Sch. 4(4)(6) - Disclosing pe

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Sent: Wednesday, 17 October 2018 8:50 AM
To: Paul Byrne; Rebecca Jane Collins
Subject: FW: DRAFT REMONDIS WtE IAS Document

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Subject: DRAFT REMONDIS WtE IAS Document

Hi Steven

Thank you for providing us with the opportunity to submit a draft IAS document for review by the Department. An **early** DRAFT of the IAS for the Swanbank WtE Project is available from the following link:

http://publish.remondis.com.au/download.php?intro=7VouKXlMuqUYABhwUuqg

We look forward to receiving your feedback / comments on the draft document. We would also welcome a meeting to discuss the DRAFT document further.

We have identified that key areas that may require additional focus is Chapters 6 and 7. In particular, the sections addressing air quality, odour and social / economic benefits. We look forward to discussing the correct balance between data required for the IAS versus an IAR/EIS Report.

Please feel free to contact me with any queries.

Thanks.

Kind Regards
REMONDIS Australia Pty Ltd

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REMONDIS®
WORKING FOR THE FUTURE

ETHOS URBAN

Initial Advice Statement

Swanbank Road, Swanbank
Waste to Energy Facility

Submitted to Office of Coordinator-General
On behalf of REMONDIS Australia Pty Ltd

11 October 2018 | 18-6636

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Contents

Contents

Figures

Tables

Contents

Abbreviations

Abbreviation	Descriptions
AADT	Annual average daily traffic
AHD	Australian Height Datum
BGL	Below Ground Level
CEMP	Construction Environmental Management Plan
Cth	Commonwealth
IAR	Impact Assessment Report
IPS	Ipswich Planning Scheme
EIS	Environmental Impact Statement
EPBC	*Environmental Protection and Biodiversity Act 1999 (Cth)*
EPP (Noise)	*Environmental Protection (Noise)Policy 2008*
EPP (Air)	*Environmental Protection (Air) Policy 2008*
GHG	Greenhouse Gas
LGA	Local Government Area
NC Act	*Nature Conservation Act 1992*
Planning Act	*Planning Act 2016*
PDA	Priority Development Area
REMONDIS	REMONDIS Australia Pty Ltd
SREWMF	Swanbank Renewable Energy and Waste Management Facility
The Site	The location of the proposed development including the proposed WtE facility referred to as the 'Site'.
WtE	Waste to Energy
VM Act	*Vegetation Management Act 1999* (Qld)

Appendices

Executive Summary

REMONDIS proposes to build Resource Recovery Infrastructure and Waste to Energy (WtE) facility on its landfill site at Swanbank, in area zoned for heavy industry (under the Ipswich City Plan) and adjacent to the Swanbank E gas-fired power station.

Swanbank has been used by REMONDIS since 2007 to supply 12,000 MWh per annum of renewable energy to the Queensland electricity grid through a methane capture and electricity generation project.

This development will include processes to allow for the recovery of a range of recyclable products for processing and recycling and residuals being utilised for WtE activities rather than landfill.

A WtE facility which is synergistic with an existing waste disposal and recycling facility will be able to use the power and heat generated to provide a level of energy self-sufficiency within the immediate business precinct and to attract investment, development and employment generating activities.

The WtE facility will use safe, reliable, tried and proven technology to create green energy from residual waste fuel that would otherwise go straight to landfill.

The WtE facility is proven technology in the proposed configuration of the facility. This technology currently operates reliably in the Europe and has a successful track record in treating the same waste streams proposed as fuel as part of this application.

REMONDIS is targeting 20% of the Queensland suitable waste streams for its WtE facility. By capturing between 300,000 and 500,000 tonnes of suitable waste per year, REMONDIS can generate up to 50MW of baseload renewable electricity for Queensland households and businesses.

If Queensland maintains a “business as usual” approach to refuse disposal and waste recycling, most of South East Queensland’s landfills will have no capacity by 2040.

Diverting thousands of tonnes of suitable waste away from landfill and into a best-practice WtE facility will extend the life of South East Queensland’s constrained landfills and also provide an additional, baseload electricity source for Queensland residents and businesses.

Queensland has the opportunity to benefit from successful European and UK experiences and incorporate WtE technology as part of the solution to sustainable, best practice waste management.

This Initial Advice Statement (IAS) demonstrates the suitability for ‘coordinated project’ determination as set out in section 26 (2), 27 and 27 (AC) of the *State Development and Public Works Organisation Act 1971* (SDPWO Act).

This document has been developed to demonstrate that the project is of strategic significance to the City of Ipswich Local Government Area and wider South East Queensland with regard to economic and social benefits, capital investment and employment opportunities.

This IAS outlines the projected benefits of this project to the region, with an estimated 200 Full Time Equivalent jobs during construction and up to 80 Full Time Equivalent jobs during operation, and an estimated Capital Investment of $400 million into the Swanbank locality.

An aerial map of the Swanbank Renewable Energy and Waste Management Facility (SREWMF) is shown at **Figure 1**.

To be finalised

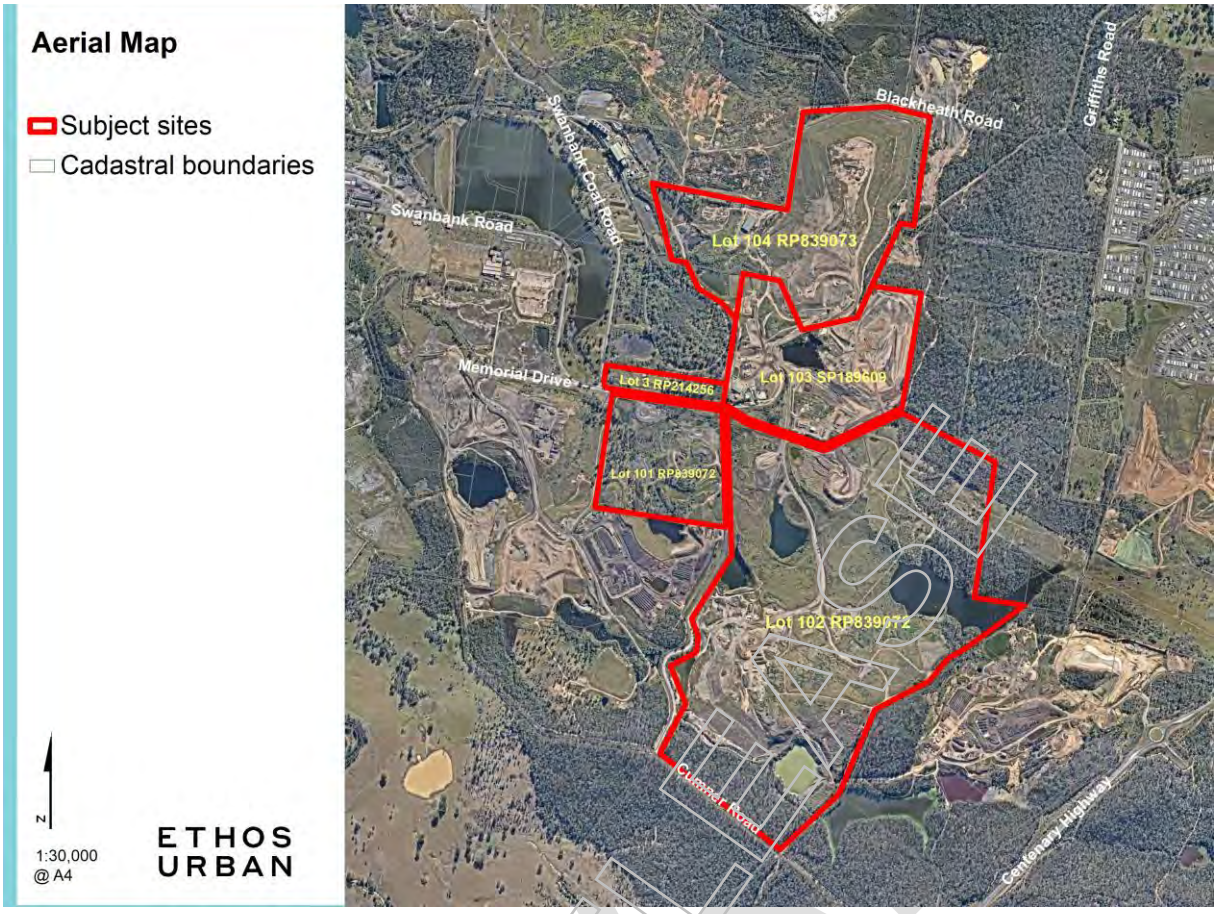

Figure 1: Site Aerial

1.0 Introduction

1.1 Background

REMONDIS Australia (REMONDIS) is committed to diverting waste from landfill and revolutionising recycling and resource recovery at the Swanbank Renewable Energy and Waste Management Facility (SREWMF).

Waste disposal at SREWMF (Stage 1) was commenced in 1998 and the landfill currently comprises seven cells, which were constructed progressively between 1997 and 2018. Although the site has operated as a landfill for many years, the subject site was previously used for open cut mining activities and is surrounded primarily by extractive industries and other waste management operations.

