – Air transport facility draft LEP 2010)* (subject to detailed environmental investigation and rezoning)

- ***Development Precinct E*** – a 12-hectare area of land consisting of the eastern portion of the existing runway 10/28, currently zoned as *Zone 5(a) Special Uses – Airport LEP 2001 (Zone SP2 Infrastructure – Air transport facility draft LEP 2010)* (following closure of runway 10/28 and subject to detailed environmental investigation and rezoning)

- ***Development Precinct F*** – a 7-hectare area of land located to the south of the existing runway 10/28 and east of the existing NDB facility, currently zoned as *Zone 5(a) Special Uses – Airport LEP 2001 (Zone SP2 Infrastructure – Air transport facility draft LEP 2010)* (subject to detailed environmental investigation and rezoning)

- ***Development Precinct GA*** – a 5-hectare area of land consisting of the existing general aviation precinct, currently zoned as *Zone 4(t) Industrial Technology LEP 2001 (Zone B7 – Business Park draft LEP 2010)*, identified as a potential long-term future redevelopment area (subject to relocation of the existing general aviation facilities to Development Precinct B)

Council's *Industrial Land Strategy* envisages that the *Airport Precinct* development area will also consist of adjacent off-airport land holdings subject to detailed environmental investigation and rezoning. It is proposed that the *Airport Precinct* will be developed as a key 'landmark' site with distinctive architectural and landscape design compatible with the Airport's increasing role as the gateway to Port Macquarie and the Mid North Coast.

The *Airport Precinct* business park will provide a specialist precinct for businesses that have either a close association with airport activity or be likely to receive competitive advantage by being located in close proximity to an airport (though not requiring direct access to the Airport runway and taxiway system). It is envisaged that the business park will consist of a diverse mix of light industrial, warehouse, distribution and related land uses in the short term, with the medium to long-term aim of attracting aviation related emerging technology industries in the fields of:

- electronics (avionics, computer support, information technology)
- materials (polymers, new materials such as kevlar, lycras, fibreglass)
- analysis (process analysis, testing, condition monitoring)
- environmental management

A key element of this long-term strategy involves the development of partnerships with universities, TAFE NSW, and other registered training organisations to establish local aviation training programs and research and development opportunities to attract knowledge-based investment to the region.

A 5.5-hectare area of land located on the eastern extent of the Airport site known as 'The Binnacle' is currently zoned as *Zone 2(a1) Residential LEP 2001 (Zone R1 General Residential draft LEP 2010)* as an extension to the existing residential areas in this location. A 7.5-hectare area of land located to the south of this site is currently zoned as *Zone 6(a) Open Space LEP 2001 (Zone RE1 Public Recreation draft LEP 2010)* due to its location under the runway 10/28 approach and take-off area. With the proposed closure of runway 10/28, an opportunity may exist for this area to be rezoned for further residential development subject to detailed environmental and land use zoning investigations.

11.0 UTILITIES

The major development of the airport facilities and commercial property development precincts identified in this Master Plan will necessitate a significant upgrade of the utility services supplying the current Airport site, including:

- an upgrade of the existing electricity supply to meet demand from the expanded airside lighting systems and passenger terminal facilities
- an upgrade of the existing water supply system to meet minimum flow and pressure requirements
- connection of the existing airport sewerage systems to the main Council reticulated sewerage system in Boundary Street and Tuffins Lane
- provision for improved telecommunications services

In order to plan for the various utility upgrades required, a separate detailed utilities planning study will need to be conducted.

12.0 ENVIRONMENTAL AND LAND USE PLANNING IMPACTS

12.1 Aircraft Noise

All civil aircraft operating in Australia are required to comply with the *Air Navigation (Aircraft Noise) Regulations 1984*. Airservices Australia is responsible for ensuring compliance with the aircraft noise regulations, and for certifying airport Australian Noise Exposure Forecasts (ANEF) and Australian Noise Exposure Index (ANEI) charts. The ANEF system was established in the early 1980s to provide a system to guide land use planning around airports. The system provides a scientific measure of the aircraft noise exposure levels around aerodromes taking into account the frequency, intensity, time and duration of aircraft operations. The ANEF charts typically show noise exposure contours of 20, 25, 30, 35 and 40 ANEF – the higher the ANEF value the greater the noise exposure. The ANEF system as described in *Australian Standard AS2021-2000* is the only endorsed method of guiding land use planning around Australian airports. The system is not used to regulate aircraft operations but rather to report on the effects of those activities.

The *Australian Standard AS2021-2000* provides recommended land use compatibility in relation to aircraft noise as shown in Table 12-1 below.

Table 12-1: Building Site Acceptability Based On ANEF Zones

Building type	ANEF zone of site		
	Acceptable	Conditionally acceptable	Unacceptable
House, home unit, flat, caravan park	Less than 20 ANEF (Note 1 of AS2021)	20 to 25 ANEF (Note 2 of AS 2021)	Greater than 25 ANEF
Hotel, motel, hostel	Less than 25 ANEF	25 to 30 ANEF	Greater than 30 ANEF
School, university	Less than 20 ANEF (Note 1 of AS2021)	20 to 25 ANEF (Note 2 of AS 2021)	Greater than 25 ANEF
Hospital, nursing home	Less than 20 ANEF (Note 1 of AS2021)	20 to 25 ANEF	Greater than 25 ANEF
Public building	Less than 20 ANEF (Note 1 of AS2021)	20 to 30 ANEF	Greater than 30 ANEF
Commercial building	Less than 25 ANEF	25 to 35 ANEF	Greater than 35 ANEF
Light industrial	Less than 30 ANEF	30 to 40 ANEF	Greater than 40 ANEF
Other industrial	Acceptable in all ANEF zones		

Source: Australian Standard AS 2021-2000

Within the 20 ANEF and 25 ANEF, land use authorities may require the incorporation of noise control features in the construction of new residential or educational facilities.

For existing communities already living near major airports, the Australian Government has given an undertaking in its *National Aviation Policy White Paper* to develop a framework for an industry-funded noise insulation program to protect existing areas from the impacts of aircraft noise. The program will be consistent with approaches taken at Sydney and Adelaide where insulation measures have been provided for public buildings in the 25 ANEI, for houses in the 30 ANEI and for voluntary acquisition above the 40 ANEI.

In accordance with the ANEF system, the following charts, prepared using the Integrated Noise Model (INM), are included in Appendix A:

- Figure 12-1: 2009 Draft ANEI – this chart indicates the estimated current level of aircraft noise exposure based on actual aircraft movements recorded in the 2009 calendar year
- Figure 12-4: 2030 Draft ANEF – this chart indicates the estimated future level of aircraft noise exposure based on forecast aircraft movements in 2030 (as described in Section 4.0)

Whilst the ANEF system provides an effective tool for land use planning, it is recognised that the charts are not easily interpreted by the community in terms of noise level (dB(A)) and the frequency of aircraft movements. To aid the understanding of the potential impacts of aircraft noise, a number of supplementary indices have been developed. These indices include N60 and N70 charts, and single event L_{Amax} aircraft noise data. The following supplementary charts, prepared using the Transparent Noise Information Package (TNIP), are included in Appendix A:

- Figure 12-2: 2009 N60 – this chart indicates the estimated number of aircraft noise events louder than 60 dB(A) that occur on an average day based on actual aircraft movements recorded in the 2009 calendar year
- Figure 12-3: 2009 N70 – this chart indicates the estimated number of aircraft noise events louder than 70 dB(A) that occur on an average day based on actual aircraft movements recorded in the 2009 calendar year. The 70 dB(A) value is adopted as the external noise level that is likely to interfere with conversation or with listening to the radio or television inside a typical house
- Figure 12-5: 2030 N60 – this chart indicates the estimated future number of aircraft noise events louder than 60 dB(A) that will occur on an average day based on forecast aircraft movements in 2030
- Figure 12-6: 2030 N70 – this chart indicates the estimated future number of aircraft noise events louder than 70 dB(A) that will occur on an average day based on forecast aircraft movements in 2030
- Figure 12-7: 2030 Indicative Arrival and Departure Flight Tracks – these charts give an indication of the typical arrival and departure flight paths used by various types of aircraft operating at the airport

- Figure 12-8: Q400 / E170 / E190 Single Event L_{Amax} Contours – this chart indicates the maximum noise exposure for a single operation (arrival and departure) of the current Q400 / E170 / E190 aircraft on Runway 03/21
- Figure 12-9: B737 / A320 Single Event L_{Amax} Contours – this chart indicates the maximum noise exposure for a single operation (arrival and departure) of the proposed future Code 4C (B737 / A320) aircraft on Runway 03/21

Together these charts provide a comprehensive picture of the current and projected future exposure to aircraft noise in the vicinity of Port Macquarie Airport for interpretation by the community and for use by Council for future land use planning and development control purposes.

In November 2009, Council commissioned a study to monitor actual levels of aircraft noise exposure recorded at a number of sites in the vicinity and on the approaches to the airport. The noise levels recorded will supplement the noise modelling charts presented in this Master Plan and provide a benchmark for future monitoring of aircraft noise at the Airport.

12.2 Obstacle Limitation Surfaces

The obstacle limitation surfaces (OLS) are a series of reference surfaces that control the available airspace around the airport and define the desirable limits to which objects may project into the airspace to ensure the safety of aircraft operations. Ideally the OLS should be kept free of obstacles. The surfaces are defined by the elevation of the runway ends and the Aerodrome Reference Point. The full OLS chart for Port Macquarie Airport is shown in Figure 12-10 in Appendix A, along with Figure 12-11 and Figure 12-12 showing the north and south take-off surfaces respectively. These charts should be adopted by Council for future land use planning and development control purposes so as not to constrain future airport operations.

MOS Part 139 specifies a two per cent (2%) take-off climb surface for Code 3 and 4 runways such as runway 03/21. With the proposed extension of runway 03/21 by 110 metres to the south (to provide an ultimate runway length of 1,800m) it is envisaged that improvements to the 21 take-off area will be required due to vegetation that will infringe the 2% slope. This vegetation will need to be cropped by up to 2.5 metres to meet the take-off gradient requirements from the end of the extended runway strip. The existing vegetation in this area includes an area identified as Coastal Wetlands which is protected under State Environmental Planning Policy (SEPP) No. 14. The cropping of this vegetation will constitute 'designated development' requiring the preparation of a detailed environmental impact statement and assessment in accordance with the *Environmental Planning and Assessment Act 1979* and the *Environmental Planning and Assessment Regulations 2000*. This assessment will also investigate whether there is likely to be a significant impact on any threatened species, populations, or ecological communities, or their habitats.

Council has recently undertaken a similar process for the runway 03/21 extension constructed in 2008 (to provide a 1,600 metre runway length) and has developed a *Vegetation Management Protocol* and

Koala Plan of Management which provide detailed mitigation measures to control the conduct of cropping works so as to minimise any impact on environmentally sensitive areas within the OLS take-off areas.

12.3 Flooding and Stormwater Drainage

The Airport is surrounded by flood prone areas with the extent of the 1 in 100 year flood event shown in Figure 5-1 included in Appendix A. Prior to any major development of the airside infrastructure and property development precincts, a detailed flooding and stormwater drainage assessment will need to be conducted to examine the potential effect of any proposed filling within the existing flood plain and of the additional stormwater runoff expected from the expanded development areas. This assessment will need to consider the potential effects of climate change on the currently adopted flood levels and in particular potential impacts identified in the *NSW Sea Level Rise Policy Statement* published in October 2009.

Given the importance of the Airport in emergencies and its status as critical transport infrastructure, all key airport infrastructure and facilities will need to be located above the 1 in 100 year flood level.

The stormwater drainage assessment and future design will also need to consider the requirements of the NSW water quality objectives to ensure that appropriate controls are placed on the quality of stormwater discharges from the Airport and in particular into the adjacent coastal wetland areas.

12.4 Other Development Control Considerations

It is recommended that Council consider the requirements of the discussion paper, *Safeguards for airports and the communities* around them, released by the Australian Government in June 2009, with regard to future land use planning in the vicinity of the Airport. The discussion paper proposes a framework for land use planning and development control which considers the issue of public safety in areas close to runway ends, and also seeks to prevent inappropriate development around airports which could result in unnecessary constraints on airport operations.

Consideration must also be given to the International Civil Aviation Organisation (ICAO) guidelines on land use and the avoidance of bird hazards within the vicinity of the Airport. Birdstrikes have the potential to cause severe damage to an aircraft and as such controls must be put in place to minimise the use of land in the vicinity of airports that may attract birds. The ICAO guidelines are reproduced in Table 12-4 below and provide guidance on land uses that may attract bird activity with a 3km (Area A) and 8km (Area B) radius of the Airport as shown in Figure 12-13 in Appendix A. In addition to minimising food sources, consideration should also be given to restricting facilities that may attract birds, for example open drains or ponds that may contain shallow water for long periods or are tidal.

Table 12-4: Land Use Guidelines for the Avoidance of Bird Hazards

Land Use (Note 1)	Land Use Guidelines	
	Area A	Area B
Agriculture		
Landscape nurseries (Note 2)	Yes	Yes
Tree farming (Note 2)	Yes	Yes
Stock farming (Note 2)	Yes	Yes
Dairy farming (Note 2)	Yes	Yes
Sod farming	No	Yes
Piggeries	No	Yes
Fruit tree farming	No	Yes
Wildlife Sanctuaries		
Bird sanctuaries	No	No
Game reserve	No	No
Recreational		
Golf courses (Note 2)	Yes	Yes
Parks (Note 2)	Yes	Yes
Playgrounds (Note 2)	Yes	Yes
Athletic field (Note 2)	Yes	Yes
Riding trails (Note 2)	Yes	Yes
Tennis, lawn bowling (Note 2)	Yes	Yes
Picnic and camp grounds	Yes	Yes
Riding academies	No	Yes
Racetracks	No	Yes
Fair grounds	No	Yes
Outdoor theatres	No	Yes
Commercial (Note 2)		
Offices	Yes	Yes
Retail sales	Yes	Yes
Hotels and motels	Yes	Yes
Restaurants	Yes	Yes
Parking lots	Yes	Yes
Indoor theatres	Yes	Yes
Warehouses	Yes	Yes
Shopping centres	Yes	Yes
Service stations	Yes	Yes
Cemeteries	Yes	Yes
Drive-in restaurants	No	Yes
Food processing plants	No	Yes

Land Use (Note 1)	Land Use Guidelines	
	Area A	Area B
Municipal Utilities (Note 2)		
Water treatment	Yes	Yes
Non-food garbage landfill	Yes	Yes
Food garbage disposal	No	No
Note 1: The land uses tabulated should not be considered as an exhaustive listing, but merely as examples of how various land uses may be graded in two areas, Area A and Area B surrounding the airport. These areas are arrived at by describing two concentric circles (radii 3km and 8km respectively) around an airport, centred on the Airport Reference Point.		
Note 2: These are general guidelines for planning and land-use zoning only. The avoidance of bird hazards during airport operations is another subject that can involve special controls to keep land free of food and shelter for birds.		

