



# **VOLUME**

AIRSPACE AND AIRCRAFT RELATED NOISE

# D1

# AIRSPACE AND AIRCRAFT RELATED NOISE INTRODUCTION





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## 1.1 INTRODUCTION

Volume D of the Environmental Impact Statement (EIS) focuses on the implications to airspace and aircraft noise from the operation of the proposed new Runway (RWY) 13/31 as part of the Sunshine Coast Airport (SCA) Expansion Project (the Project).

As outlined in Volume A, the new 2,430 m long east/west runway will offer significant operational benefits over the existing 1,797 m long north/south runway currently in operation at SCA, including:

- Reducing the number of dwellings currently affected by aircraft noise
- Removing the need for SCA to operate under a Civil Aviation Safety Authority dispensation
- Improving access to domestic and international destinations and markets for Sunshine Coast residents and businesses
- Providing operational benefits with respect to reducing the effects of cross winds on aircraft operations
- Providing the essential infrastructure to support the growth of the aviation and aviation related sectors of the economy for the foreseeable future.

In describing the baseline conditions and assessing the impacts of the new runway, it is important to recognise that airspace operations at SCA are influenced by a range of factors, including weather, the number of arriving and departing aircraft, as well as their origin and destination.

Longer-term factors like growth in total traffic volumes and the introduction of new aircraft or new technologies also affect operations.

This volume provides an overview of these factors in the context of future airport operations and noise impacts as well as addressing other aviation-related environmental issues.

**Volume D** includes the following chapters:

Chapter D2 – Airspace Architecture and Modes
of Operations: This chapter provides background
information on the issues and concepts that relate to
airspace operations to assist in understanding the noise
impacts associated with the new runway.

Airspace operations refer to aircraft operations in any specific three-dimensional portion of the atmosphere but more specifically includes:

- Operation of aircraft in the air:
  - · En-route to joining their final alignment for landing
  - En-route to joining their required alignment for their destination
  - Landing or taking off.
- Operation of aircraft when performing manoeuvring operations on the runway and taxiway system (holding points, docking at aerobridges or pushing back) on their way to or from their parking positions at the terminals.

There are a range of factors which govern why an aircraft will be positioned at a particular spatial location in the sky and a number of additional factors which influence the consequent noise level it creates on the ground below. The factors discussed in Chapter D2 include weather, runway direction, flight paths, air traffic management rules, traffic forecasts and noise descriptors.

This chapter also examines in detail the current and the proposed flight paths for the new runway system for the SCA, including the procedures that govern how aircraft arrive and depart from the airport and flight path development.

- Chapter D3 Aircraft Noise: This chapter provides details
  of predicted aircraft noise exposure around SCA with the
  Project. The following scenarios have been considered:
  - Current operations
  - Proposed closure of the existing RWY 12/30 in 2016-2017 to allow construction of the new RWY 13/31
  - Operations in 2020 immediately after new RWY 13/31 becomes operational
  - Operations in 2040 with the Project
  - Operations in 2020 and 2040 without the Project.

In each case, noise exposure is predicted for the day period (7am to 6pm), the evening period (6pm to 10pm) and night period (10pm to 7am).

Noise exposure calculations are based on predicted aircraft movements provided in Chapter D2, as well as assumptions regarding continuity of air traffic control procedures and meteorological conditions.

Due to the volume of helicopter traffic at SCA, noise exposure predictions have considered the influences of fixed-wing and rotary-wing (helicopter) operations separately, as well as cumulatively.

This chapter first describes the noise prediction and assessment methodology. Helicopter and fixed-wing noise exposures are then discussed separately using this methodology. Cumulative aircraft noise exposure is then discussed in detail. In each case, existing noise exposure is presented initially, with predicted noise exposure following. An assessment of impacts, based upon the predicted metrics described in this chapter, is undertaken in Chapter D6 – Social Impact Assessment.

• Chapter D4 – Air Quality and Greenhouse Gas Emissions: This chapter presents the results of an air quality and greenhouse gas (GHG) assessment of the potential emissions from aircraft operations associated with the Project. The potential impacts on air quality due to aircraft operations related to the Project were considered for current and predicted air traffic levels (to 2040).