REMONDIS has identified that the biggest waste management issue for South East Queensland Councils is the cost of cheap landfill, which results in no incentive to look for other waste management options. Further, a business as usual approach to refuse disposal and waste recycling may see most of South East Queensland's landfills with no capacity by 2040.

Waste-to-energy technology is used across the world, with countries including Germany, Japan, China and Finland using waste to generate electricity. Diverting thousands of tonnes of suitable waste away from landfill and into a best-practice WtE facility will extend the life of South East Queensland's constrained landfills and also provide an additional, baseload electricity source for Queensland residents and businesses.

Queensland has the opportunity to benefit from successful European and UK experiences and incorporate Waste to Energy as part of the solution to sustainable, best practice waste management.

1.1.1 Site Details

The SREWMF is located at 66-114 Blackheath Road SWANBANK QLD 4306 and is legally described as:

- Lot 101 on RP839072
- Lot 102 on RP839072
- Lot 103 on SP189609
- Lot 104 on RP839073
- Lot 3 on RP214256

The SREWMF includes the approved landfill footprints identified as Stage 1 and 2:

- Stage 1 is made up of Lot 103 on SP189609 and Lot 104 on RP 839073.
- Stage 2 is identified as Lot 101 and 102 on RP 839072 and Lot 3 on RP 214256.
- Stage 1 of the landfill operation comprises a number of approved individual landfill cells along with a major power easement which runs along the western and southern boundary of Stage 1B on SP 152158 and SP 127335.

Figure 2: Swanbank Landfill – Approved Landfill Footprints – Stage 1 and 2

As identified in **Figure 3** below, the site falls within the Swanbank Approved Land Use Precincts (3 and 4) under the Ipswich City Plan for the following purposes:

1. Waste Processing, Treatment and Disposal (in accordance with Plan of Development No. 10556/001C).
2. Waste Recycling, Composting and Disposal, Land Rehabilitation, Truck Depot and Park with ancillary uses of Leachate Collection, Landfill, Gas Collection, Treatment, Storage and Disposal, Crushing of Spoil Pile Material, Vegetation Propagation for Rehabilitation and Caretakers Flat (Generally in Accordance with Plan of Development TP-61/90).

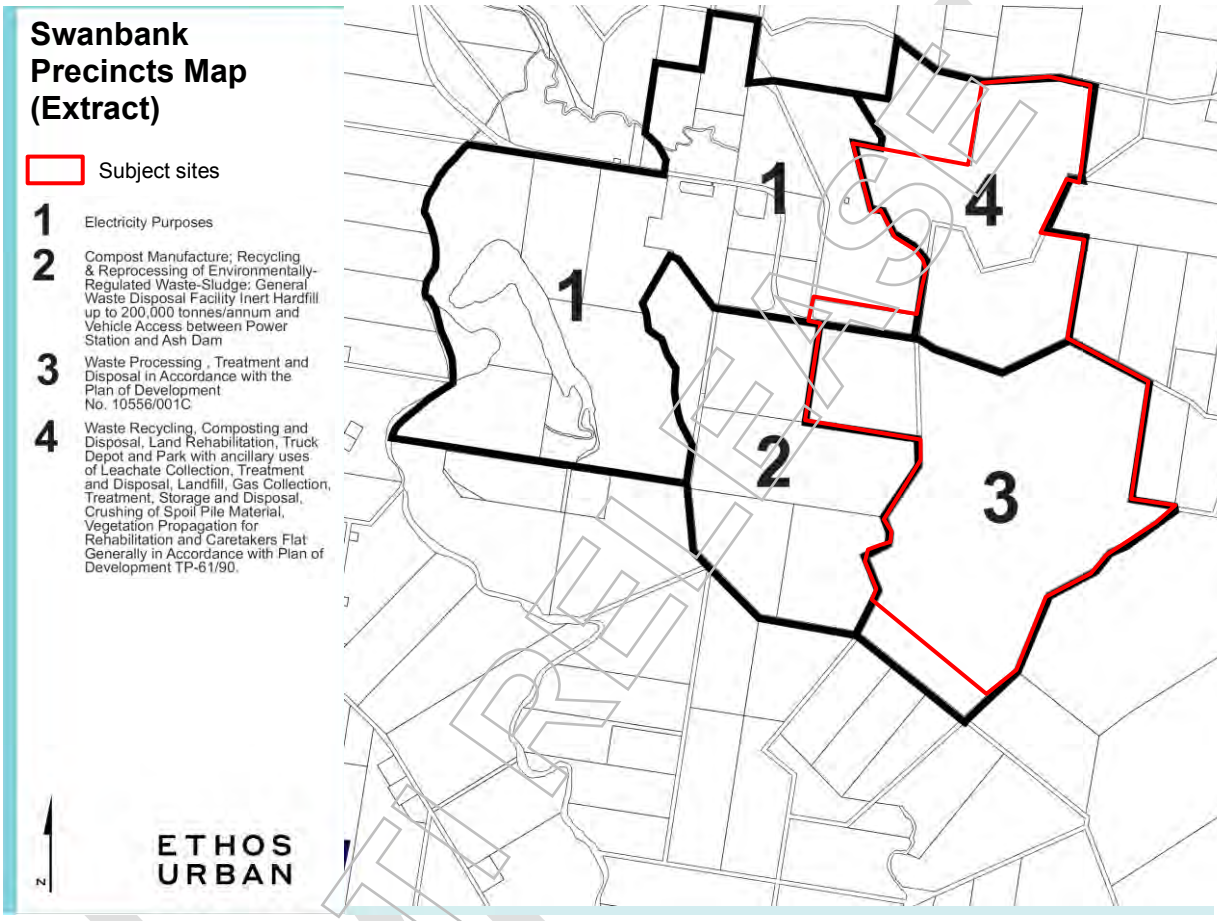

Figure 3: Swanbank Approved Land Use Precincts (Ipswich Planning Scheme)

1.2 Site Approvals

In 1990, the former Moreton Shire local government agency issued an approval for the rezoning of land identified as Stage 1 of the Swanbank site under the Moreton Shire Planning Scheme (TP-61/90).

Although subsequent planning schemes have changed zoning regimes, the wording of the original rezoning continues to be reflected in the current planning scheme. This wording indicates appropriate activities on the land as including:

- Waste recycling, composting and disposal;
- Leachate collection, treatment and disposal;
- Landfill gas collection, treatment and disposal; and
- Crushing of spoil pile material.

Land comprising of the Stage 2 of SREWMF area was granted zoning and development approval in 1990 by Ipswich City Council for activities of waste processing, treatment and disposal in accordance with plan of development 10556/001C.

The current environmentally relevant activities (ERA) approvals over the SREWMF site allow for a wide range of activities, including the following:

- Waste disposal;
- Soil conditioner manufacturing;
- Composting;
- Regulated waste storage;
- Regulated waste treatment; and
- Fuel burning.

The site has been subject to a number of planning approvals since it commenced operation as a Renewable Energy and Waste Management Facility with each extension, expansion and construction of the landfill cells requiring a subsequent approval.

It is noted that the proposed WtE facility will be located on Lot 101 on RP 839072 that forms Stage 2 of the SREWMF.

The subject site is identified within the Swanbank New Chum Land Use Concept Master Plan as shown in **Figure 5** below. The Swanbank New Chum master plan (as described within the ICC Planning Scheme Part 6.7D) is an indicative footprint for future development and is not intended to prescribe the precise boundaries of the indicative land use designations and structural elements.