Source: International Civil Aviation Organisation (ICAO)

The *Manual of Standards (MOS) Part 139 – Aerodromes* also provides guidance on the installation of lights within 6km of an airport to ensure that the lighting does not cause confusion, distraction or glare to pilots in the air. Within this area, there are four light control zones A, B, C and D, and corresponding limits on the allowable intensity of light sources. Figure 12-14 in Appendix A shows the primary area where the intensity of lighting must be controlled to ensure the safe operation of aircraft at the Airport.

13.0 MASTER PLAN

Figure 13-1 included in Appendix A shows the recommended layout of the Airport infrastructure and facilities expected to be required by 2030 to meet the forecast growth in RPT airline services and passenger movements including regular operations of up to Code 4C aircraft and passenger movements of up to 450,000 passengers per annum. The Master Plan figure also identifies areas for possible future general aviation related business activities to meet demand, and areas for future commercial property development as part of a proposed *Airport Precinct* business park. The key features of the Master Plan include:

- an upgrade of the existing main runway 03/21 on its current alignment to Code 4C standard, 1,800 metres long x 30 metres wide, with the pavement strength limited to 68,100kg maximum take-off weight (MTOW) – the 110 metre extension required being provided at the southern end of the runway
- closure or realignment of Tuffins Lane over a section at the northern end of runway 03/21, and acquisition of land to the north of Tuffins Lane, to allow for provision of a runway end safety area (RESA)
- staged construction of a new full length Code C taxiway parallel to and to the east of runway 03/21 (as an extension to the existing taxiway Bravo) to maximise capacity and operational efficiency, and enhance safety
- expansion of the existing regular public transport (RPT) apron to the north of its current location to provide for up to four (4) free moving parking positions for up to Code 4C aircraft
- an extension and upgrade of the existing passenger terminal building and facilities to suit a future 'busy hour' projection of up to 600 passengers (300 arrivals and 300 departures)
- expansion of the current car parking facilities to provide up to 600 parking spaces by 2030 including separate areas for short-term, long-term, premium undercover and staff parking along with areas for the collection and return of hire cars
- identification of an area of land (Development Precinct A) to the south of the existing RPT area, reserved for possible future airport uses including an option for a future RPT Precinct including new apron, passenger terminal and car parking infrastructure
- permanent closure of the existing grass runway 10/28 to reserve land for future airport infrastructure and facilities (Development Precinct A) and future commercial property development opportunities as part of a proposed *Airport Precinct* business park (Development Precinct E)

- identification of an area of land (Development Precinct B) located to the west of runway 03/21 for possible future general aviation uses for up to Code B aircraft (20m wingspan limit), including up to 20 new aircraft hangar sites, as part of the establishment of a *Mid North Coast Regional Aviation Centre of Excellence*
- identification of sites within Development Precinct A for a relocated helicopter landing and parking area, and for the possible future provision of Aerodrome Rescue and Fire-Fighting Services (ARFFS) and Air Traffic Control (ATC) facilities
- identification of areas of land not required for future airport / aviation uses, to be made available for commercial property development as part of the proposed *Airport Precinct* business park
- possible long-term relocation and redevelopment of the existing GA precinct to allow for further development of the proposed *Airport Precinct* business park
- principal road access retained via Hastings River Drive and Boundary Street and Tuffins Lane, with further traffic / transport and land use planning required to identify the scope of road infrastructure improvements necessary to suit future demand
- the requirement for a subsequent utilities planning study to determine the scope of utility (electricity, water, sewerage, telecommunications etc) improvements required to cater for future development

14.0 STAGING CONSIDERATIONS AND FUNDING OPTIONS

As highlighted in the previous section, significant works will be required to upgrade the existing airport infrastructure and facilities to cater for up to Code 4C medium jet aircraft such as the Boeing B737 and Airbus A320 series aircraft. This programme of work will be staged as necessary to suit demand brought about through passenger growth and / or the introduction of new aircraft. The work will also need to be planned to suit the level of funding available and a detailed Business Plan will be developed consistent with this Master Plan to ensure the financial viability and sustainability of the Airport business.

Port Macquarie Airport is funded solely by airport operations on a 'user pays' basis, and does not receive funding from Council to subsidise its operations. It is important to note therefore that the costs associated with upgrading the airport infrastructure and facilities will not affect the level of rates payable by ratepayers in the Port Macquarie – Hastings LGA. Funding for major capital projects has been, and will continue to be sourced from a combination of:

- the airport reserve
- aeronautical revenue (received from ongoing airport operations)
- non-aeronautical revenue (received from commercial property development and airport concessions)
- external financing (such as loan borrowings).

Indicative cost estimates (in 2010 $ excl. GST) for the principal RPT development proposals outlined in this Master Plan are as follows:

Aircraft Movement Areas	
Runway	$17,000,000
Taxiway	$14,750,000
Apron	$4,750,000
Landside Facilities	
Terminal Expansion	$10,000,000
Car Parking Areas	$1,500,000
Total	**$48,000,000**

The estimates include allowances for preliminaries (15%), professional fees (15%), and contingencies (20%), but exclude GST and costs associated with other development options including GA and aviation support facilities, access roads, the Airport Precinct development and utility services upgrades.

GLOSSARY OF TERMS

Term	Definition
Airside	The area of an airport reserved for aircraft movements and associated operations, access to which is controlled
Civil Aviation Safety Authority (CASA)	The Australian Government department responsible for the maintenance, enhancement and promotion of the safety of civil aviation in Australia
Endangered Ecological Communities (EECs)	An ecosystem that has been identified as endangered or threatened, as defined in the *Environment Protection and Biodiversity Conservation Act, 1999*.
General Aviation (GA)	That part of the aviation industry that engages in activity other than scheduled commercial airline activity. This may include charter operators, aeromedical operators, agricultural aviation businesses, aviation-based fire-fighting services, training and aerial work such as aerial photography and surveying. It also includes private, business, recreational and sports aviation activity and supporting businesses such as maintenance providers
Landside	The public area of an airport, including the access roads, passenger terminal and car parking areas
Master Plan	A strategic planning document that: ✈ establishes the strategic direction for the efficient and economic development of an airport ✈ provides for the development of additional uses of an airport site ✈ indicates to the public the intended uses of an airport site ✈ reduces potential conflicts between uses of an airport site, and to ensure that uses of an airport site are compatible with the areas surrounding the airport
Obstacle Limitation Surface (OLS)	A series of geometric surfaces associated with each runway that defines the desirable limits to which objects may project into the airspace around the aerodrome so that aircraft operations at the aerodrome may be conducted safely
Office of Transport Security (OTS)	A division of the Australian Government Department of Infrastructure, Transport, Regional Development and Local Government responsible for aviation security in Australia
Public Safety Zone (PSZ)	An area adjacent to the end of a runway which is considered to be at highest risk of damage from an aircraft, within which development may be restricted
Regular Public Transport (RPT)	That part of the aviation industry that engages in scheduled commercial airline activity
State Environmental Planning Policy (SEPP)	A planning instrument made by the Minister for Planning which deals with issues of significance for environmental planning in NSW

LIST OF ABBREVIATIONS

Abbreviation	Definition
ARFFS	Aerodrome Rescue and Fire-Fighting Services
ATC	Air Traffic Control
AVGAS	Aviation Gasoline fuel
AVTUR	Aviation Turbine fuel
AWIS	Aerodrome Weather Information Service
BoM	Bureau of Meteorology
CASA	Civil Aviation Safety Authority
EDS	Explosive Detection System
EECs	Endangered Ecological Communities
ERSA	En Route Supplement Australia
GA	General Aviation
GSE	Ground Support Equipment
IWI	Illuminated Wind Indicators
LGA	Local Government Area
MTOW	Maximum Take-Off Weight
NDB	Non-Directional Radio Beacon
OLS	Obstacle Limitation Surface
PAX	Passengers
PAL	Pilot Activated Lighting
PAPI	Precision Approach Path Indicators
RESA	Runway End Safety Area
RPT	Regular Public Transport
SEPP	State Environmental Planning Policy
TWY	Taxiway
UNICOM	Universal Communications services

APPENDIX A

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AMPC
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PORT MACQUARIE AIRPORT

PORT MACQUARIE AIRPORT MASTERPLAN 2010

FIGURE 3-1

EXISTING AIRPORT LAYOUT

DATE: 24-05-10

AMPC Airport Master Planning Consultants

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APPROX. ONLY

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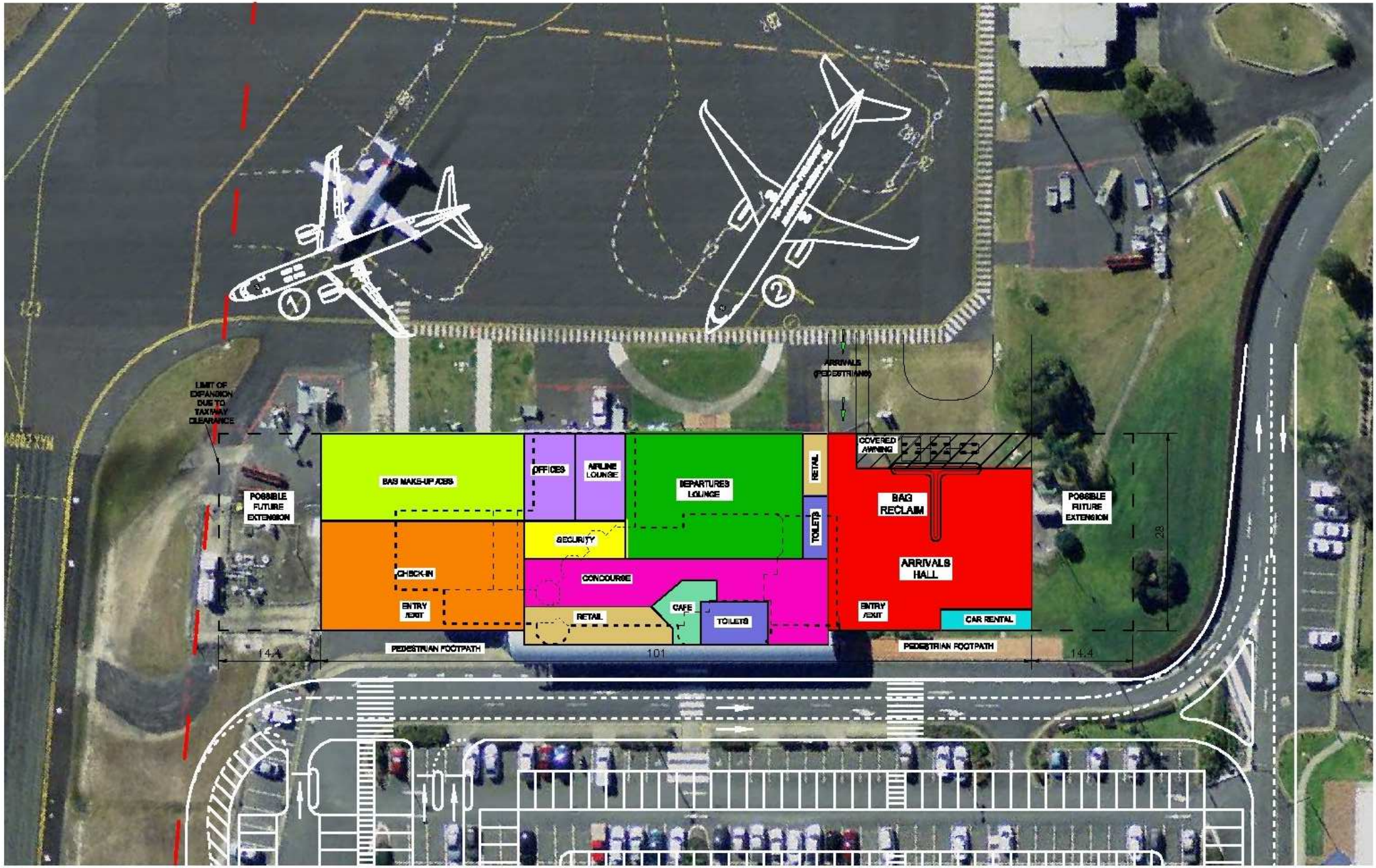
PORT MACQUARIE AIRPORT

PORT MACQUARIE AIRPORT MASTERPLAN 2010

FIGURE 5-1
DEVELOPMENT CONSTRAINTS



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AMPC Airport Master Planning Consultants