The existing air quality in the region is described in terms of ambient air quality monitoring data that has been collected by the Department of Environment and Heritage Protection. Existing emissions to air associated with industry in the area and current SCA operations

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were used to characterise existing air quality. Emissions scenarios for 2012, 2020 (opening year), 2030 and 2040 (design year) were modelled to assess compliance with the Environmental Protection (Air) Policy.

A GHG assessment of aircraft operations in 2012, 2020, 2030 and 2014 is also presented in this chapter. Estimates were made of current emission levels as well as emissions based on forecast air traffic levels. GHG emissions from aircraft operations are under the direct control of individual airlines and as such fall under the Scope 3 carbon accounting category.

- Chapter D5 Social and Visual Impacts: This chapter discusses the potential social and visual impacts from operation of the new runway. This includes an overview of the key demographic characteristics and trends within the study area, identification of noise sensitive infrastructure and facilities such as schools, childcares, aged care facilities and places of worship and the potential social and visual impacts arising from proposed airspace and flight path arrangements associated with the new runway.
- Mitigation measures and monitoring recommended within the chapters of this volume are addressed in Volume E in the context of the Airspace Management Plan (Chapter E5) and in the context of the Risk Management Plan (Chapter E6).

# 1.2 OTHER CONSIDERATIONS (LAND USE)

#### 1.2.1 Introduction

The EIS Terms of Reference requires Sunshine Coast Council (SCC) to take into consideration potential changes to aircraft operations within a 20 nautical mile (approximately 40 km) radius of the airport.

This section describes the land use within this wider study area, which takes in the Sunshine Coast Local Government Area (LGA) and Noosa Shire Council LGA, and any likely impacts as a result of the change to airspace and implementation of new flight paths.

For ease of data analysis the Australian Bureau of Statistics' Sunshine Coast LGA Census block (SA4) has been used as the boundary for this study area as shown in **Figure 1.2a**. It is noted that the newly formed Noosa Shire LGA sits within the northern section of the Sunshine Coast census block.

#### 1.2.2 Land use, tenure and ownership

Land within the study area comprises a combination of tenure types, including freehold under various ownership, state land, lands lease, reserve, and forest as shown in **Figure 1.2b** and **Figure 1.2c**.

Land across the study area is used for a wide range of purposes. Built up urban areas are generally located along the coast and include residential, commercial, industrial, and community uses. Due to their coastal location, many uses in these areas are leisure and tourism focused. Rural areas of the study area are located to the west in the hinterland areas. The area also includes areas of National Park.

Figure 1.2d is provided with the intent to describe land ownership in close proximity to the Airport and particularly land ownership along the main approach flight path to RWY 13/31. What this figure shows is that much of the land close to the north western (13) end of the new runway is owned by Council and the State Government.

#### 1.2.3 Business and industrial activity

Whilst commercial facilities of various scales are dispersed across the region, major activity centres are located at Nambour, Maroochydore, Noosa and Caloundra and serve the retail, entertainment and civic needs of the population. These areas also contain residential development at higher densities. Key industrial areas in the region are located at Kunda Park, Coolum, Pacific Paradise, Fisherman's Road at Maroochydore, Nambour, Noosaville and the new Sunshine Coast Industrial Park, a 115 ha subdivision located at Caloundra.

#### 1.2.4 Health services

The main public hospital servicing the region is located in Nambour, the administrative centre of the region. Private hospitals are located at Nambour (Nambour Selangor Private Hospital), Buderim (The Sunshine Coast Private Hospital), Noosa (Noosa Hospital) and Kawana (Kawana Private Hospital).

Development of a new private hospital and a new public hospital the Sunshine Coast University Hospital, in Kawana has commenced. The public hospital will be a tertiary teaching hospital incorporating a Skills, Academic and Research Centre. The hospital is expected to open with approximately 450 beds in 2016, and to increase to 738 beds by 2021. Co-located with the public hospital is the new 110 bed Sunshine Coast University Private Hospital, which opened in late 2013.