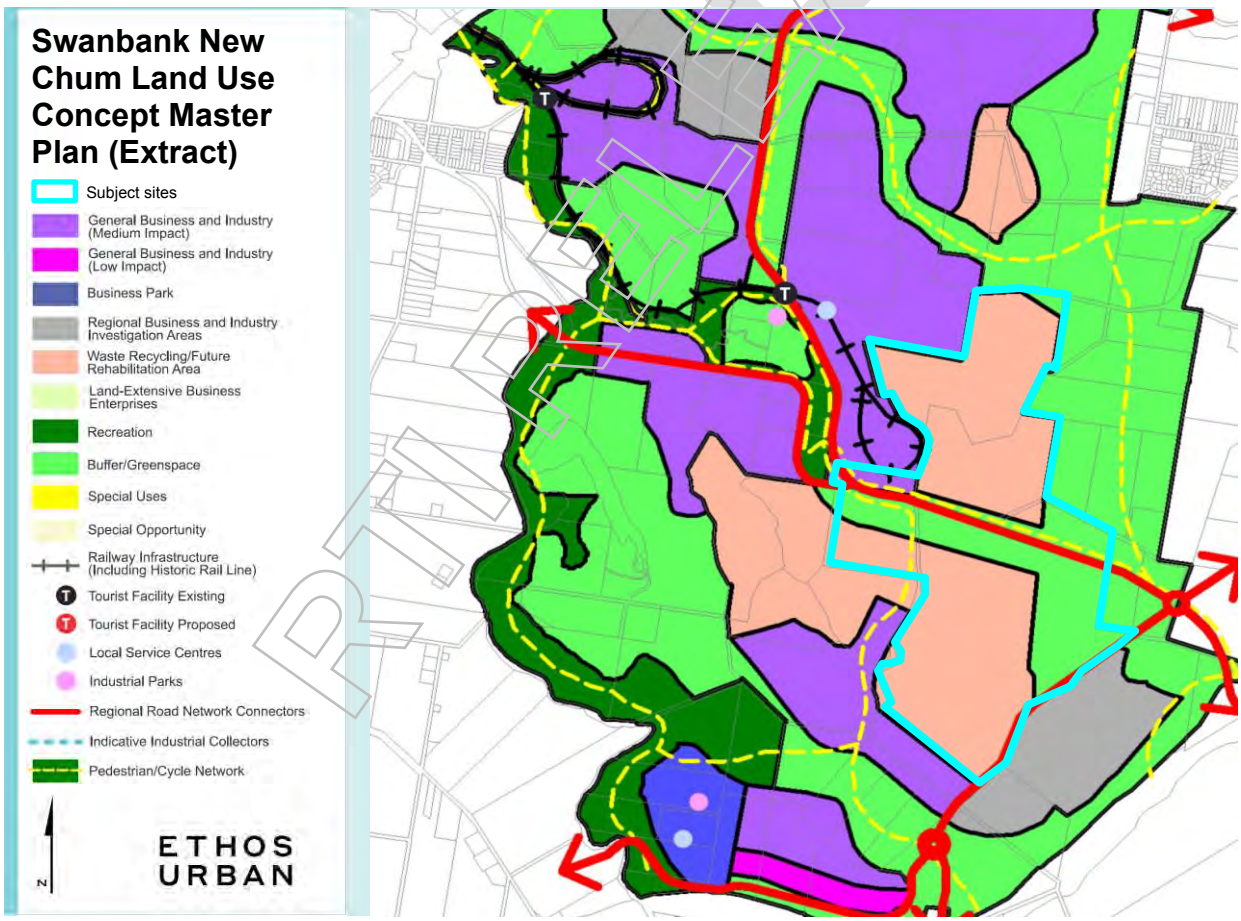

Figure 4: Swanbank New Chum Land Use Concept Master Plan (Extract)

1.3 Purpose and scope of Initial Advice Statement

The purpose of this Initial Advice Statement (IAS) is to assist the Coordinator-General in determining whether the project should be declared a 'coordinated project' under Part 4 of the *State Development and Public Works*

Organisation Act 1971 (SDPWO Act) and the level of assessment required. The IAS identifies the potential Project impacts (positive and negative) to be investigated in detail in either the Project Impact Assessment Report (IAR) or Environmental Impact Statement (EIS).

Accordingly, the IAS provides the Project information to interested and affected stakeholders and the general public. It identifies additional approvals that may be required for the implementation of the Project once the Coordinator-General assessment is complete.

1.4 Coordinated project declaration

Due to the importance of the Project, the need for a viable long term solution to waste management in South East Queensland and an alternative to traditional landfill waste management, REMONDIS believes the Project would benefit from declaration as a Coordinated Project by the Coordinator-General under Part 4 of the SDPWO Act.

The proposed approach to build and operate the resource recovery WtE facility within the existing SREWMF site is expected to significantly reduce the environmental, social and economic impacts of the Project.

REMONDIS seeks confirmation from the Office of Coordinator-General that the proposal's declaration as a 'Coordinated Project' is appropriate under section 27(2)(b) of the SDPWO Act as the IAS confirms that the Project will:

Require complex State or Commonwealth government approval requirements

A number of approvals from local, State and the Commonwealth government will be required for the Project. This will require coordination of the input of a number of regulatory agencies, which are likely to include:

- Department of Natural Resources, Mines and Energy (DNRME);
- Department of Environment and Science (DES);
- Workplace Health and Safety, Queensland (WHSQ);
- Department of Transport and Main Roads (DTMR);
- Hazardous Industries and Chemicals Branch (HICB);
- Ipswich City Council (ICC); and
- Department of Environment and Energy (DoEE).

Further, SREWMF holds a current Environmental Authority (EA) granted in December 2016 for a number of Environmentally Relevant Activities (ERA's). The operation of a WtE facility at SREWMF (Lot 101) will require an application to amend an EA to include the following ERA's:

- ERA 14 – Electricity Generation (for all WtE technology operations);
- ERA 15 – Fuel Burning (for all WtE technology operations);
- ERA 55 – Regulated Waste Recycling or Reprocessing.

Be of Strategic significance to the locality, region or the State

As a major Resource Recovery Infrastructure and Energy project requiring an investment of approximately A$400 million, the Project is expected to deliver a range of positive socio-economic impacts targeting the region but extending to other population centres in South East Queensland. These include:

- Creation of employment opportunities during the planning, design, construction and operation of the Project – with current estimates of 200 Full Time Equivalent jobs during construction and up to 70 Full Time Equivalent jobs during operation;
- Project will assist the retention of jobs in the Ipswich LGA as a result of new investment and economic activity;
- Project is a strategically significant development for Ipswich in terms of supporting the city's industrial diversification;
- Facilitation of critical infrastructure to the State in advancing the resource recovery, recycling and waste management strategy;
- Assist to achieve the Queensland State Government target for 50 per cent renewable energy by 2030;
- Project adopts technology to ensure that wastes with recoverable value are not sent to landfill and, instead, are put to beneficial use; and
- Supply base load power to the domestic market.

There will be several key environmental matters that require focused assessment to fully identify impacts and develop appropriate mitigation measures.

On the basis that the Project's scale and extent is anticipated to have known environmental impacts that are able to be managed through well understood environmental risk mitigation measures, the use of an Impact Assessment Report (IAR) process under the SDPWO Act is requested as the prudent coordinated project pathway.

It is recognised that there are two types of Coordinated Project declaration (EIS or IAR) and that an IAR process may be used if the Coordinator-General is satisfied that the environmental effects of the project do not, having regard to their scale and extent, require assessment through the EIS process.

Given the existing approval of the wider SREWMF, the current site operations, the infrastructure that currently caters to waste storage and treatment (both on site and within the locality) and the industrial nature of the Swanbank precinct, the proposal is well suited to progress under an IAR pathway.

Further, REMONDIS has a proven track record in the Ipswich region in relation to resource recovery and waste management. When the proposal is considered in the context of the existing operation and the fact that REMONDIS is Europe's second largest operator of WtE plants, operating 52 facilities that produce fuels and generate electricity and currently treats more than 4.2 million tonnes of waste per annum in Europe to convert to electricity to the grid, it is demonstrated that the proposal is a well-defined, low to medium risk project where the likely impacts are highly predictable and the REMONDIS has a well-defined proposal to avoid, minimize, mitigate and/or offset those impacts that are accepted best-practice in the WtE industry; the proposal is therefore well suited to progress via the IAR pathway.

Justification for using the more targeted IAR process is summarised in Section 7.1 (potential project impacts) and Section 8.1 (Environmental Management and Mitigation Measures).

2.0 The proponent

REMONDIS is one of the world's largest waste, water and environmental management organisations, managing recyclable material, general waste, organic matter, liquids and more problematic wastes. It has been operating since 1934.

The company employs more than 32,000 staff in over 800 business locations across 39 countries and turns over approximately AUD$8 billion per annum.

REMONDIS has a network of more than 500 sorting, treatment and processing facilities that service more than 200 million residents and collect, process and market more than 25 million tonnes of recyclable materials every year.

Sustainability and the conservation of natural resources are the central features of the company's philosophy and directly influence all of REMONDIS' business activities. Across the world, REMONDIS promotes and advances efforts to sustainably improve living conditions.

REMONDIS Australia was founded in 1982 with its first operation in Penrith, NSW. Since then, REMONDIS Australia has grown steadily, with operations in Sydney, Melbourne, Brisbane, Adelaide, Perth and in regional Australia.

In Queensland, REMONDIS employs approximately 180 people, servicing more than 7,000 commercial customers, including 9 councils, and working with a network of domestic customers.

REMONDIS is Europe's second largest operator of WtE facilities and operates 52 facilities that produce fuels and generate energy. REMONDIS treats more than 4.2 million tonnes of waste per annum and sells electricity into the European grid.

REMONDIS has extensive international experience in building and operating waste to energy plants. They own and/or operate a total of 11 large plants that utilise various types of fuel including municipal waste, refused derived fuel and biomass. Examples of some of these plants:

Oberhausen, Germany
The 720,000 tonnes per year WtE plant in Oberhausen Germany which produces up to 70MW of electricity from municipal solid waste.

WbF-Kraftwerk Plant in Lunen, Germany
A 150,000 tonnes per year biomass plant which produces 15MW of electricity primarily from wood waste

Frankfurt, Germany
525,000 tonnes per year WtE plant in Frankfurt City. The plant produces 28MW of electricity and additional heat production for Frankfurt

Bremerhaven
300,000 tonnes per year plant treating MSW located near Bremerhaven, Germany. The plant produces up to 33MW of electricity.