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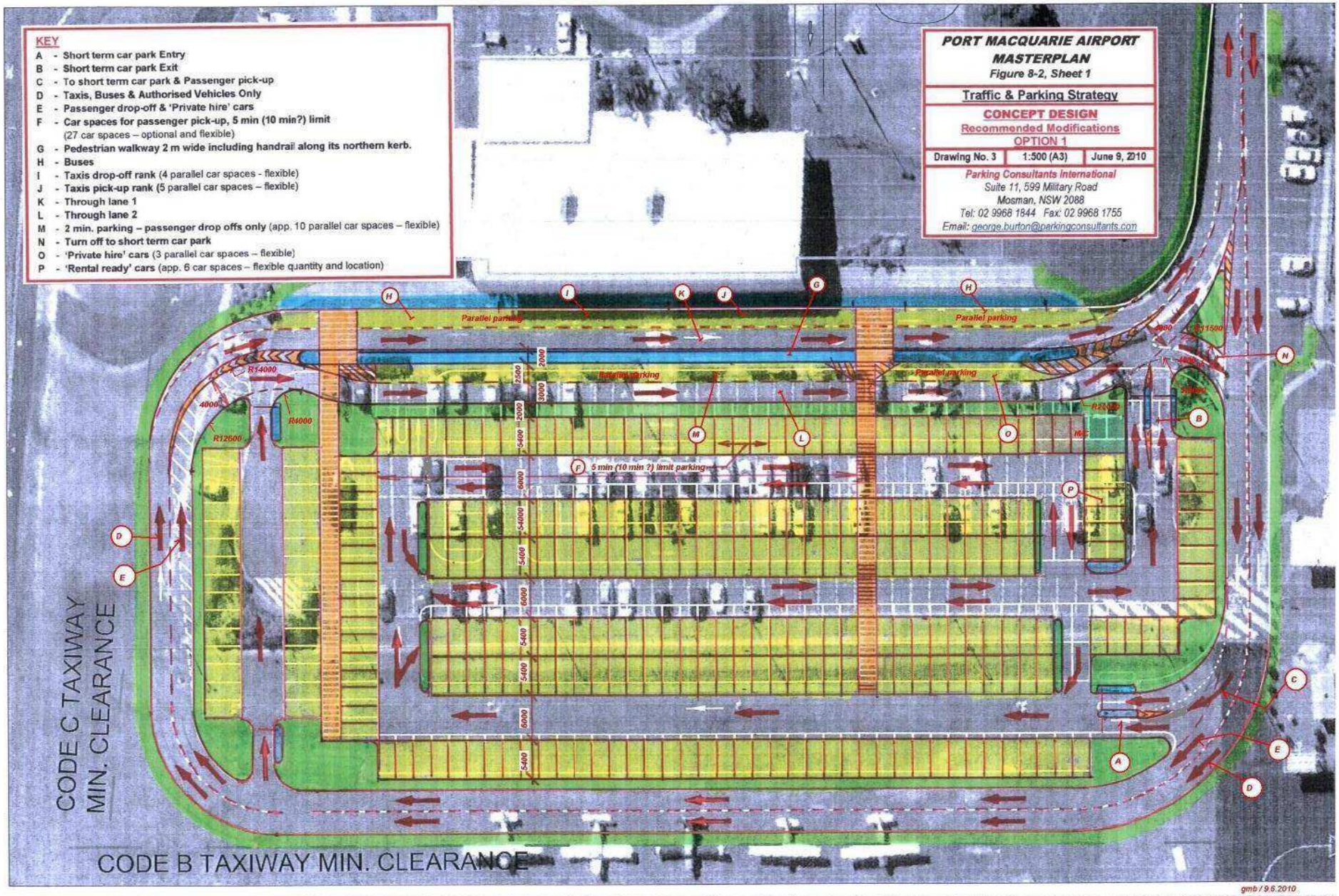
PORT MACQUARIE AIRPORT

PORT MACQUARIE AIRPORT MASTERPLAN 2010

FIGURE 8-1

INDICATIVE TERMINAL LAYOUT



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PORT MACQUARIE AIRPORT MASTERPLAN 2010

FIGURE 8-2 SHEET 1 OF 2

INDICATIVE CARPARK LAYOUT

DATE: 03-06-10

AMPC
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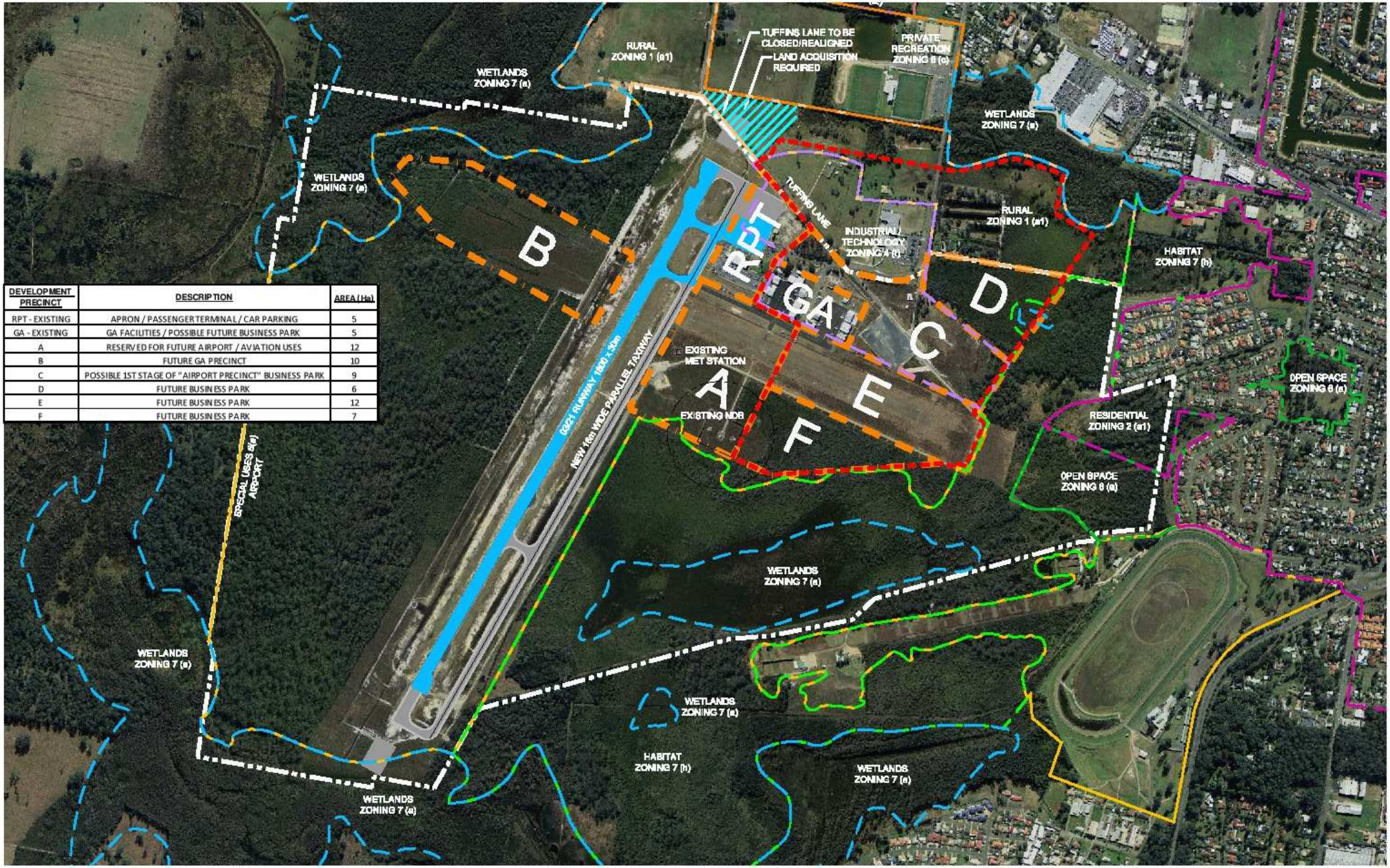
PORT MACQUARIE AIRPORT

PORT MACQUARIE AIRPORT MASTERPLAN 2010

FIGURE 8-2 SHEET 2 OF 2
INDICATIVE CARPARK LAYOUT



DEVELOPMENT PRECINCT	DESCRIPTION	AREA (Ha)
RPT - EXISTING	APRON / PASSENGER TERMINAL / CAR PARKING	5
GA - EXISTING	GA FACILITIES / POSSIBLE FUTURE BUSINESS PARK	5
A	RESERVED FOR FUTURE AIRPORT / AVIATION USES	12
B	FUTURE GA PRECINCT	10
C	POSSIBLE 1ST STAGE OF "AIRPORT PRECINCT" BUSINESS PARK	9
D	FUTURE BUSINESS PARK	6
E	FUTURE BUSINESS PARK	12
F	FUTURE BUSINESS PARK	7

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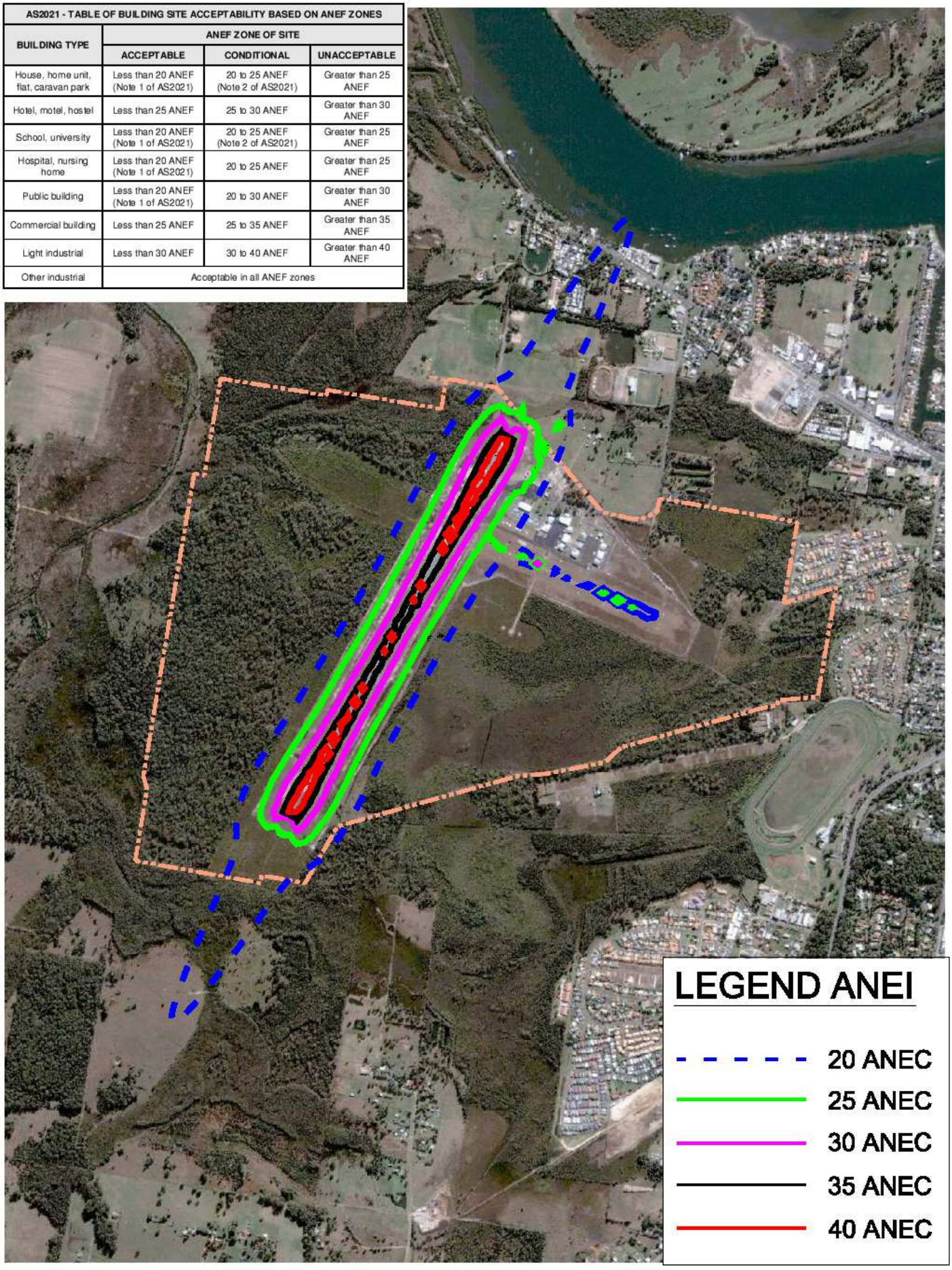
PORT MACQUARIE AIRPORT

PORT MACQUARIE AIRPORT MASTERPLAN 2010

FIGURE 10-1

DEVELOPMENT PRECINCTS

AS2021 - TABLE OF BUILDING SITE ACCEPTABILITY BASED ON ANEF ZONES			
BUILDING TYPE	ANEF ZONE OF SITE		
	ACCEPTABLE	CONDITIONAL	UNACCEPTABLE
House, home unit, flat, caravan park	Less than 20 ANEF (Note 1 of AS2021)	20 to 25 ANEF (Note 2 of AS2021)	Greater than 25 ANEF
Hotel, motel, hostel	Less than 25 ANEF	25 to 30 ANEF	Greater than 30 ANEF
School, university	Less than 20 ANEF (Note 1 of AS2021)	20 to 25 ANEF (Note 2 of AS2021)	Greater than 25 ANEF
Hospital, nursing home	Less than 20 ANEF (Note 1 of AS2021)	20 to 25 ANEF	Greater than 25 ANEF
Public building	Less than 20 ANEF (Note 1 of AS2021)	20 to 30 ANEF	Greater than 30 ANEF
Commercial building	Less than 25 ANEF	25 to 35 ANEF	Greater than 35 ANEF
Light industrial	Less than 30 ANEF	30 to 40 ANEF	Greater than 40 ANEF
Other industrial	Acceptable in all ANEF zones		