#### 1.2.5 Educational facilities

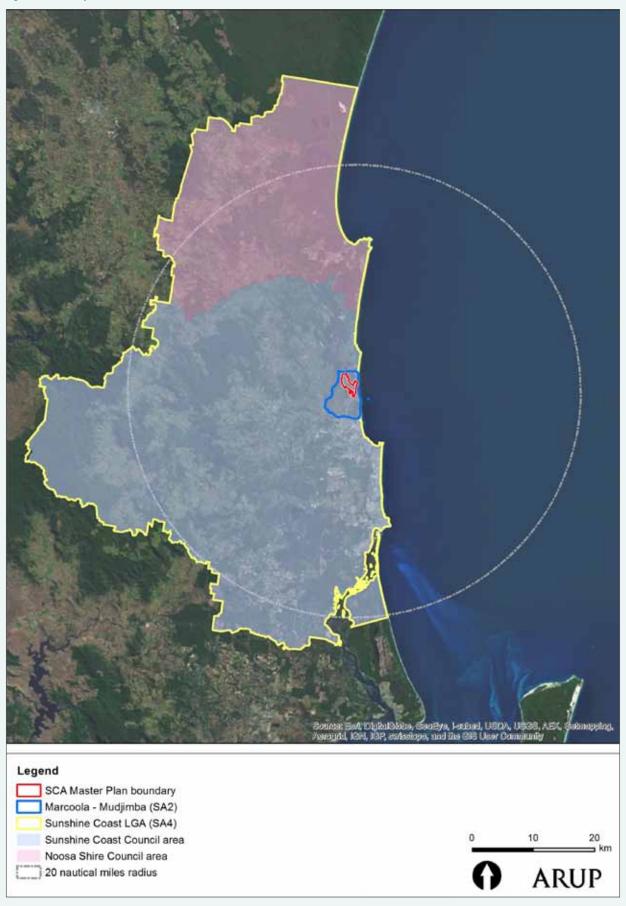
The University of the Sunshine Coast is located at Sippy Downs, south west of the SCA, and is the region's main higher education facility. A small Central Queensland University campus is located in Noosa, and TAFE campuses are located at Caloundra, Mooloolaba, Maroochydore, Nambour and Noosa. State primary and secondary schools are located in most suburbs across the region. Private schools and colleges are also dispersed throughout the region.

#### 1.2.6 Airports, aerodromes, and airfields

SCA is one of Queensland's key airports servicing the region with domestic, regional and, more recently, international flights (to New Zealand). Brisbane Airport is recognised as the major gateway for international and domestic air transport into South East Queensland (SEQ), increasingly supported by both Sunshine Coast and Gold Coast airports. Cairns and Townsville airports are other key aviation gateways for the State.

A major Royal Australian Air Force Base is located at Amberley. SEQ also has a number of other airports, including Archerfield, Caboolture, Caloundra, Toowoomba and Redcliffe.