In Germany, REMONDIS' Lippe Plant is the focal point and the hub of its recycling activities, where 410,000MWh of energy (electricity and heat) is produced each year, including 157,000MWh from a biomass-fired power plant.

The proponent's Queensland head office is located in Rocklea at the following address:

69 Grindle Road,
Rocklea QLD 4106

3.0 Nature of the proposal

3.1 Scope of the project

The project is proposed to comprise of an integrated waste receiving, processing, recovery, and power generation facility referred to as a Waste to Energy (WtE) facility. WtE plants recover energy through the combustion of waste as the fuel for generating power – just as other power plants use coal or natural gas. The burning fuel heats water into steam to drive a turbine to create electricity. Unlike wind and solar systems, WtE plants can generate renewable baseload electricity for households and businesses that is available 24/7, 365 days a year.

At Swanbank, diverting between 300,000 and 500,000 tonnes of suitable waste away from landfill (as shown in **Figure 2** below) and into a best-practice WtE facility, REMONDIS can generate up to 50MW of electricity and extend the life of constrained landfills.

Waste will be received to the facility either for recovery and recycling in a material recovery facility, or directly for use of suitable materials as a fuel source in a WtE plant. Residues from plant emission controls systems will be processed in an on-site facility. Resulting ash from the plant will be processed through a recovery facility to extract resources such as metals and reused as a construction material or disposed to a suitable landfill.

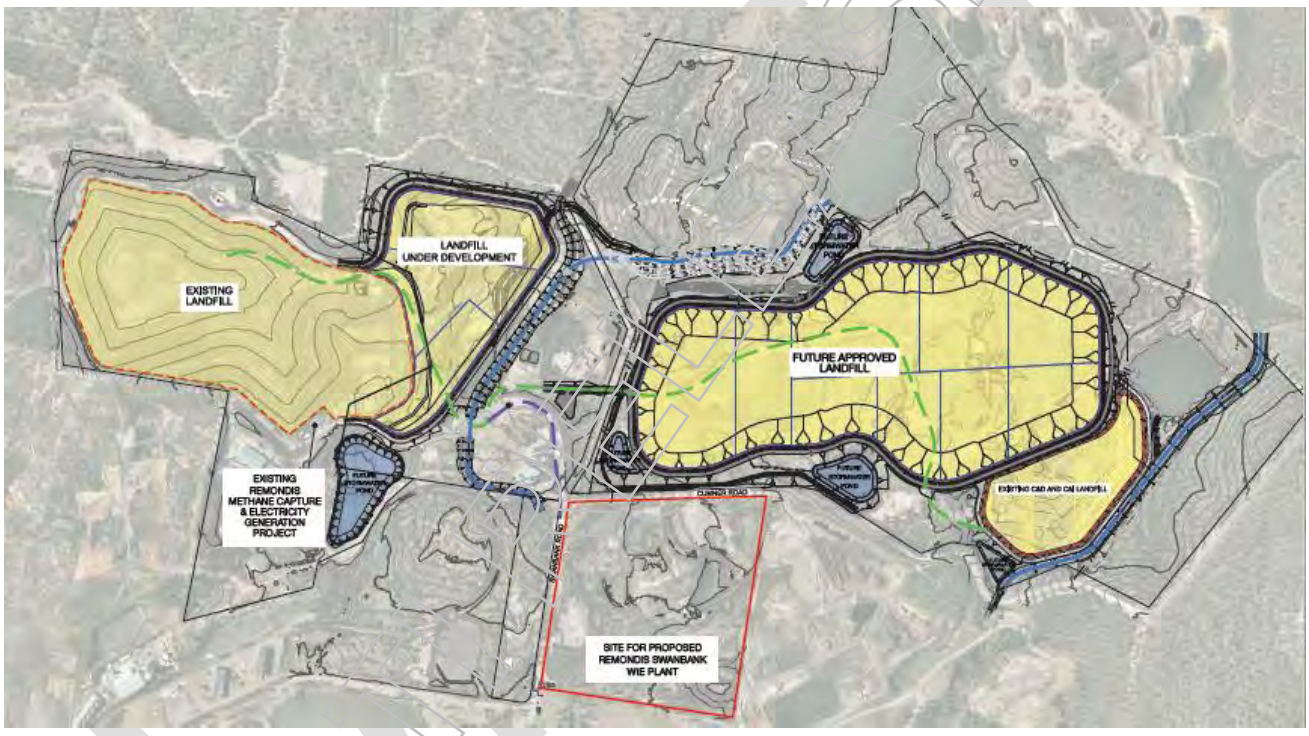

Figure 5: Swanbank landfill with proposed site for REMONDIS WtE facility shown in red

Figure 6: Artist's impression of the Waste to Energy Facility at Swanbank, Ipswich. Main building cut away to show major internal components.

Figure 7: Artist's impression of the Waste to Energy Facility. Main building cut away to show major internal components.

3.2 Land uses

Activities currently approved on the Stage 1 and 2 of the subject land include the following:

- Landfilling;
- Resource recovery and recycling of waste;
- Waste volume reduction and separation;
- Biological treatment processing;
- Chemical waste treatment (including sewerage sludge treatment);
- Thermal treatment technologies; and
- Composting and organic processing.

3.3 Project need, justification and alternatives considered

The main objectives of the proposed facility are as follows:

- To help solve the energy and waste needs of South East Queensland;
- To improve resource recovery from waste and to divert recyclables from landfill and disposal;
- To manage or reduce the need/dependency for landfill in South East Queensland.

South East Queensland faces a significant existing landfill challenge, with landfill disposal accounting for about 40% of total waste management in Australia. There are 11 landfills in South East Queensland which receive nearly 4 million tonnes of household rubbish, commercial and industrial waste, and construction and demolition waste a year.

The diversion of waste from landfill, reducing the potential for methane emissions, while also providing a form of low carbon, renewable energy, is now recognised by Government as making an important contribution to the targets for dealing with waste.

It is therefore considered that the 'Do Nothing' scenario is not appropriate given the established need for new energy generation, including a need for low carbon generation. The alternative to the proposed Development proceeding would be continued operation of traditional landfill waste management operations which have been found to be inefficient as a long term sustainable solution to South East Queensland's expanding population and waste generation.

The selection of the site for the proposed Development is directly related to its proximity to the Cunningham Highway, local electricity grid, and the direct synergies between the proposed Development and the adjoining REMONDIS SREWMF currently in operation which will provide a high percentage of the waste fuels. In addition, the Swanbank area is designated and zoned as a significant business and industrial area of the city of Ipswich and is identified as having preferred development outcomes of industry with high energy uses which will allow synergies with future industrial development in the surrounding area.

Waste to Energy technology is used across the world, with countries including Germany, Japan, China and Finland using waste to generate electricity. Diverting thousands of tonnes of suitable waste away from landfill and into a best-practice WtE facility will extend the life of South East Queensland's constrained landfills and also provide an additional, baseload electricity source for Queensland residents and businesses. Queensland has the opportunity to benefit from successful European and UK experiences and incorporate Waste to Energy as part of the solution to sustainable, best practice waste management.

3.4 Components, developments, activities, and infrastructure that constitute the project to be declared coordinated

The proposed development involves the construction and operation of resource recovery infrastructure and Waste to Energy Facility on the REMONDIS SREWMF, in an area appropriately zoned for heavy industry and adjacent to the Swanbank power station and with the infrastructure in place to operate a power station.

WtE plants recover energy through the combustion of waste as the fuel for generating power, as shown in a simple process diagram in **Figure 9** below.