DATE: 03-06-10

AMPC
Airport Master Planning Consultants

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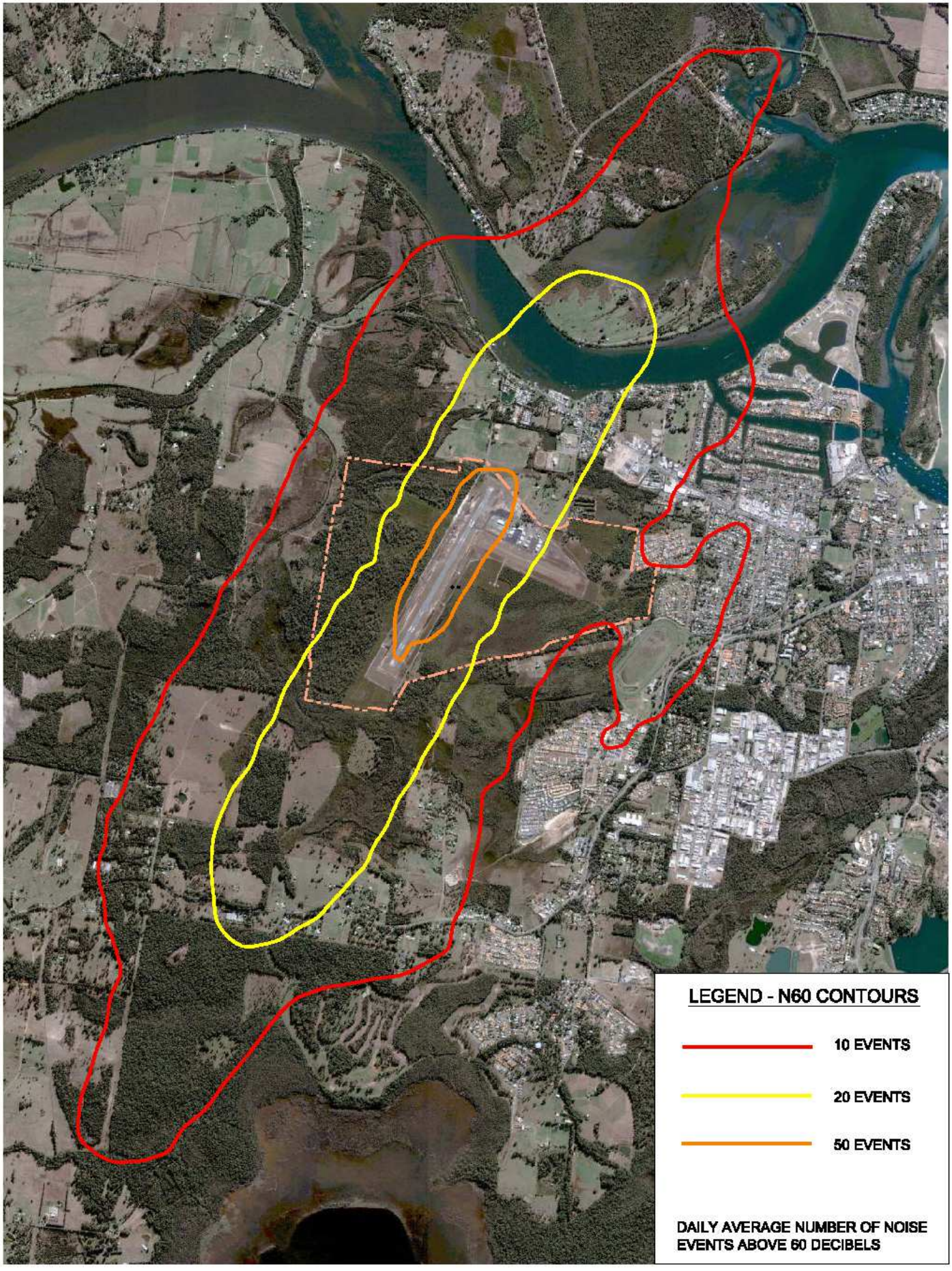
PORT MACQUARIE AIRPORT

PORT MACQUARIE AIRPORT MASTERPLAN 2010

FIGURE 12-1

2009 DRAFT ANEI



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AMPC
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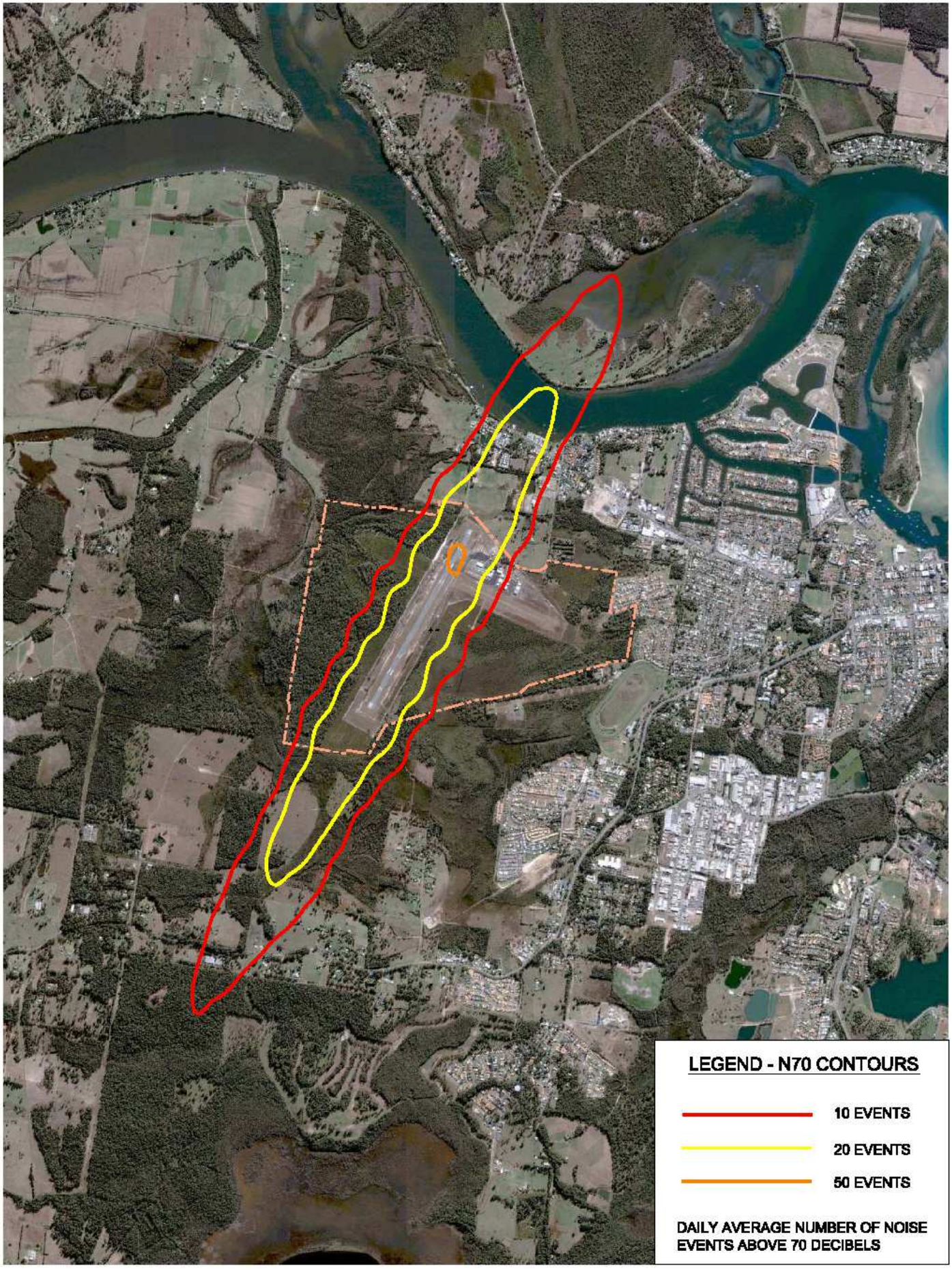
PORT MACQUARIE AIRPORT

PORT MACQUARIE AIRPORT MASTERPLAN 2010

FIGURE 12-2

2009 N60



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Airport Master Planning Consultants

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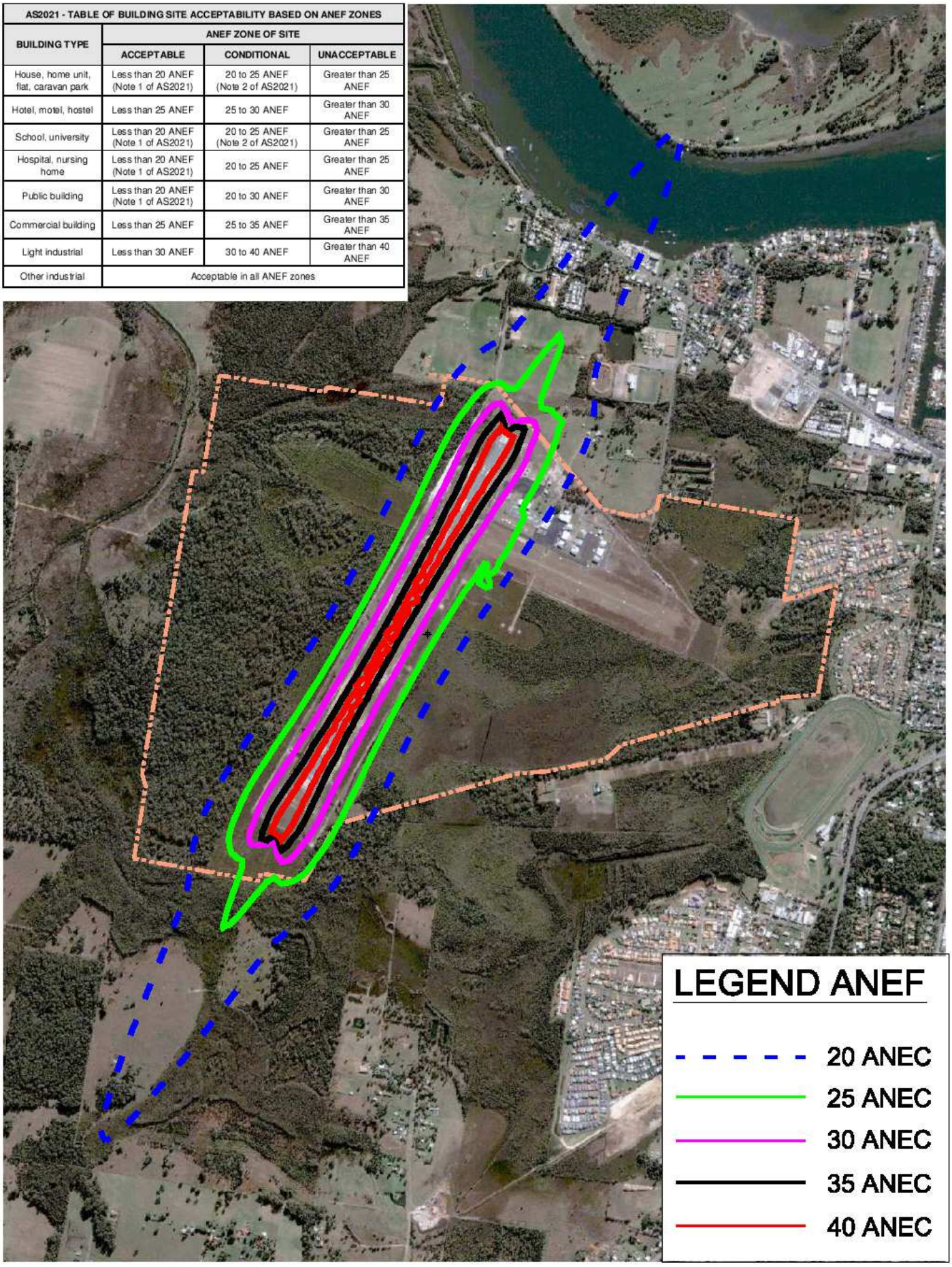
PORT MACQUARIE AIRPORT

PORT MACQUARIE AIRPORT MASTERPLAN 2010

FIGURE 12-3

2009 N70

AS2021 - TABLE OF BUILDING SITE ACCEPTABILITY BASED ON ANEF ZONES			
BUILDING TYPE	ANEF ZONE OF SITE		
	ACCEPTABLE	CONDITIONAL	UNACCEPTABLE
House, home unit, flat, caravan park	Less than 20 ANEF (Note 1 of AS2021)	20 to 25 ANEF (Note 2 of AS2021)	Greater than 25 ANEF
Hotel, motel, hostel	Less than 25 ANEF	25 to 30 ANEF	Greater than 30 ANEF
School, university	Less than 20 ANEF (Note 1 of AS2021)	20 to 25 ANEF (Note 2 of AS2021)	Greater than 25 ANEF
Hospital, nursing home	Less than 20 ANEF (Note 1 of AS2021)	20 to 25 ANEF	Greater than 25 ANEF
Public building	Less than 20 ANEF (Note 1 of AS2021)	20 to 30 ANEF	Greater than 30 ANEF
Commercial building	Less than 25 ANEF	25 to 35 ANEF	Greater than 35 ANEF
Light industrial	Less than 30 ANEF	30 to 40 ANEF	Greater than 40 ANEF
Other industrial	Acceptable in all ANEF zones		



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Airport Master Planning Consultants

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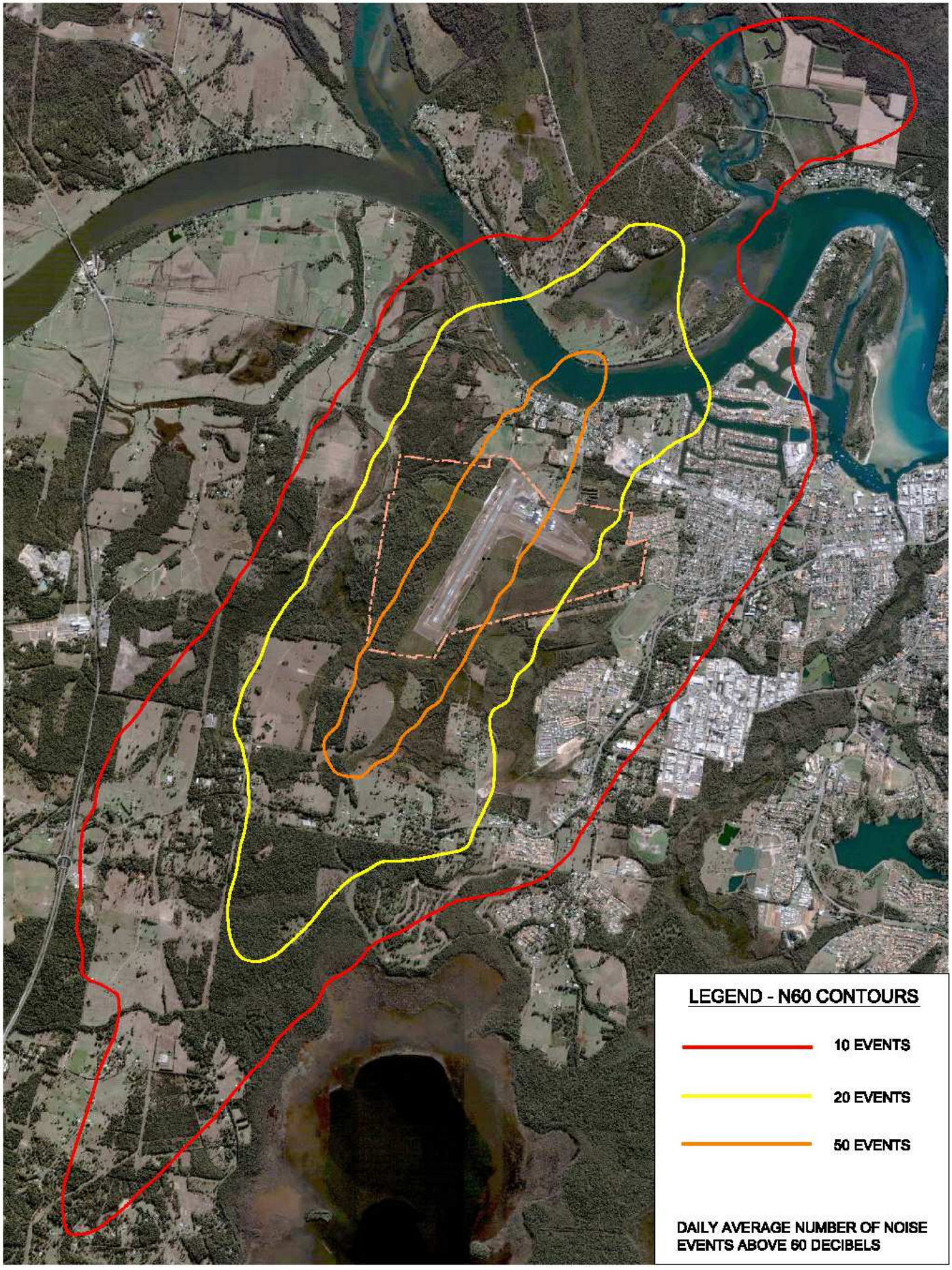
PORT MACQUARIE AIRPORT