Figure 1.2a: Study area



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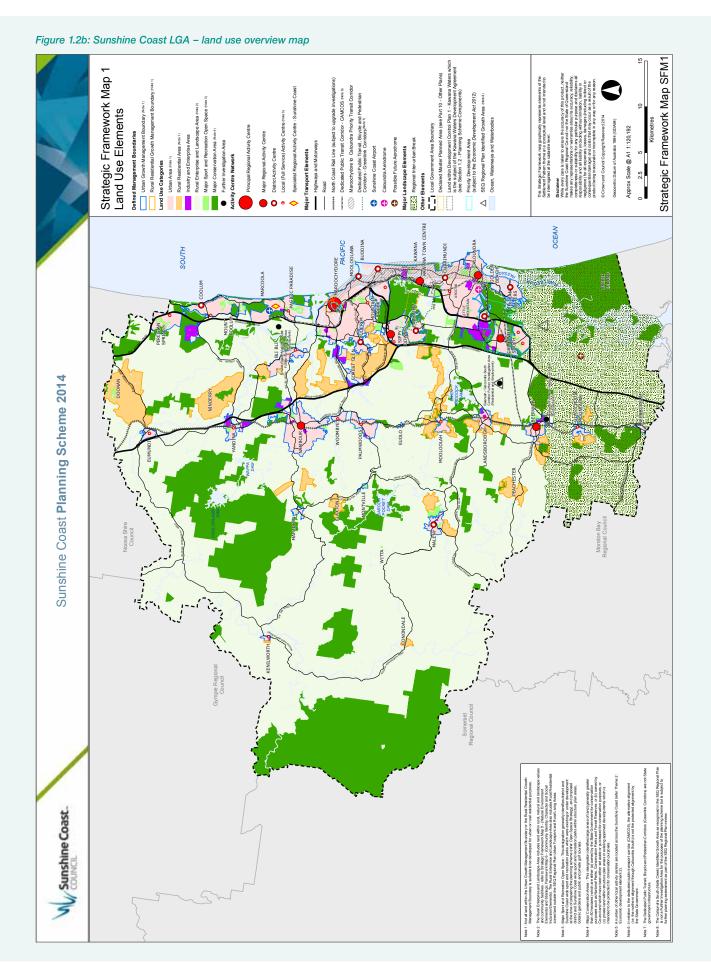


Figure 1.2c: Noosa LGA land use overview map

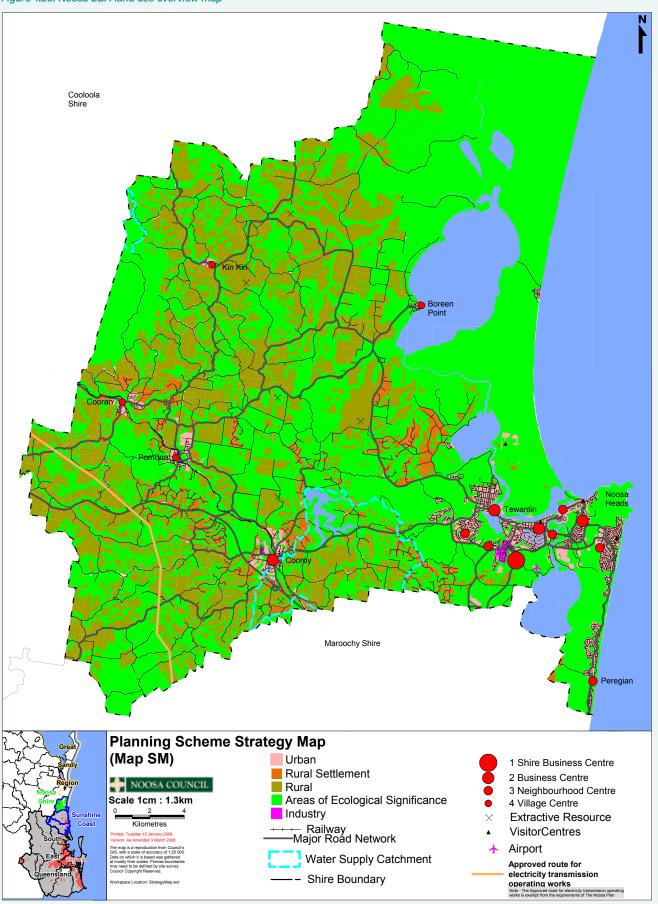
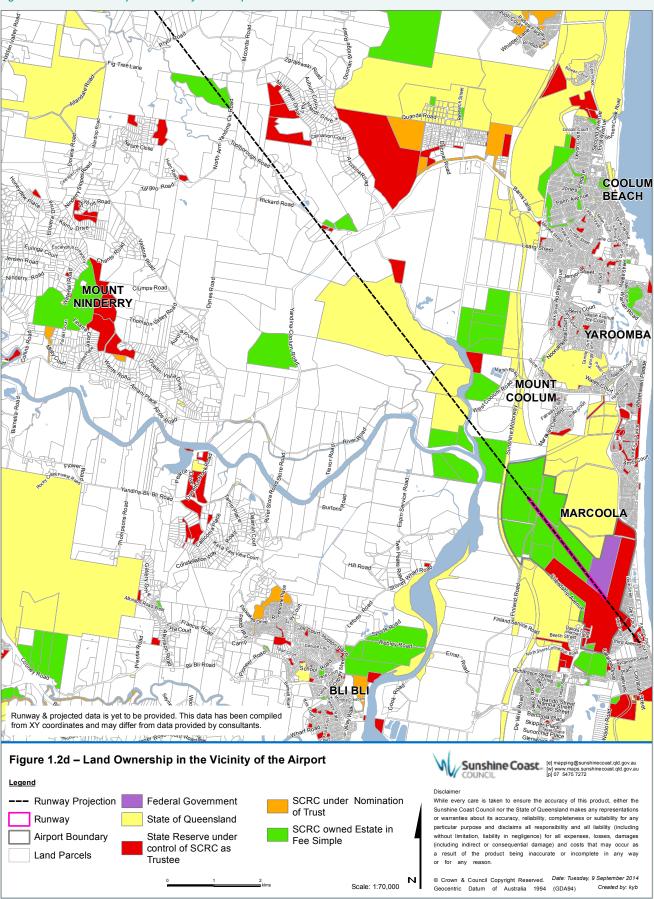