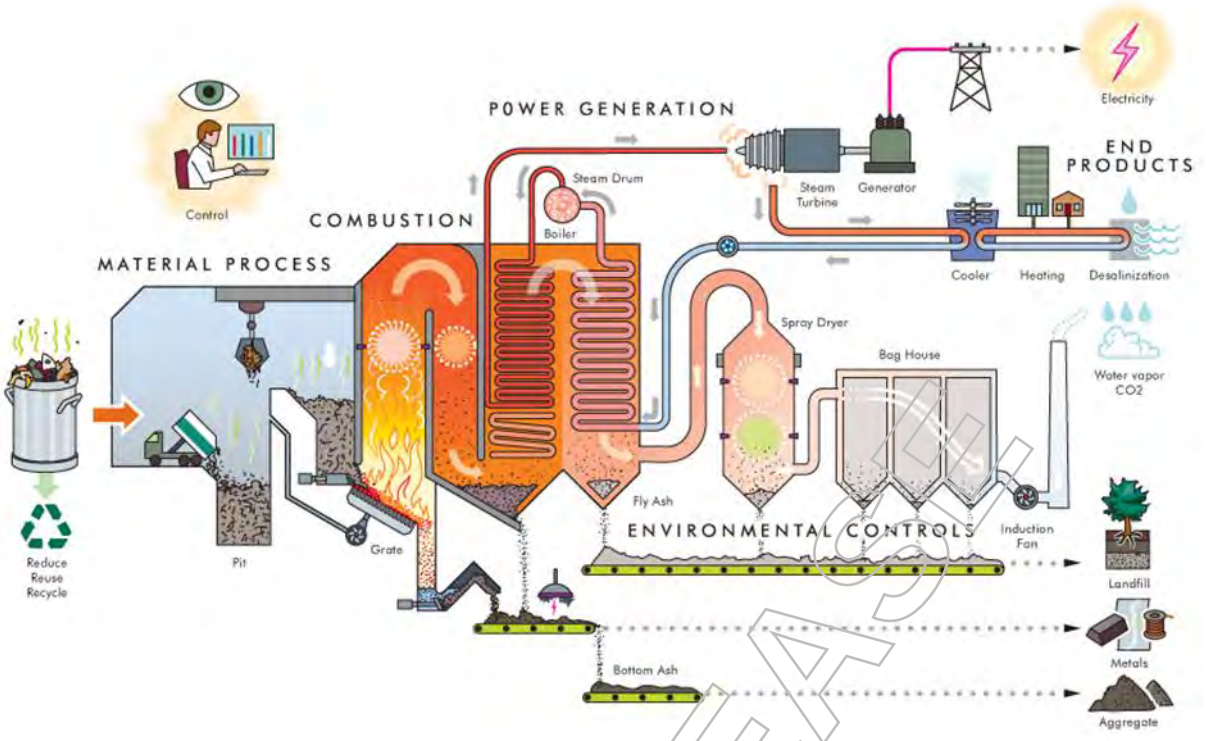

Figure 8: Simple Waste to Energy process

3.5 Process Description

Material Recovery Facility
Waste received to site in a material recovery area where the waste is sorted into recoverable and non-recoverable fractions. Recoverable waste will be collected and transported to suitable recycling facilities and non-recoverable wastes will be further sorted and transferred into the Receival / Tipping Hall.

Receival or Tipping Hall
Waste is received at the facility into the receiving or tipping hall. This hall is maintained under negative pressure to minimise dust and odour emissions. The air in the tipping hall and waste bunker area is used as combustion air for the process reducing further the risk of emissions.

Waste Bunker
The waste is tipped into a large waste bunker which has enough capacity for several days storage of waste. Waste is fed directly by crane from this bunker into the combustion chamber.

Combustion Chamber
The combustion is a highly specialised and large piece of equipment that receives and combusts waste feed in a controlled manner to ensure complete and efficient combustion.

Bottom Ash Conveyer
Ash falls from the end of the combustion grate into the bottom ash conveyer where it is transported out of the system. It is cooled with water and taken away for re-processing and re-use.

Boiler or Heat Exchange Unit
This boiler unit takes the hot air form the combustion chamber and transfers this heat to water and turns it into steam. The steam is super- heated, normally to around 430ºC and high pressures, to turn the steam turbine.

Flue Gas treatment
The flue gas treatment system receives and treats off-gases prior to release from the site. The off gases, after passing through the boiler units, will pass through several treatment steps which typically include scrubbing (for acidic gases and metals), selective non catalytic reduction (to remove NOx gases) and a baghouse filter (removes particulates).

Steam Turbine
The turbine and generator units turns the high pressure steam into electricity. The steam is condensed back into highly demineralised water and re-used in the process.

Stack
Flue gases will be emitted via a stack – the height of the stack will be determined by dispersion modelling.

Plant Outputs
Apart from electricity there are three main outputs from the WtE process:

Bottom Ash
The bottom ash is processed to recover metals and the resulting aggregate is re-used in various applications (for example: road base). Bottom ash volumes are generally 16-22% of the input waste volumes.

Fly Ash
The fly ash is collected from the boiler and emission control processes. The ash is treated at an onsite facility if required and disposed to REMONDIS' licenced landfill. Fly ash volumes are generally 2-3% of the input waste volumes.

Gas Emissions
The gas emissions leaving the stack will be monitored continuously by a computerised system that complies with IED regulations. They will also be spot tested as required by relevant regulations for various contaminants such as metals and dioxins/furans.

3.6 External infrastructure requirements

The SREWMF site can be accessed from the Cunningham Highway via Swanbank Road. Construction traffic will primarily occur via this road.

Existing power and water supply on site will be suitably meet the requirements of construction activities.

The activities of the WtE plant will require connection to the existing power grid system. This connection will be negotiated with the relevant parties prior to project commencement as it will be required to finalise design plans.

The activities of the WtE facility will require connection to the existing power grid system. This connection will be negotiated with the relevant parties prior to project commencement as it will be required to finalise design plans however the return to service of the Swanbank E Power Station presents an opportunity for the proposed WtE facility to utilise this existing infrastructure.

These connections will be undertaken in line with all necessary state and federal guidelines and permit systems. It is expected that this connection will extend past the boundaries of the existing Swanbank facility as required by the infrastructure system.

3.7 Timeframes for the project

The proposed commencement and completion of the WtE facility is outlined in the table below.

Table 1: Timeframe

Activity	Timeframe
Coordinated project and DES approvals.	2018-2019
Detailed Design and Approvals.	2019-2020
Construction and quality control.	2021-2023
Implementation and site operations commence.	2024-2025

3.8 Construction and operational processes

Overview of key construction and operational requirements:

- Access to water supply;
- Road network;
- Waste feedstocks;
- Connection to power grid;
- Environmental testing and guidelines.

The key project components and activities required to provide the Resource and Recovery and WtE facility at Swanbank include:

- Construction and Enabling Works:
  - Site establishment;
  - Bulk earthworks;

  - Piling and foundations;
  - Services location and reticulation;
  - Internal and external road works; and
  - Car parking and other civil infrastructure.
- Main Construction Works:
  - Site layout and building works;
  - Structure works:
    - Resource recovery area;
    - Transport/loading infrastructure for the transport of recyclables;
    - Tipping hall;
    - Waste bunker;
    - Grate;
    - Boiler house;
    - Flue Gas treatment;
    - Turbine hall;
    - Ash conveyor belt;
    - Stack;
    - Ash processing.
- Weighbridges;
- Building Materials/Finishes;
- Office and amenities for staff and contractors;
- Parking and traffic management infrastructure;
- Landscaping and environmental development to support local ecosystems.

3.9 Workforce requirements during the construction and operation

Workforce numbers are estimated to be up to 200 Full Time Equivalent jobs during construction and up to 80 Full Time Equivalent jobs during operation.

3.10 Economic indicators

Based on concept design work undertaken to date, the Project's capital expenditure is approximately $400 million. The cost estimate will be further developed as part of the Project's detailed design process.

3.11 Financing requirements and implications

The proposed REMONDIS WtE facility will be a private sector investment. The project is not reliant on the Queensland State Government Resource Recovery Industry Development Program (RRIDP). REMONDIS has the necessary capacity to fund the project.

4.0 Location of the key project elements

4.1 Location

The SREWMF is located at 66-114 Blackheath Road SWANBANK QLD 4306 and is legally described as:

- Lot 101 on RP 839072;
- Lot 102 on RP 839072;
- Lot 103 on SP 189609;
- Lot 104 on RP 839073;
- Lot 3 on RP 214256.

The project area is located within the local context is shown below in **Figure 10.**