PORT MACQUARIE AIRPORT MASTERPLAN 2010

FIGURE 12-4

2030 DRAFT ANEF



DATE: 04-06-10

AMPC Airport Master Planning Consultants

N

0 1km 2km

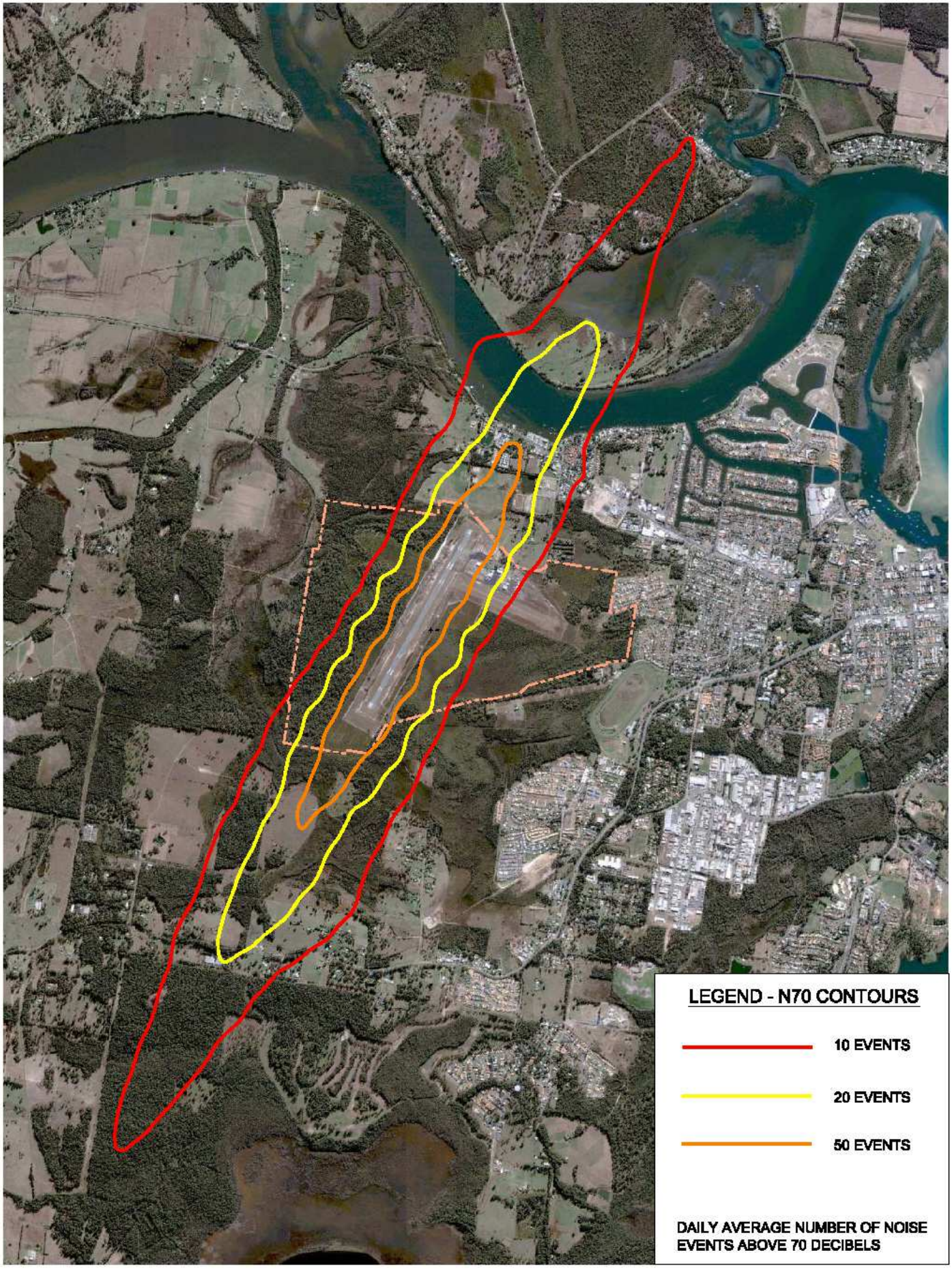
SCALE 1:50,000 (A4)

PORT MACQUARIE AIRPORT

PORT MACQUARIE AIRPORT MASTERPLAN 2010

FIGURE 12-5

2030 N60



DATE: 04-06-10

AMPC
Airport Master Planning Consultants

N

0 500 1000m

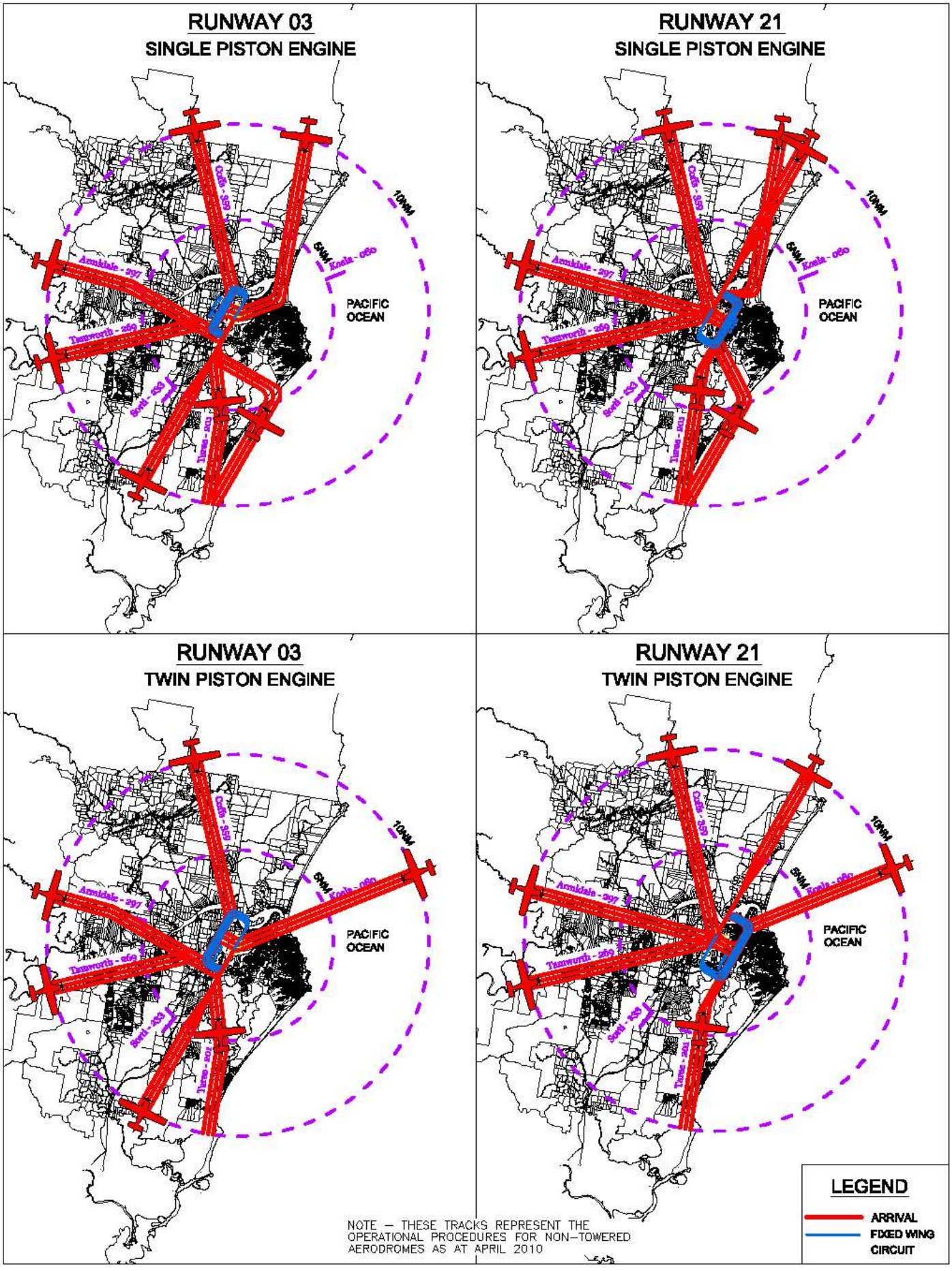
1:40,000 (A4)

PORT MACQUARIE AIRPORT

PORT MACQUARIE AIRPORT MASTERPLAN 2010

FIGURE 12-6

2030 N70



DATE: 03–06–10

AMPC
Airport Master Planning Consultants

N

0 5 10km

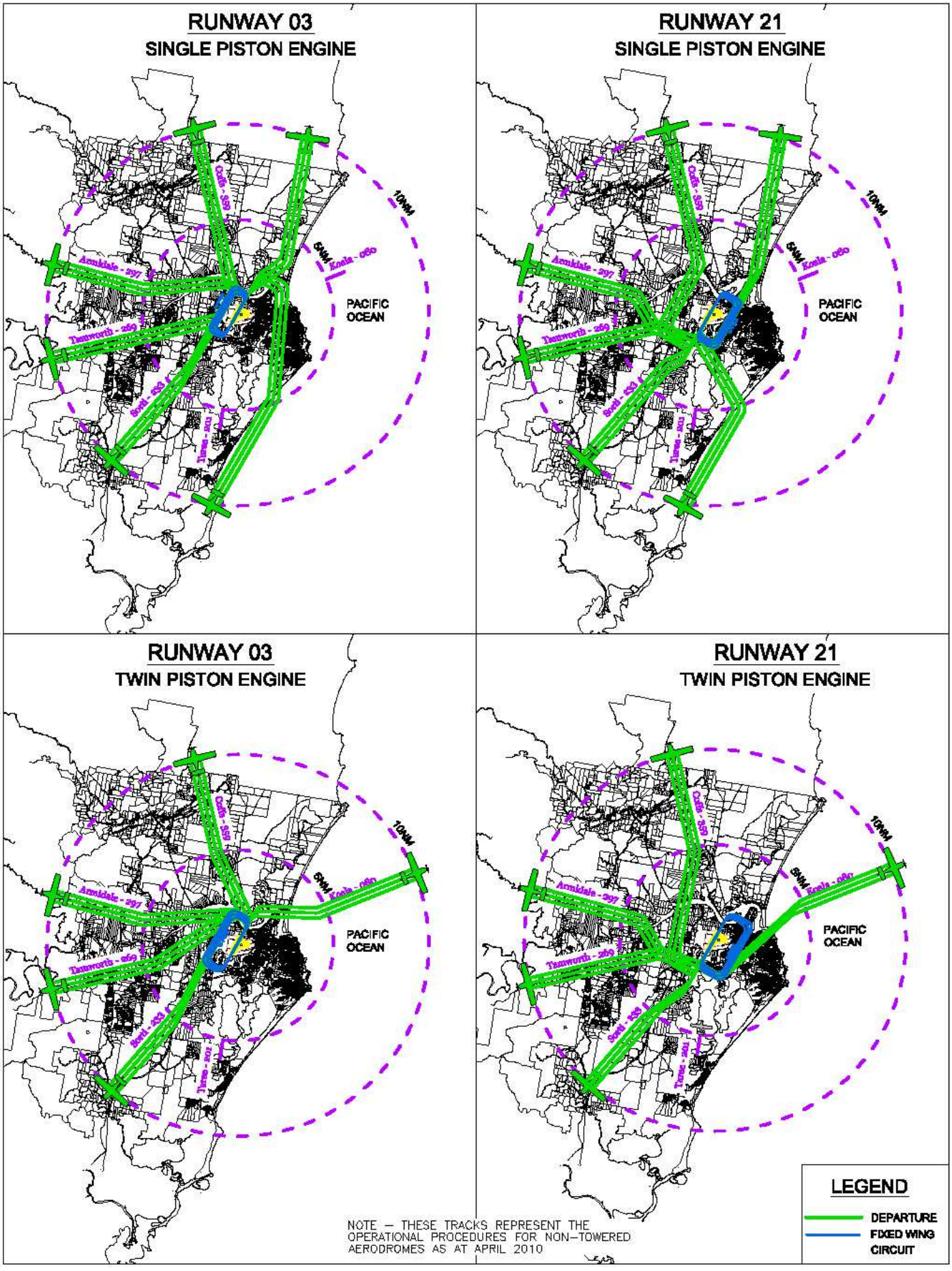
1:500,000 (A4)

PORT MACQUARIE AIRPORT

PORT MACQUARIE AIRPORT MASTERPLAN 2010

FIGURE 12-7 (SHEET 1 OF 4)