Figure 1.2d: Land ownership in the vicinity of the airport



Within the study area and its immediate surrounds are the following aviation facilities:

- Caloundra Aerodrome
- Noosa Airstrip
- Teewah Airfield
- Gympie Airport
- Caboolture Airport
- Redcliffe Airport
- Brisbane Airport.

#### 1.2.7 Tourism

As described in Chapter B13 – Social Impact, tourism is a key economic driver for the Sunshine Coast region. The region offers a number of tourism and leisure products ranging from coastal beaches and waterways to scenic hinterland areas, National Parks, world-class resorts, quality restaurants and several built attractions (such as Australia Zoo and Underwater World). By expenditure the Sunshine Coast is the fourth largest tourism region in Queensland and the eighth largest in Australia (AEC Group, 2012).

As discussed in Chapter A2 – Need for the Project, the relatively high contribution to the economy by retail trade and accommodation and food services (9.3 per cent and 4.2 per cent of GRP) highlight the strong tourism sector in the region, as these are the two industry sectors that benefit most from tourist visitation. By comparison, at the national level, retail trade and accommodation and food services represents 4.4 per cent and 2.2 per cent to Australian Gross Domestic Product.

The Queensland Government's Tourism and Events Queensland prepared the Sunshine Coast Tourism Opportunity Plan 2009 – 2017 which defines the following as places as key current and future tourism nodes and precincts in the region:

- Noosa Heads
- Noosaville
- Noosa Riverfront / Harbour Tewantin
- Eastern Beaches
- Maroochydore
- Mooloolaba
- Coolum
- Tin Can Bay
- Noosa Hinterland
- Gympie
- · Caloundra Central District
- Steve Irwin Wav
- Glasshouse Mountains
- Golden Beach / Pelican Waters
- Stockland Park Sports Precinct
- Blackall Range
- Rainbow Beach
- Mary Valley

- Nambour
- Sunshine Coast Airport (SCA).

The SCA is also listed as a key item of transport infrastructure to support the ongoing development of the region's tourism economy. The upgrade of the airport is seen as a key catalyst project for the future growth and development of tourism in the region. Development of the aviation facilities at SCA provides an opportunity not only to meet future demand but to continue to increase the percentage of visitors using air transport to access the region.

In September 2012 Sunshine Coast Destination Limited, in conjunction with SCC, hosted a Tourism Industry Forum. A key outcome from this forum was the need to improve the level of service provided by SCA through improvements in airport processes in the short term and infrastructure upgrades in the longer term.

#### 1.2.8 Hinterland cottage industries and tourism

The settlement pattern in the hinterland is dominated by low density rural and rural residential activities. This includes towns along the North Coast Rail line from Beerburrum to Cooran, the Blackall Range towns of Maleny, Montville, Mapleton and Flaxton, and the townships of Glasshouse, Kenilworth, Eumundi and Yandina. Many of these towns are key nodes for tourist activity and smaller scale urban development. Historically settled as logging communities, these towns have evolved into farming towns and have since developed a tourism and leisure oriented economy based around its scenic and historical qualities, cottage industries and eco-businesses.