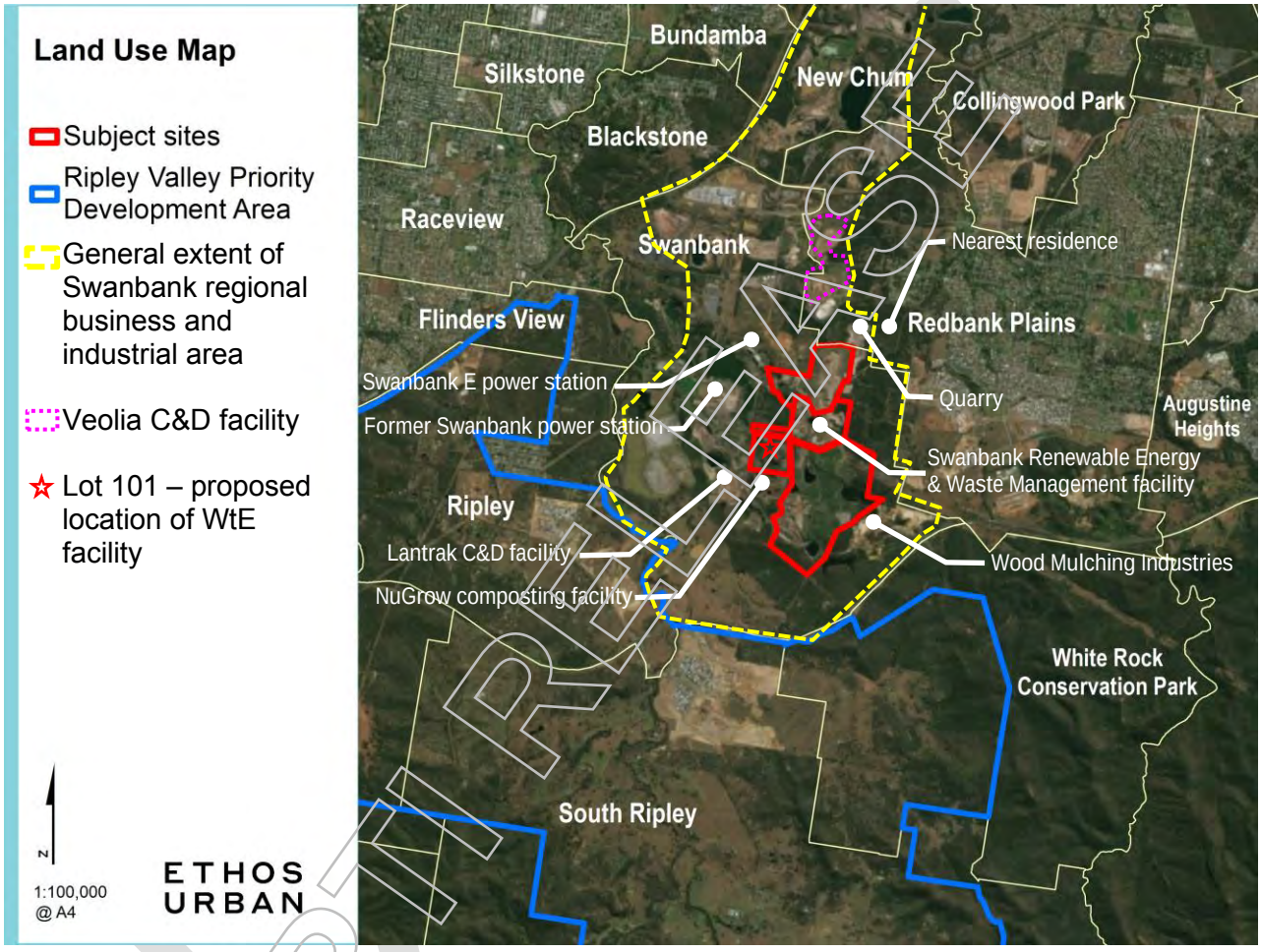

Figure 9: Surrounding features

4.2 Tenure

The proposed WtE facility is to be located on Lot 101 on RP 839072 however the proposal will include with wider SREWMF which includes Stage 1 (Lot 103 on SP 189609 and Lot 104 on SP 839073) and Stage 2 (Lot 101 and 102 on RP 839072 and Lot 3 on RP 214256).

The SREWMF is owned freehold by REMONDIS and is surrounded by freehold land. The key parcels of land identified above will continue to utilised in association with the Resource and Recovery and WtE facility. The site is zoned RBIA02 - Regional Business & Industry Investigation (New Chum) under the provisions of the Ipswich Planning Scheme, located within the City of Ipswich Local Government Area.

5.0 Description of the existing environment

5.1 Natural environment

5.1.1 Land

The SREWMF and the area around the Project site are located within the Swanbank regional business and industrial area as defined in the Ipswich City Plan and are characterised by disturbance from former coal mining operations and other ongoing industrial activities.

The entire site is included in the Regionally Significant Business Enterprise and Industry Area under the planning scheme. Within this area, Lots 101, 103 and 104 are located within the Regional Business and Industry Investigation Zone. Lot 102 is also partly included in this zone, with the eastern part of this lot included in the Regional Business and Industry Buffer Zone. Lot 3 is included in the Regional Business and Industry (Medium Impact Sub Area) Zone.

These areas primarily accommodate regional business enterprise and industry employment opportunities, as well as the buffer areas for these uses, that are generally compatible and create a high standard of amenity. Although the proposed land use is not typically associated with high amenity, it is consistent with and will form part of the existing on-site Swanbank landfill operations.

The zoning for the site, as shown below in **Figure 11**, is also consistent with the inclusion of the site in the Swanbank New Chum Land Use Concept Master Plan, where the site is identified as being part of the waste recycling/future rehabilitation, general business and industry (medium impact) and buffer/greenspace areas.

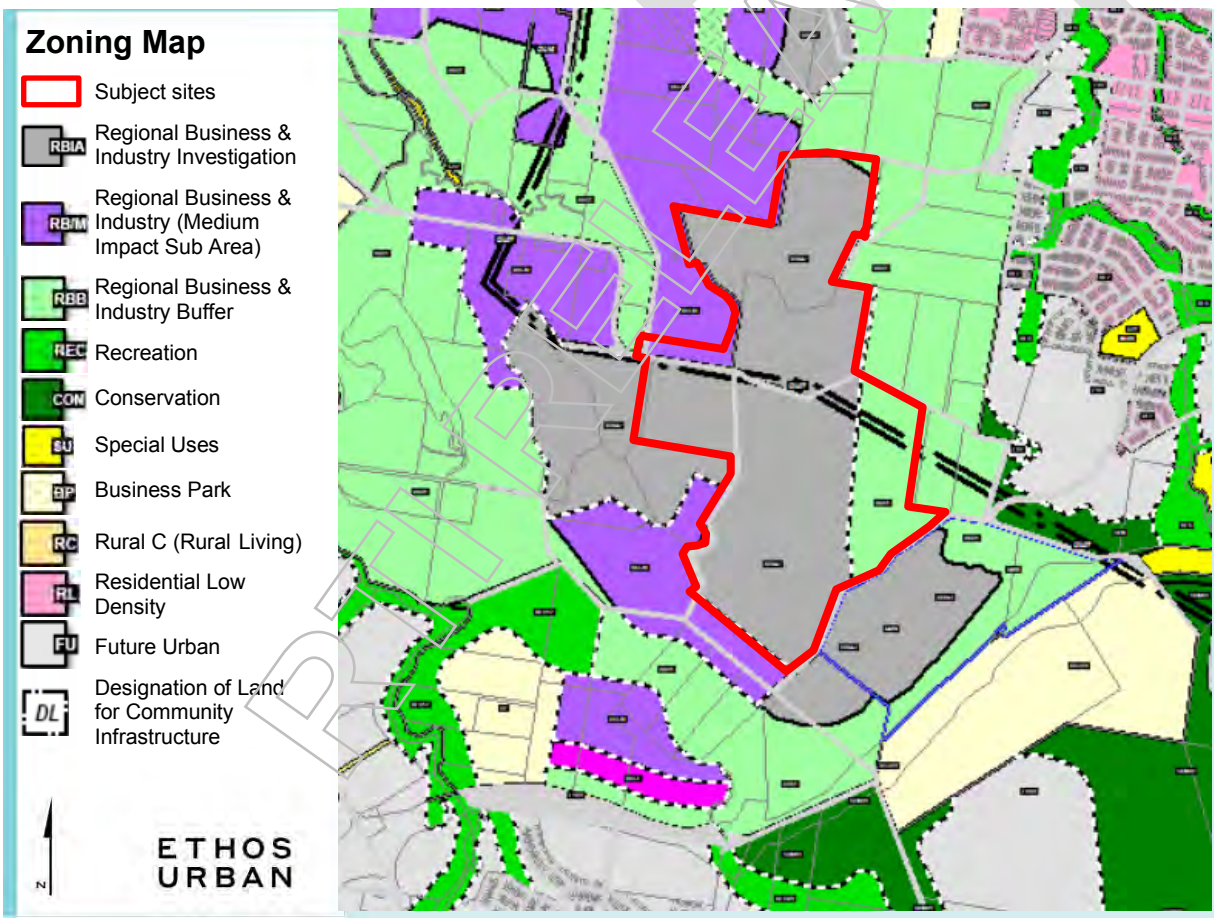

Figure 10Zoning Map

Figure 11 Site Aerial with Approved Stages of SREWMF

The subject site is also included in the following planning scheme overlays:

- Key Resource Areas, Buffers and Haul Routes (OV02): The subject site includes key resource areas and haul routes/buffers;
- Mining Influence Areas (OV03): The subject site includes mining influence constrained areas, areas of surface disturbance (including open cut mining) and areas that have been affected by underground mining (including shafts and tunnels);
- Difficult Topography (OV04): The subject site includes slopes >25%;
- Defence (Area Control) Regulations and Obstruction Clearance Surfaces (OV7a): The subject site is included in the 45 and 90 metre maximum building height limitation areas;
- Operational Airspaces, Wildlife Attraction and Lighting Issues (OV07b);
- Swanbank Power Station Buffer (OV10);
- High Pressure Oil and Gas Pipeline (OV11): Lot 104 includes a gas pipeline and associated buffer area; and
- High Voltage Electricity Transmission Lines (OV13).

As previously identified, the site incorporates the following lots the form the existing operations:

- Lot 103 on SP 189609 – is currently used for landfill support operations including site offices, weighbridge and works depot;
- Lot 104 on RP 839073 – is currently used for Stage 1 operations, including waste disposal and landfill gas electricity generation;
- Lot 102 on RP 839072 - the location for the proposed Stage 2 landfill. Some Construction & Demolition (C&D) and Commercial and Industrial (C&I) waste disposal currently occurs within the Stage 2 Hardfill area;
- Lot 101 on RP 839072 – proposed location of the WtE facility;

The following key industrial features surround the SREWMF site:

- Swanbank E gas-fired power station to the west;
- the former Swanbank B coal power station and associated cooling pond is located to the west;
- a construction and demolition (C&D) waste management facility, operated by Lantrak, is located to the south west;
- a C&D waste management facility, operated by Veolia Environmental Services, is located to the north (no longer operational);
- a construction and demolition (C&D) landfill, operated by Biorecycle, is located to the west;
- a waste transfer station, operated by Biorecycle, is located to the west;
- a quarry is located to the northeast, owned by PGH;
- a composting facility, operated by NuGrow, is located to the southeast;
- extractive industries and other waste management operations;
- Other nearby major land uses include electricity generation at the Swanbank Power Station.