2030 INDICATIVE PISTON ENGINE ARRIVAL FLIGHT TRACKS



DATE: 03–06–10

AMPC
Airport Master Planning Consultants

N

0 5 10km

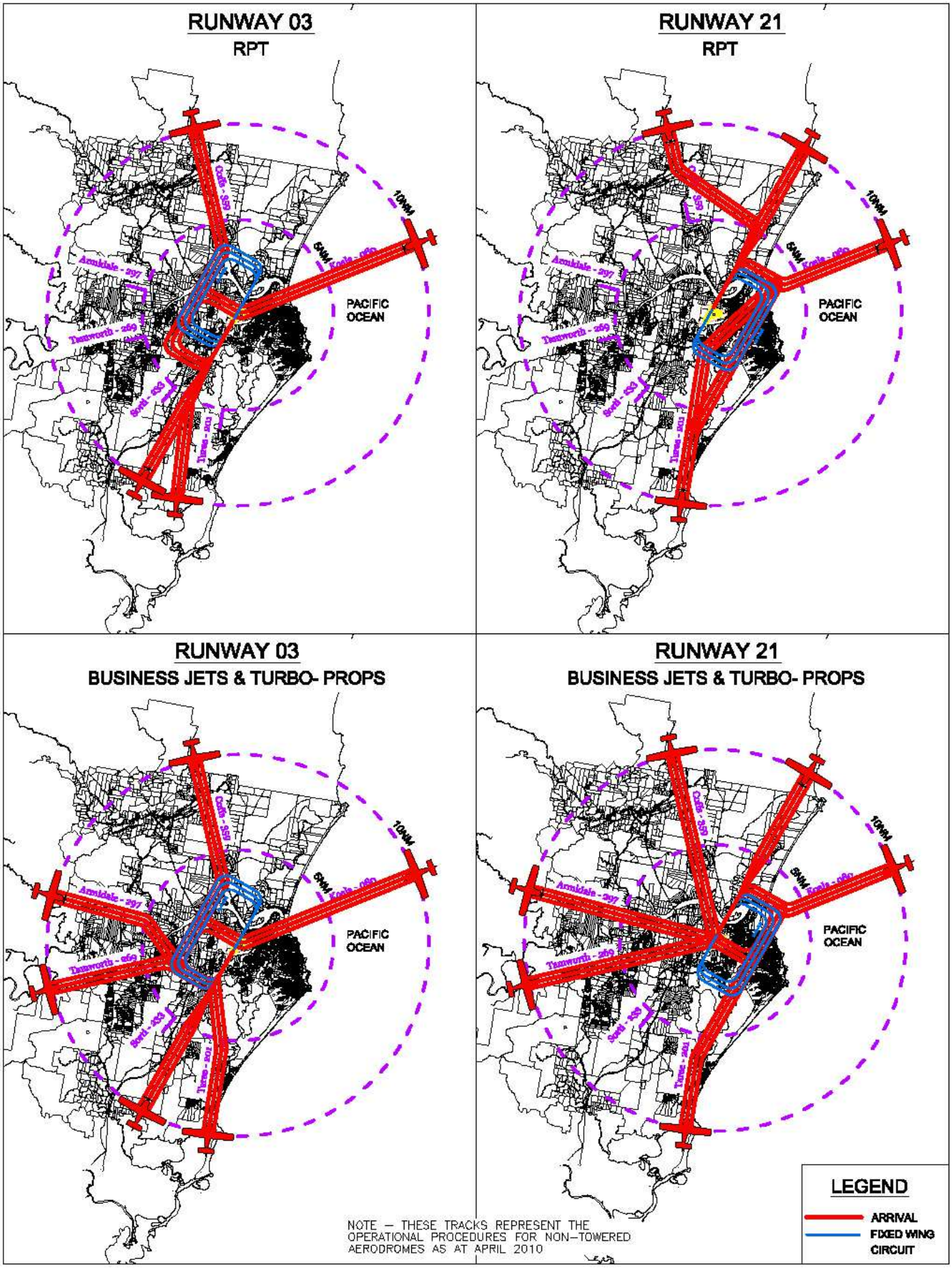
1:500,000 (A4)

PORT MACQUARIE AIRPORT

PORT MACQUARIE AIRPORT MASTERPLAN 2010

FIGURE 12-7 (SHEET 2 OF 4)

2030 INDICATIVE PISTON ENGINE DEPARTURE FLIGHT TRACKS



DATE: 04–06–10

AMPC
Airport Master Planning Consultants

N

0 5 10km

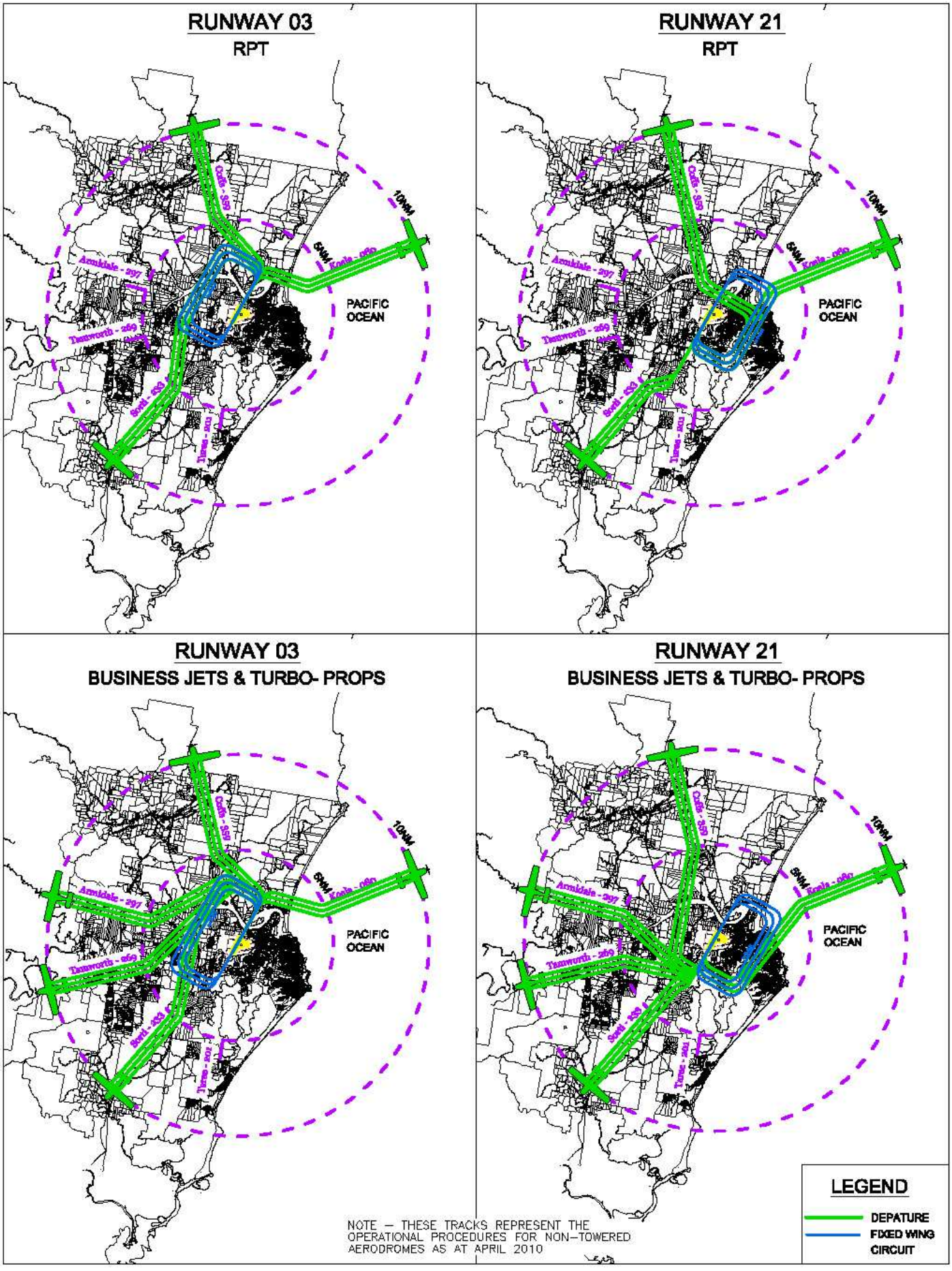
1:500,000 (A4)

PORT MACQUARIE AIRPORT

PORT MACQUARIE AIRPORT MASTERPLAN 2010

FIGURE 12-7 (SHEET 3 OF 4)

2030 INDICATIVE JET & TURBO-PROP ARRIVAL FLIGHT TRACKS



DATE: 03–06–10

AMPC
Airport Master Planning Consultants

N

0 5 10km

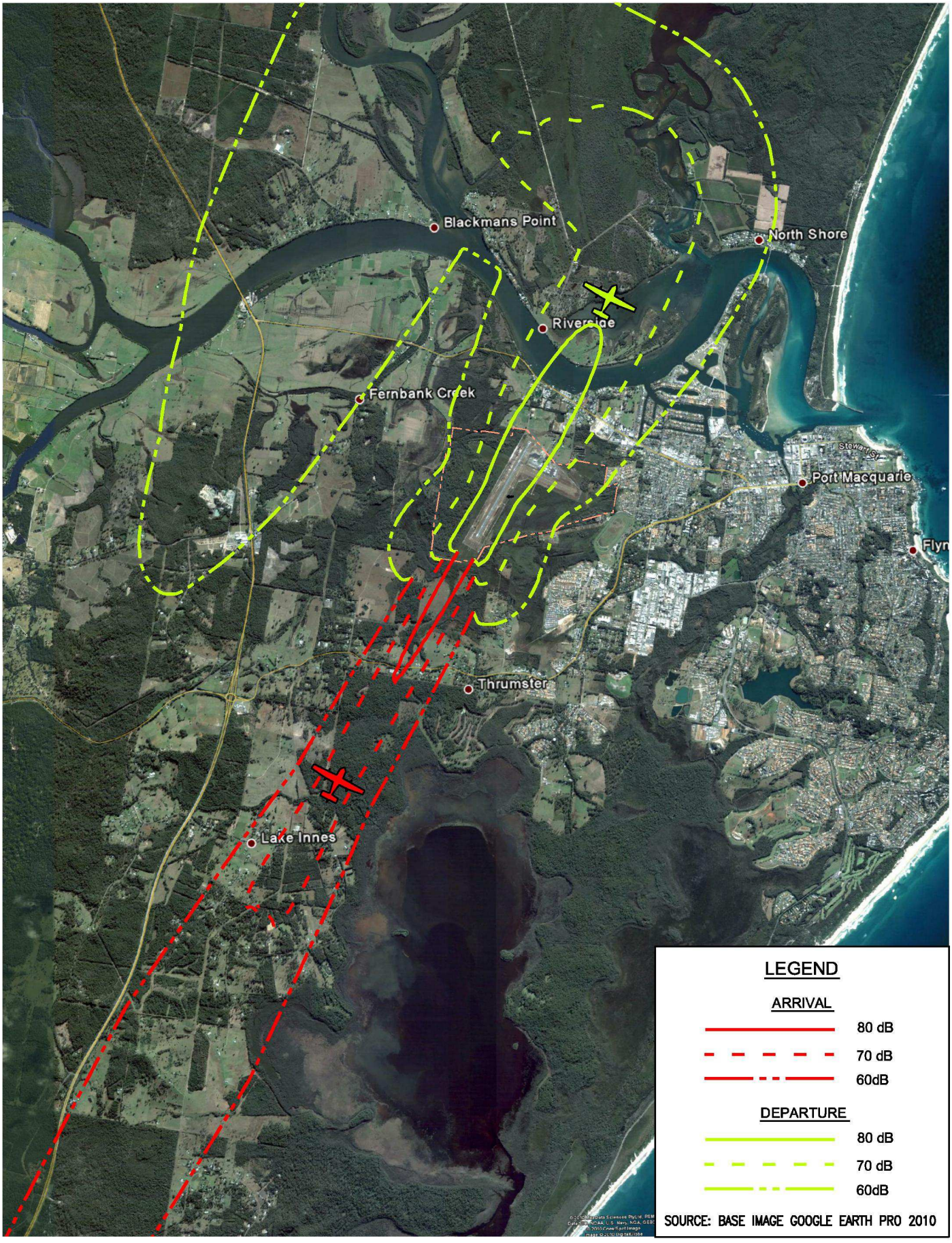
1:500,000 (A4)

PORT MACQUARIE AIRPORT

PORT MACQUARIE AIRPORT MASTERPLAN 2010

FIGURE 12-7 (SHEET 4 OF 4)

2030 INDICATIVE JET & TURBO-PROP DEPARTURE FLIGHT TRACKS



DATE: 16–06–10

AMPC
Airport Master Planning Consultants

N

0 1 2km

1:75,000 (A4)

PORT MACQUARIE AIRPORT

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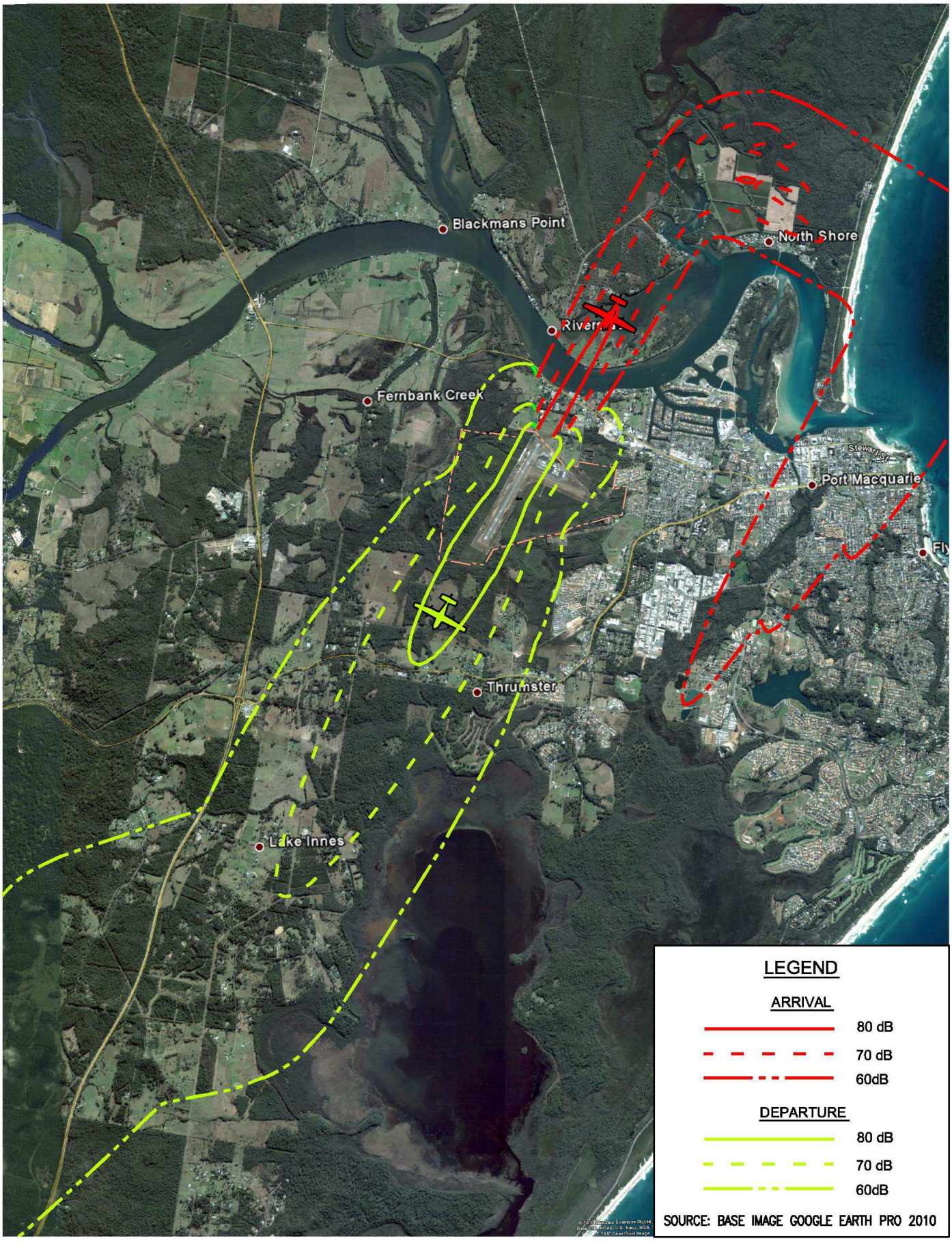
FIGURE 12-8 SHEET 1 OF 2