#### 1.2.9 National Parks and conservation areas

Large expanses of land within the region are identified as National Park, reserves, or state forests. Whilst many of these areas may be used for recreational activities, the activities permitted in each of these areas are dependent on the values of the area and regulations specified for each. National Parks and conservation areas located in the region are identified in **Section 1.7**.

#### 1.3 ZONING

Zoning in the study area is currently defined by the new Sunshine Coast Planning Scheme 2014 and the Noosa Plan 2006. Zoning in the study area generally reflects the land uses described in section 1.2.2. Whilst the two planning schemes categorise land according to their own naming conventions and zoning intents, the zones across the region include a mix of residential, commercial, open space, special/community purposes in the urban areas with higher density residential zoned along the coast and adjacent to business centres. Rural land is generally located in western areas.

Consistent with the South East Queensland Regional Plan (SEQRP), the new Sunshine Coast Planning Scheme identifies Maroochydore as the Principal Activity Centre for the Sunshine Coast. The centre contains a mix of retail,

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residential and commercial uses and major community infrastructure including a transit plaza, civic plaza, public amphitheatre, and local and district parks. According to the structure plan for the Principal Activity Centre, the development in the centre is to provide for "the widest range and highest order retail, commercial, residential and community facilities..."

The Sunshine Coast Planning Scheme also identifies Caloundra as the regional business centre for the southern portion of the LGA. It identifies a sub-regional business centre in Bokarina, a specialist retail centre in Warana, and district centres in Beerwah, Caloundra South, Caloundra West, and Maleny. Core industry areas are identified in Landsborough, Beerwah, Caloundra South, Central Caloundra, Kawana Waters, and Beerwah.

The business centre of the Noosa Shire is located in Noosaville and is adjoined by land zoned for industry as identified by the Noosa Plan. The Noosa Plan also identifies business centres in Noosa Heads, Cooroy, Noosaville, and Tewantin. The Noosa National Park is included in the Open Space Conservation Zone and encompasses an area of approximately 4000 ha.

#### 1.3.1 Regional Development Areas

Caloundra South Urban Development Area and Palmview Master Planned Area sit within the Sunshine Coast LGA. These areas have been designated and planned to accommodate the Sunshine Coast's projected future growth. These areas are listed in the South East Queensland Regional plan as Regional Development Areas. They have been planned to provide residential (including affordable housing), employment and recreational opportunities for an additional 60,000 – 70,000 residents during the next two decades.

#### 1.3.1.1 Palmview

Palmview is located approximately 15 km to the south of the SCA. It is planned to house 18,000 residents and provide 8,000 jobs once complete. The masterplanned area includes residential areas, a town centre, sporting facilities, open space, an industry and enterprise area and space for future community facilities. The Palmview Structure Plan provides an integrated land use, infrastructure and master planning framework for Plamview's 926 ha parcel of land. Council adopted the Palmview Structure Plan, on 1 November 2010 with subsequent amendments to *Maroochy Plan 2000* and *Caloundra City Plan 2004* taking effect on 5 November 2010. These amendments have been carried forward into the new Sunshine Coast Planning Scheme.

#### 1.3.1.2 Caloundra South

Caloundra South is located approximately 20 km to the south of the SCA. It is planned to house 50,000 residents and provide 20,000 jobs once complete. The masterplanned area includes a new town centre, four district centres, 20,000 new dwellings, new road networks, community facilities and open space areas. The Caloundra South Urban Development Area (UDA) was declared 22 October 2010 and

covers 2,310 hectares and is located south of the existing Caloundra urban area, the Caloundra Aerodrome and the Sunshine Coast Regional Business and Industry Park.