As demonstrated above, the proposal is entirely consistent with the nature of land uses within the locality.

The site is located on a low, north to south orientated ridge, which extends from a range of hills (up to 350 metres elevation) to the south of the site. The topography of the area can generally be described as low hills and includes patches of vegetation and several drainage paths, whilst being characterised by the mining activities that previously occurred on the site.

The site is currently connected to the local water reticulation network, electricity and telecommunications.

The SREWMF is separated from the nearest proposed residential areas by the Regional Business and Industry Buffer, which would help to reduce potential amenity impacts associated with industrial activities. The nearest existing and future residential locations are approximately 1,500m from the proposed site.

The SREWMF is located within an area characterised by and planned for industrial land use under the planning scheme, as indicated in **Figure 13**.

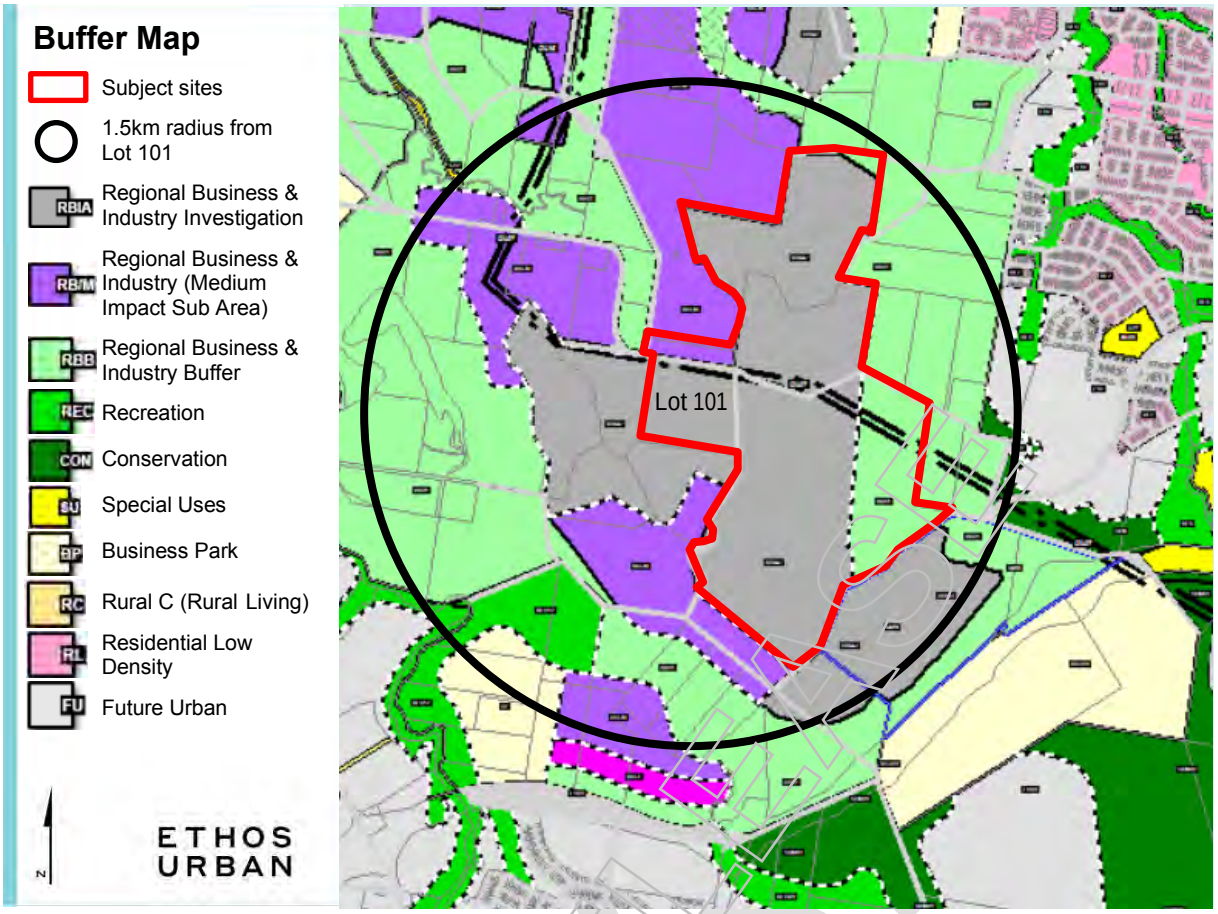

Figure 12 Buffer Map

Areas to the east of the SREWMF are zoned as an emerging community, and are forecast to be developed within the next ten years. The nearest residents are located approximately 1,500 m to the east of the Lot 101.

The Ripley Valley PDA is located to the south of the SREWMF as shown in and some areas of the PDA are expected to be developed over the next ten years.

The visual character and landscape of the SREWMF, located within the Swanbank industrial area, is characterised by former coal mining and more recent industrial activity.

The SREWMF is located at the end of Swanbank Road. Typically, traffic at the site is destined for the facility, and there would be minimal passing traffic. The existing landfill is visible from the end of Blackheath Road, which is a no-through road, and would not receive through traffic.

5.1.2 Water

Surface water features

The SREWMF site is located on a low, north-south running ridge, which extends from a mountain range (up to 350 m elevation) to the south of the site. The Bremer River is located approximately 8.5 km north of the site, and Bundamba Creek is approximately 2.5 km west of the site. The topography of the area can generally be described as low hills.

The site is located in the west-draining catchment of Oaky Creek; runoff form the site flows to the Swanbank Power Station cooling water dam located on Oaky Creek. Oakey Creek flows into Bundamba Creek approximately 1 km downstream of the cooling water dam, and Bundamba Creek flows into the Bremer River approximately 14.5 km downstream from there.

Bundamba Creek flows through a modified catchment consisting of grassland and sections of naturally vegetated channel through urban areas. Six Mile Creek is northeast of the existing SREWMF Stage 1 landfill, and does not receive runoff from the site.

Regional flooding regime

The site is located at the head of the Oaky Creek/Bundamba Creek catchments, and is outside the Bremer River floodplain. Flood modelling undertaken by Ipswich City Council indicates that Lot 101 is not affected by regional flooding from the Bremer River or other waterway.

Flooding Plan to be Inserted

Climate and meteorology

This section describes the existing climate for the Swanbank area. Climate data is readily available from the Bureau of Meteorology (BOM) from the Amberley Allied Meteorological Office (AMO) weather station, situated 11 km west of the SREWMF. Records of climate data are available for the AMO weather station from 1941; this significant historical collection of data provides a reliable understanding of climatic averages.

Temperature

The Swanbank facility is located in a subtropical region of Australia and experiences varying climates over the year. Warm and humid summers are experienced with temperatures typically varying from approximately 19°C to 31°C, with highs reaching 44°C and lows reaching 19°C. Winters experienced in this area are typically mild and dry with temperature varying from 5°C to 22°C. Lows experienced during winter have been as low as -5°C and as high as 33°C. Recorded monthly temperatures are represented in **Figure 15**.