Q400/E170/E190 SINGLE EVENT LAMAX CONTOURS - RUNWAY 03



DATE: 16–06–10

AMPC
Airport Master Planning Consultants

N

0 1 2km

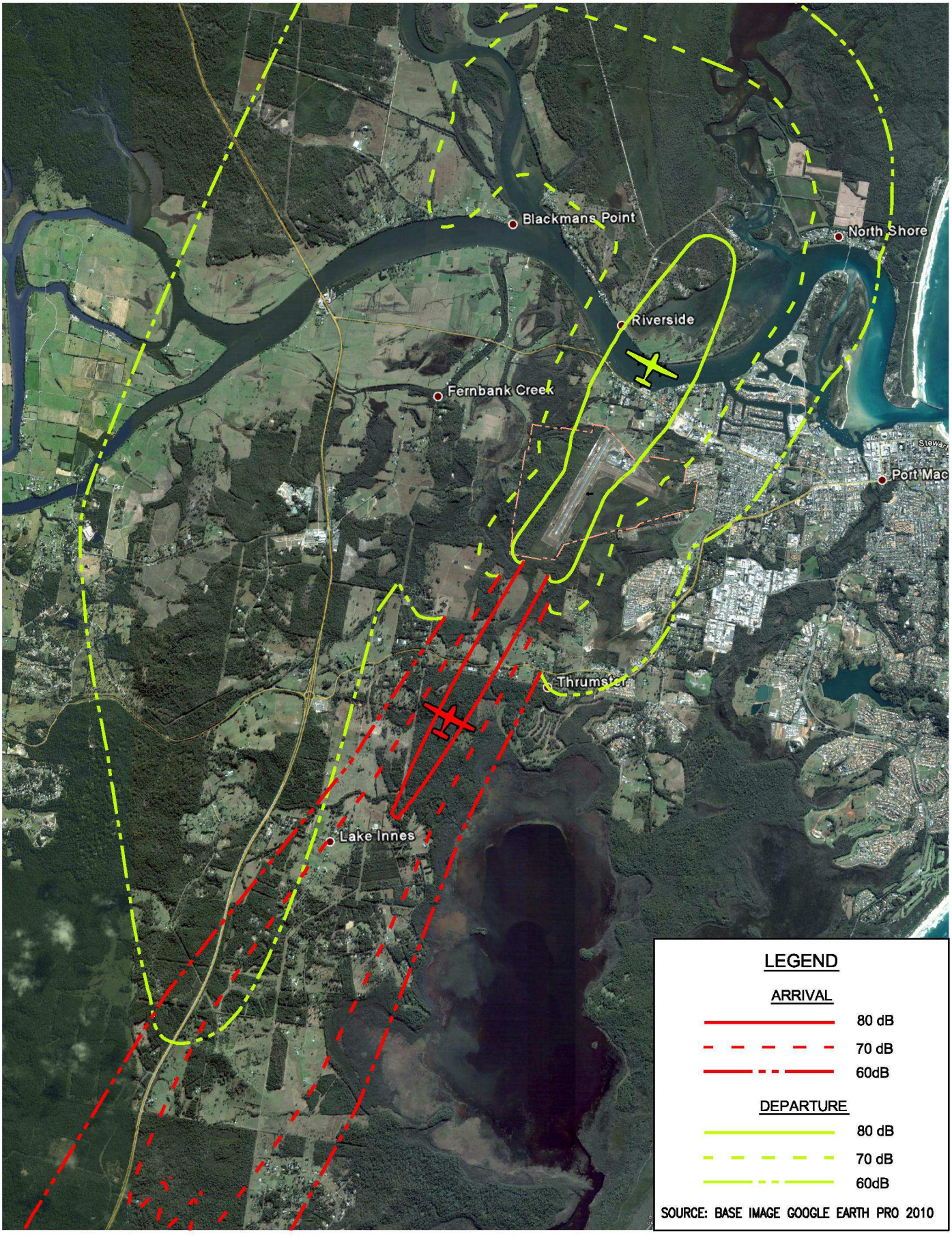
1:75,000 (A4)

PORT MACQUARIE AIRPORT

PORT MACQUARIE AIRPORT MASTERPLAN 2010

FIGURE 12-8 SHEET 2 OF 2

Q400/E170/E190 SINGLE EVENT LAMAX CONTOURS - RUNWAY 21



DATE: 16–06–10

AMPC
Airport Master Planning Consultants

N

0 1 2km

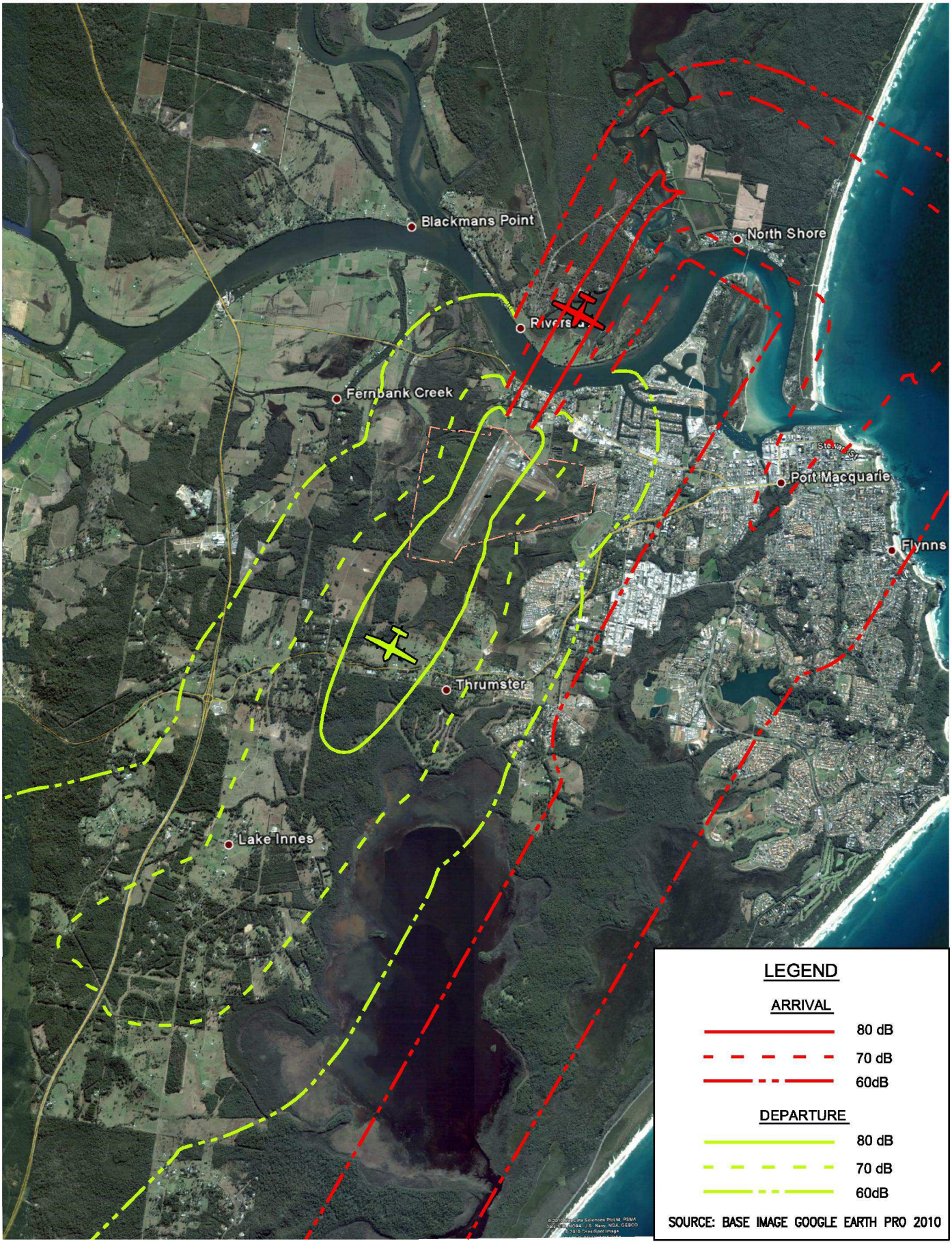
1:75,000 (A4)

PORT MACQUARIE AIRPORT

PORT MACQUARIE AIRPORT MASTERPLAN 2010

FIGURE 12-9 SHEET 1 OF 2

B737-900/A321 SINGLE EVENT LAMAX CONTOURS - RUNWAY 03



DATE: 16–06–10

AMPC
Airport Master Planning Consultants

N

0 1 2km

1:75,000 (A4)

PORT MACQUARIE AIRPORT

PORT MACQUARIE AIRPORT MASTERPLAN 2010

FIGURE 12-9 SHEET 2 OF 2

B737-900/A321 SINGLE EVENT LAMAX CONTOURS - RUNWAY 21

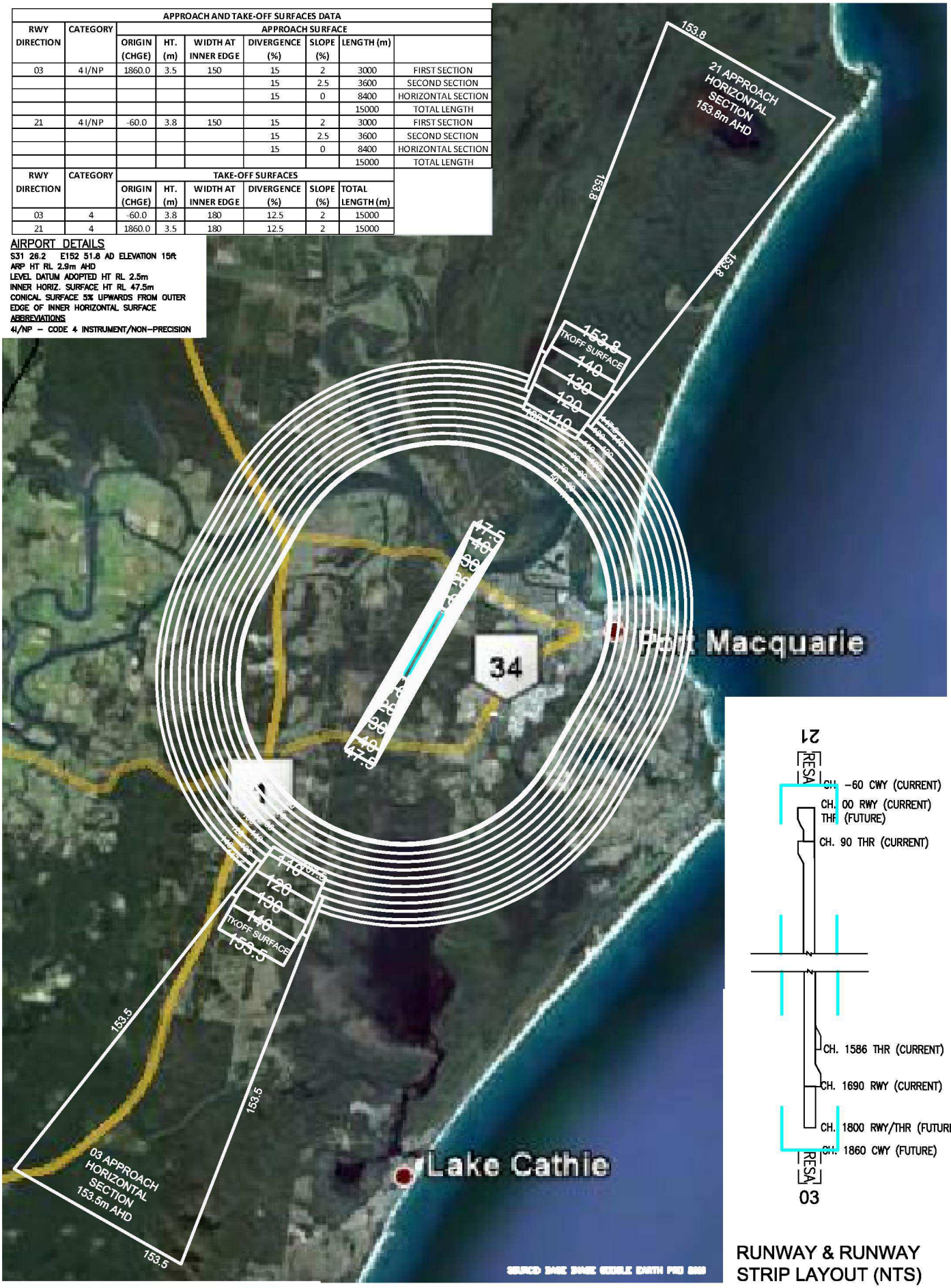
APPROACH AND TAKE-OFF SURFACES DATA								
RWY DIRECTION	CATEGORY	APPROACH SURFACE						
		ORIGIN (CHGE)	HT. (m)	WIDTH AT INNER EDGE	DIVERGENCE (%)	SLOPE (%)	LENGTH (m)	
03	4 I/NP	1860.0	3.5	150	15	2	3000	FIRST SECTION
					15	2.5	3600	SECOND SECTION
					15	0	8400	HORIZONTAL SECTION
							15000	TOTAL LENGTH
21	4 I/NP	-60.0	3.8	150	15	2	3000	FIRST SECTION
					15	2.5	3600	SECOND SECTION
					15	0	8400	HORIZONTAL SECTION
							15000	TOTAL LENGTH
RWY DIRECTION	CATEGORY	TAKE-OFF SURFACES						
		ORIGIN (CHGE)	HT. (m)	WIDTH AT INNER EDGE	DIVERGENCE (%)	SLOPE (%)	TOTAL LENGTH (m)	
03	4	-60.0	3.8	180	12.5	2	15000	
21	4	1860.0	3.5	180	12.5	2	15000	