On 8 October 2011 the Caloundra South UDA Development Scheme was approved by the State Government. The development scheme is the planning document that will assist in planning, carrying out, promoting, coordinating and controlling the development of land in the Caloundra South UDA. All development applications within the UDA are assessed against the development scheme rather than the Sunshine Coast Planning Scheme. Economic Development Queensland (EQD) is the agency currently responsible for the Caloundra South UDA.

The expansion of SCA is a key element in the broader infrastructure network to support the continued urban growth on the Sunshine Coast. Population and economic growth created by Caloundra South, Palmview and the Maroochydore town centre will drive demand for aviation services at SCA.

#### 1.4 TRANSPORT NETWORK

The Bruce Highway is a key north-south route across the region and beyond. The transport network within the Sunshine Coast region is comprised of other State controlled roads such as the Sunshine Motorway, Palmwoods-Mooloolah Road, and a network of district, suburban, and local roads.

Bruce Highway Upgrade Planning Study (Caloundra Road to Sunshine Motorway) project seeks to improve the safety of the highway and its interchanges, increase its capacity and efficiency, and improve its immunity to flooding. Key features of the plan include widening of the highway to up to eight lanes in strategic locations, increasing flood immunity to 1 in 100 flood events, and new or upgraded interchanges. The delivery of these projects is dependent on Federal funding and they are likely to be constructed in a number of stages.

Queensland Rail's North Coast Line, which extends from Brisbane to Cairns, traverses the Sunshine Coast region to the west of the SCA. It operates commuter services, high-speed tilt trains, and freight services. Within the Sunshine Coast, the North Coast Line services the towns of Beerburrum, Glasshouse Mountains, Beerwah, Landsborough, Mooloolah, Eudlo, Palmwoods, Woombye, Nambour, Yandina, Eumundi, Cooroy and Cooran.

A number of public transport studies and projects are underway to improve connectivity in the region and cater for the growth in population. The proposed CAMCOS (Caboolture to Maroochydore Corridor Study) railway line is a proposed single track rail line extending from the existing North Coast Line to service the Sunshine Coast. There is currently no date for its implementation.

The Caloundra South Rail Corridor Realignment Study investigates the original Caboolture to Maroochydore Corridor Study to review the alignment between the Bruce Highway and Sugar Bag Road with regard to land use and transport integration.

Other public transport initiatives in the region include:

- Sunshine Coast Light Rail Project: Investigation into the creation of a light rail network for the Sunshine Coast
- CoastConnect: Caloundra to Maroochydore Quality Bus Corridor – This initiative proposes bus connections from Caloundra to Maroochydore via Kawana and Mooloolaba
- TransitWays: The Connecting SEQ 2031 document identifies TransitWays as a network providing on-road priority to multi-occupant vehicles, particularly buses. TransitWays are proposed between Sippy Downs to Mooloolaba and Nambour to Noosa via Maroochydore and SCA
- UrbanLink Bus Services: UrbanLink bus services are high frequency bus services. Routes are proposed between Caloundra South and Sippy Downs, Kawana, and Caloundra.

Transport is discussed in Chapter B14 – Surface Transport.

## 1.5 AREAS OF NATURAL RESOURCES

#### 1.5.1 Key Resource Areas

Major extractive resources are identified in the *State Planning Policy* (SPP) and are referred to as key resource areas (KRA). The SPP is concerned with the protection of resources from alienation by conflicting development in the environs, and to protect developments from the impacts of extractive industry while allowing the optimal use of the extractive resource. Each KRA comprises the extractive resource and on-site processing areas, the associated transport route, and a separation area around the resource and processing area and transport route.

Key resource areas in the Sunshine Coast Region are:

- Glasshouse (KRA 48)
- Meridian Plains (KRA 49)
- Glenview (KRA 50)
- Sunrock at Glass House Mountains (KRA 51)
- Bli Bli (KRA52)
- Image Flat (KRA53)
- Yandina Creek (KRA 54)
- Toolborough Road (KRA55)
- Moy Pocket (KRA89)
- Ringtail Creek (KRA56)
- Wahpunga Range (KRA57).

While the source of pavement material for the new runway is not yet defined, it is likely that it will be drawn from a local KRA. KRA 89 (Moy Pocket) is a potential source for this material. It is noted that Council has recently refused a DA for KRA 54; this matter is the subject of an ongoing appeal process in the courts.

#### 1.5.2 Strategic cropping land

Strategic Cropping Land mapping prepared by the Queensland Government identifies areas which should be protected from development for use in food and fibre production. Whilst land within SCA is not designated as strategic cropping land, there are expanses of strategic cropping land located in various areas to the west of the Airport. The closest strategic cropping land is located directly west of the Sunshine Motorway. Other areas of strategic cropping land are located at Coolum, Yandina Creek, Maroochy River, Yandina, Woombye, and Palmwoods, Eudlo, and Mooloolah Valley.

# 1.6 DECLARED WATER STORAGE CATCHMENTS

Declared water storage catchments are catchment areas that surround particular storages and are identified by the *Water Act 2000*. The state and local government regulate development within these areas to avoid negative impacts on water quality. There are no declared water storage catchment areas within the Sunshine Coast Region.

Water supply dams provide towns with potable water. Existing water supply dams within the Sunshine Coast Region include:

- Baroon Pocket Dam
- Cooloolabin Dam
- Ewen Maddock Dam
- Lake Macdonald
- Poona Dam
- Wappa Dam.

## 1.7 WETLANDS AND PROTECTED AREAS

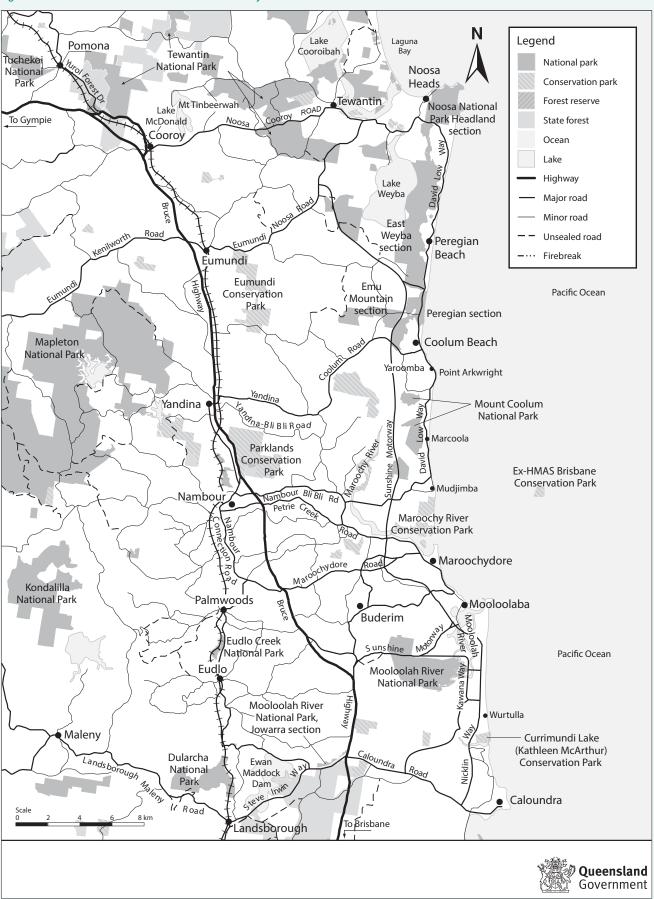
Moreton Bay, where sand dredging is proposed for the SCAEP, is located to the south east of the SCA, and a portion of this is identified as a wetland of international significance under the Ramsar Convention. In addition, Maroochy River Wetlands, which encompasses areas surrounding the SCA, is identified as a nationally important wetland.

Due to the significance of these wetlands, the project has been referred to the Australian Government's Department of the Environment for their assessment. The Commonwealth government subsequently designated the project a controlled action to be assessed through an EIS due to the potential impact of the project on this wetland of international importance and other matters of national environment significance such as listed threatened species and communities. Wetlands are discussed further in Chapter B9 – Aquatic Ecology.

Numerous National Parks and conservation areas are located in the study area as shown in **Figure 1.7a**.

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Figure 1.7a: Parks and reserves located within the study area



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