AIRPORT DETAILS

S31 26.2 E152 51.8 AD ELEVATION 15ft
ARP HT RL 2.9m AHD
LEVEL DATUM ADOPTED HT RL 2.5m
INNER HORIZ. SURFACE HT RL 47.5m
CONICAL SURFACE 5% UPWARDS FROM OUTER EDGE OF INNER HORIZONTAL SURFACE

ABBREVIATIONS

4I/NP – CODE 4 INSTRUMENT/NON–PRECISION



RUNWAY & RUNWAY STRIP LAYOUT (NTS)

DATE: 17–06–10

AMPC Airport Master Planning Consultants

N

0 2,500 5,000m

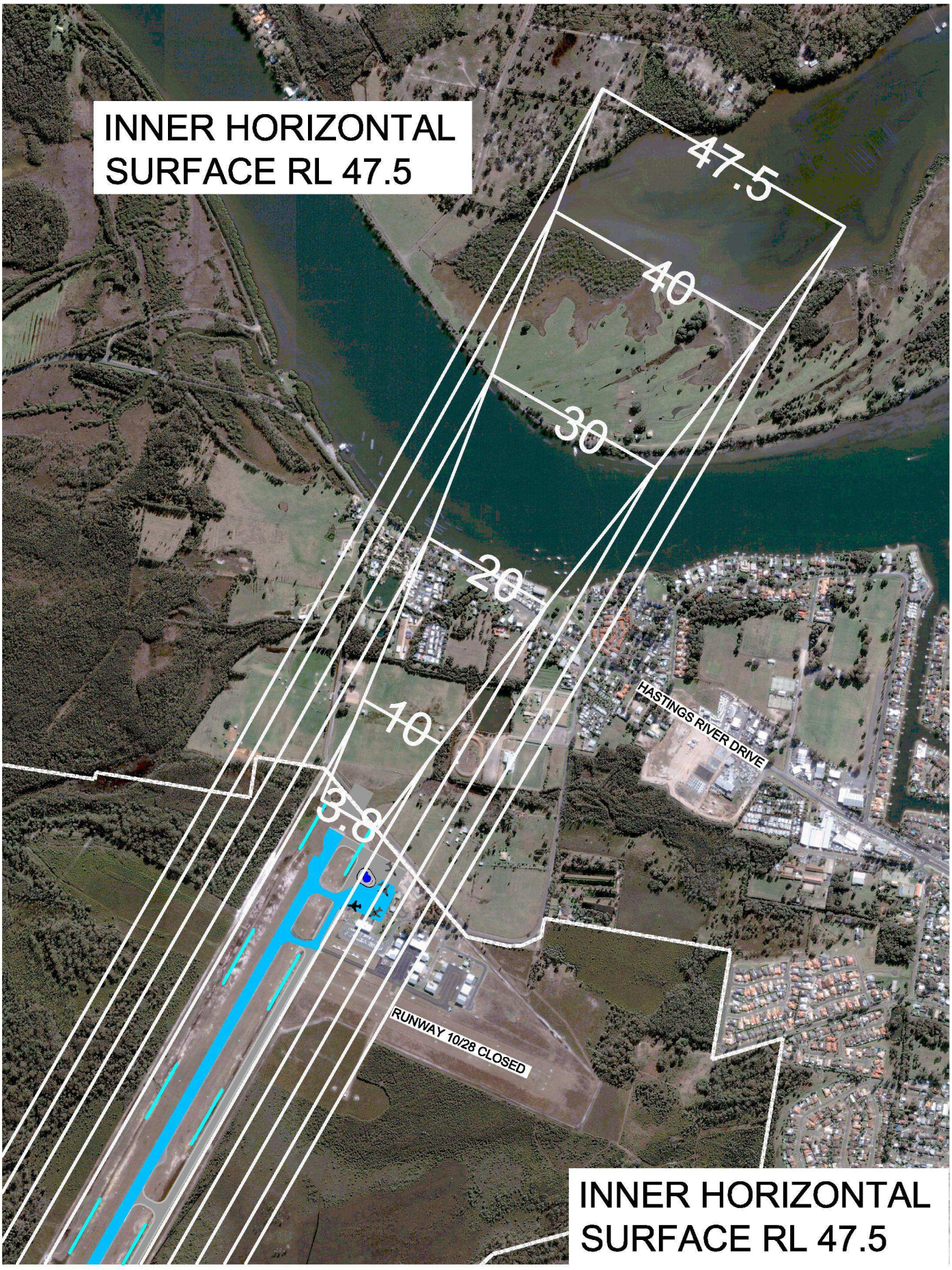
SCALE 1:125,000 (A4)

PORT MACQUARIE AIRPORT

PORT MACQUARIE AIRPORT MASTERPLAN 2010

FIGURE 12-10

OLS



DATE: 17–06–10

AMPC Airport Master Planning Consultants

N

0 300 600 m

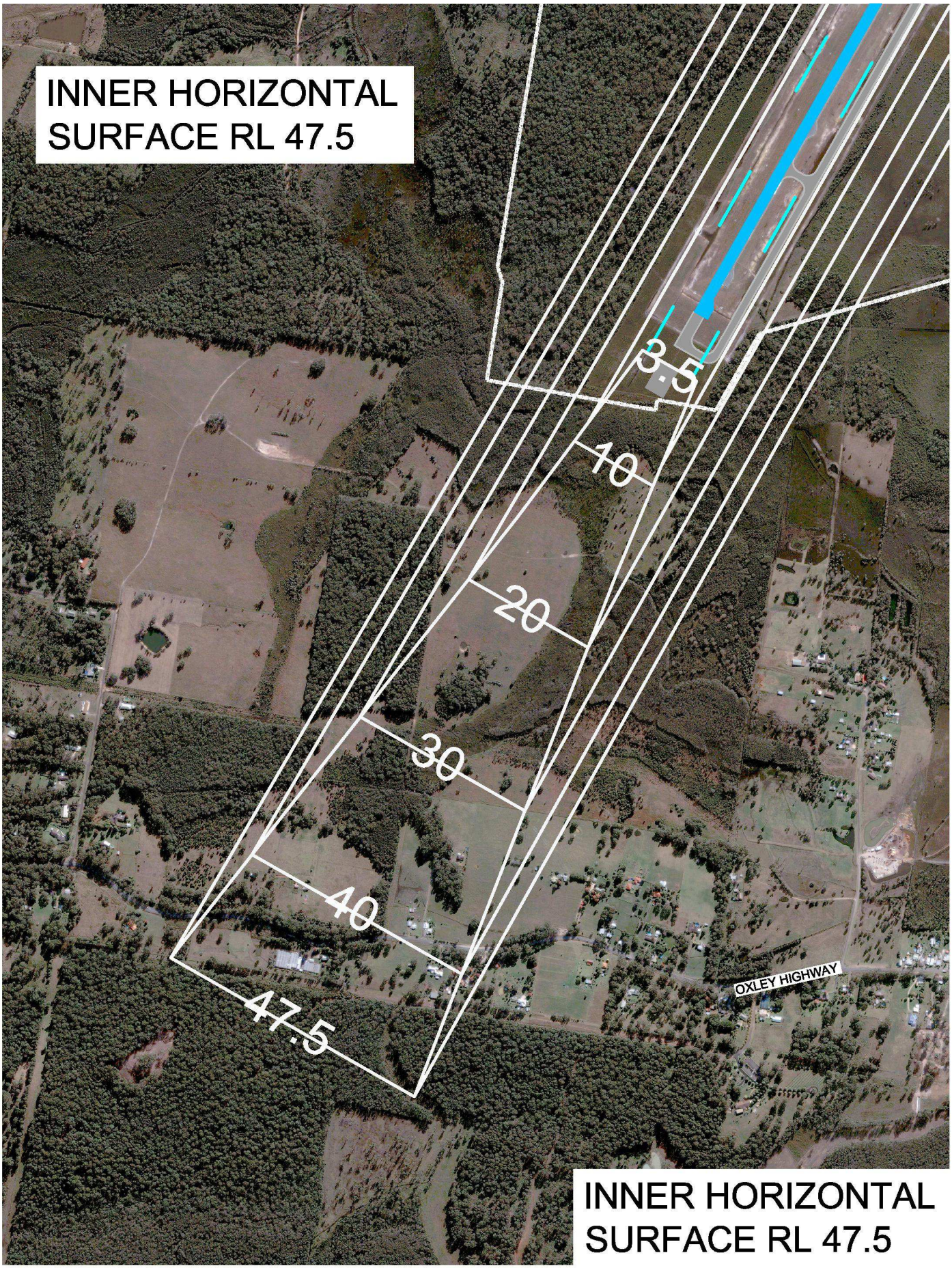
1:15000 (A4)

PORT MACQUARIE AIRPORT

PORT MACQUARIE AIRPORT MASTERPLAN 2010

FIGURE 12-11

INNER OLS - NORTH



INNER HORIZONTAL SURFACE RL 47.5

DATE: 17–06–10

AMPC
Airport Master Planning Consultants

N

0 300 600 m

1:15000 (A4)

PORT MACQUARIE AIRPORT

PORT MACQUARIE AIRPORT MASTERPLAN 2010

FIGURE 12-12

INNER OLS - SOUTH

DATE: 17–06–10

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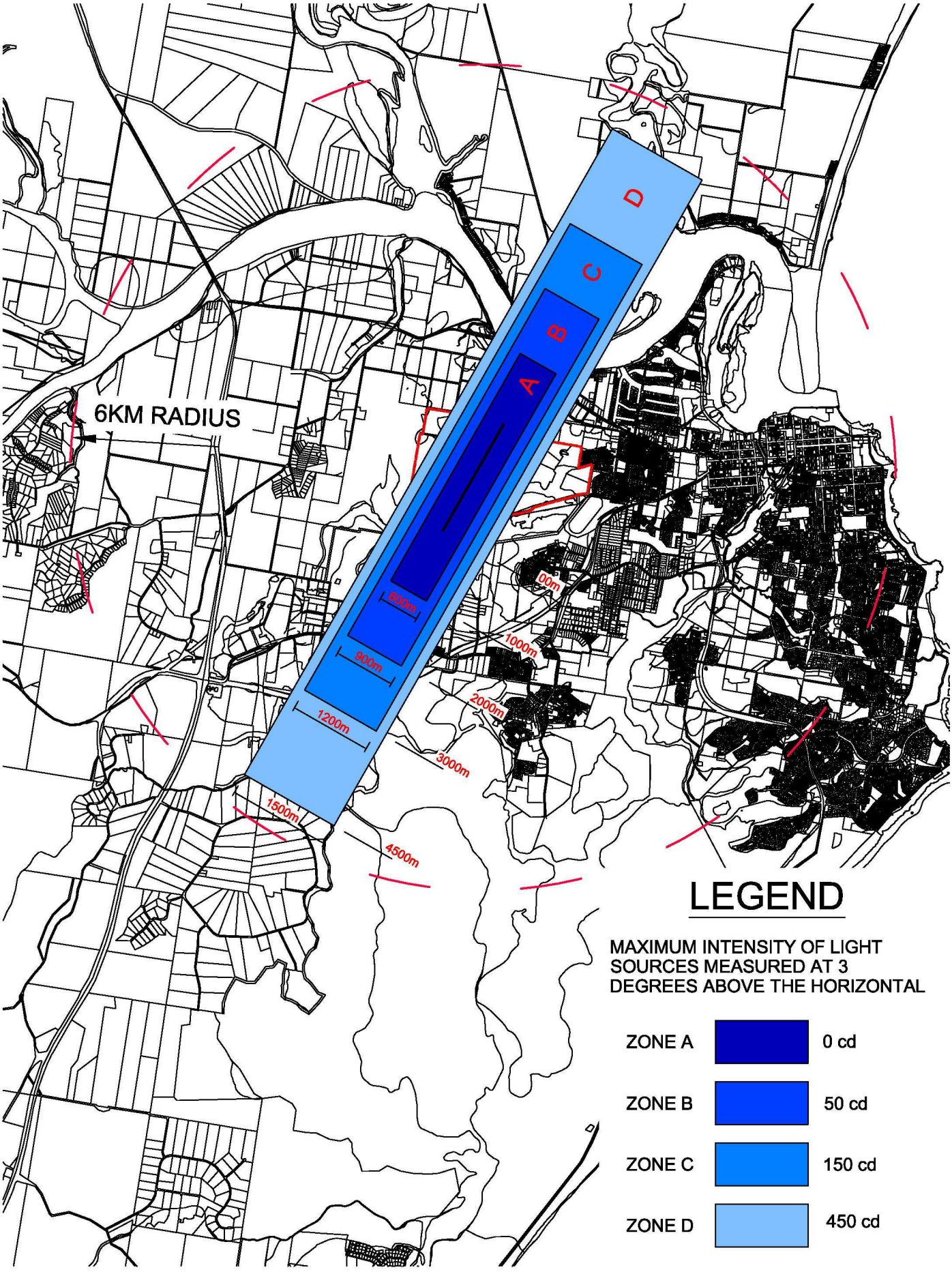
N

PORT MACQUARIE AIRPORT

PORT MACQUARIE AIRPORT MASTERPLAN 2010

FIGURE 12-13

BIRD HAZARD AREAS



DATE: 17–06–10

N

0 1 2km

1:75,000 (A4)

AMPC
Airport Master Planning Consultants

PORT MACQUARIE AIRPORT

PORT MACQUARIE AIRPORT MASTERPLAN 2010

FIGURE 12-14

MAXIMUM EXTERNAL LIGHTING INTENSITIES

DATE: 26-05-10

AMPC Airport Master Planning Consultants

0 100 200 300 400 m

SCALE 1:10,000

N

PORT MACQUARIE AIRPORT

PORT MACQUARIE AIRPORT MASTERPLAN 2010

FIGURE 13-1

MASTERPLAN