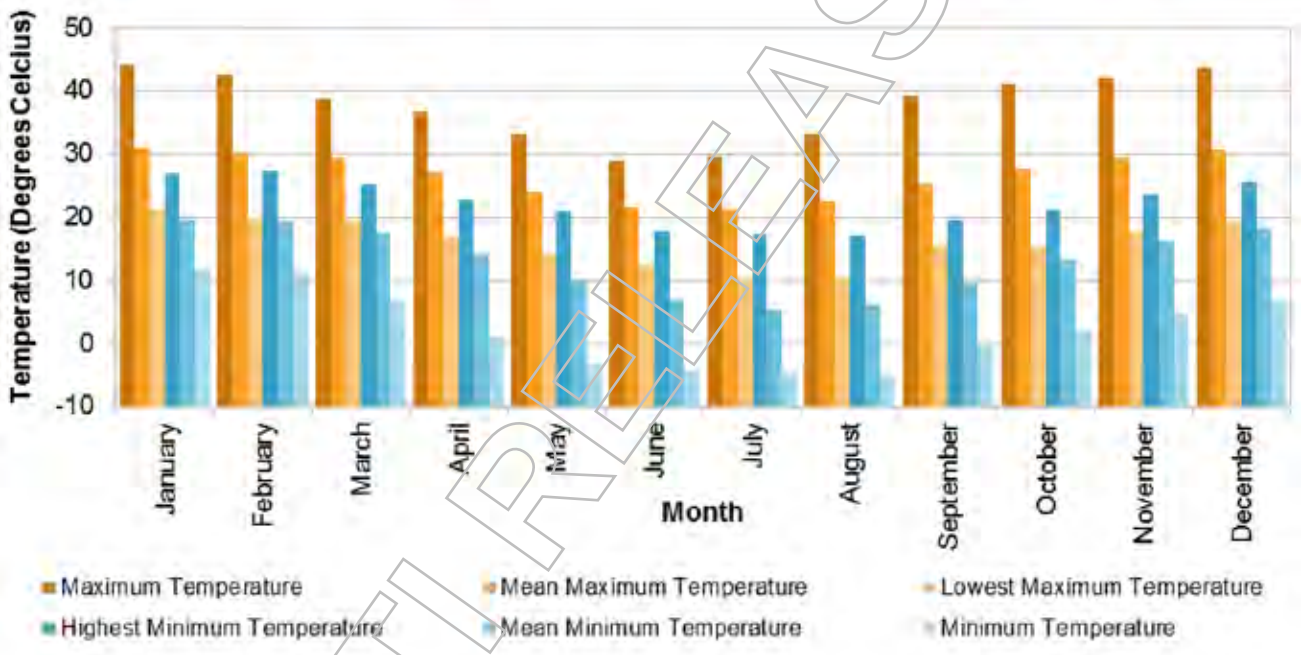

Figure 13 Monthly temperature statistics

Precipitation

The area receives greater volumes of rainfall in the warmer months and less in the cooler months, although this can vary and the cooler months can be known to produce wet periods, particularly in autumn. The warmer months in southeast Queensland typically produce a wetter climate because of the increased humidity in the atmosphere.

The highest daily rainfall for this region was in January 1974 with 240 mm. The monthly rainfall data for AmberleyAMO is provided in **Figure 16**.

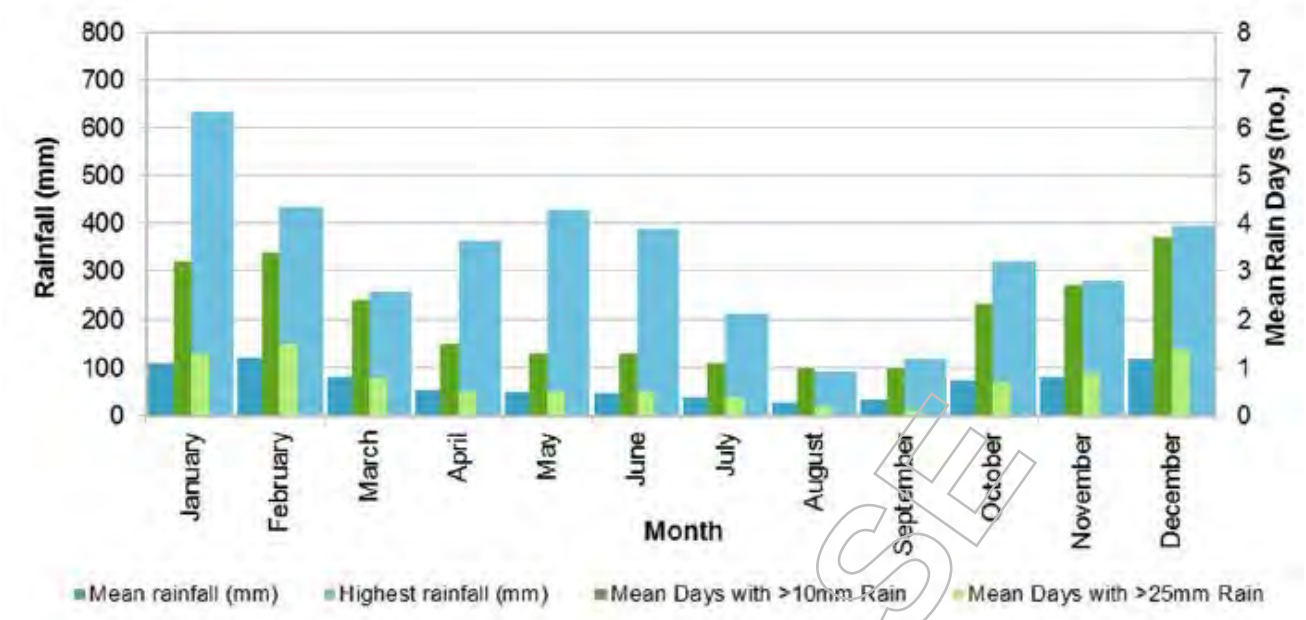

Figure 14 Monthly rainfall statistics

Wind

Wind speeds vary by season and throughout the day. The mean wind speeds for 9 am and 3 pm are provided in **Figure 17** to show the variation of wind speeds throughout the year and between morning and afternoon.

Afternoon wind speeds are typically 6 to 10 km/h greater than those in the morning, as shown in **Figure 17**. The historical records indicate a seasonal variation in wind speed, similar to temperature and rainfall. Typically east to south easterly winds are more dominant in the warmer months in the morning, shifting to east to north easterly in the afternoons. The cooler months receive more dominant winds from the south and west.

Figure 15 Monthly wind statistics

Noise / Vibration, light and air quality

A further Air Quality Impact Assessment will be prepared as part of the next phase of the application.

5.1.3 Flora and Fauna

A detailed Ecological Impact Assessment in relation to the proposed use of Lot 101 for the purpose of a WtE facility will prepared as part of the detailed documentation phase of the application.

5.2 Social and economic

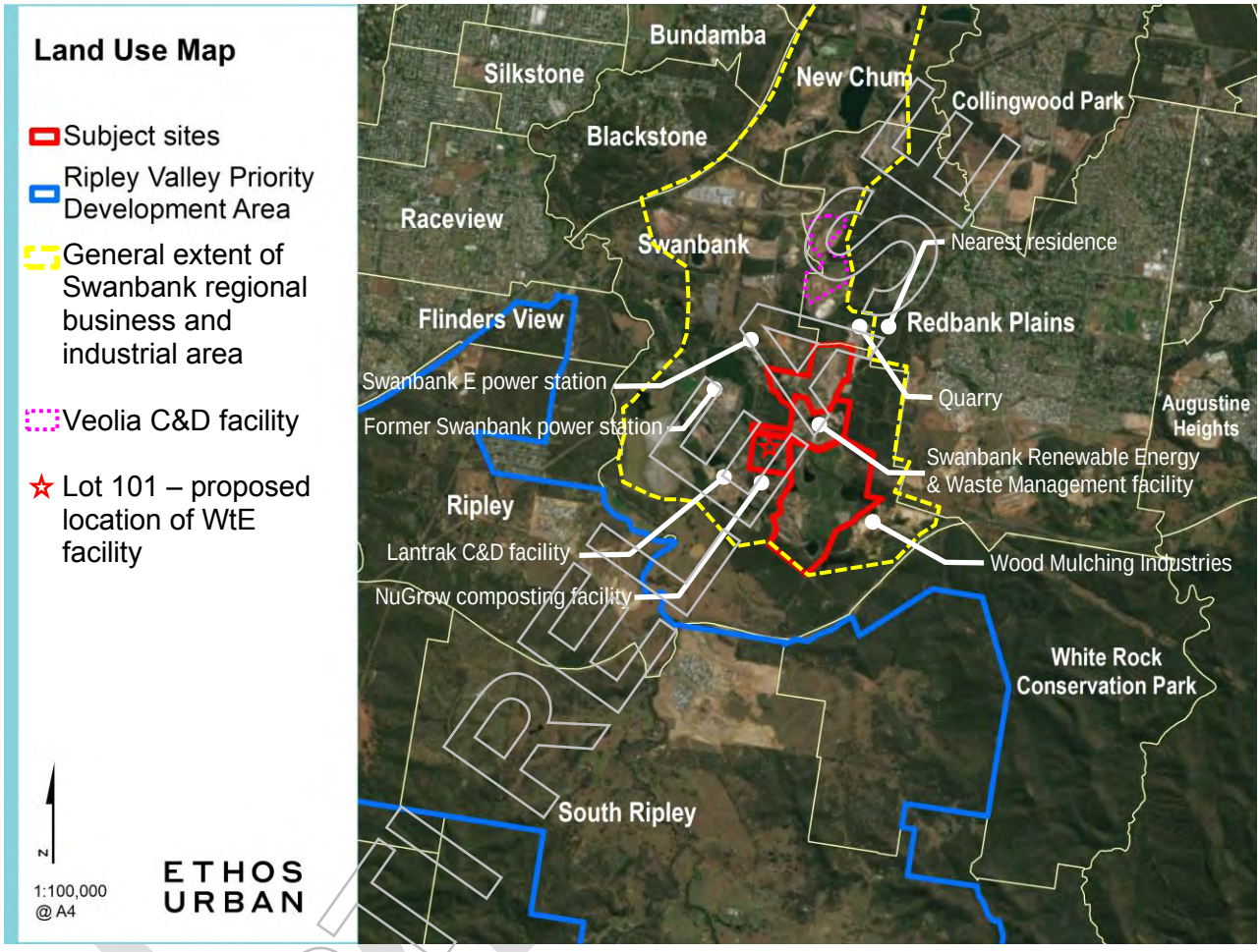

Figure 16 Surrounding features

Ripley Valley to the south, in its current form, exists as a small community of under 1,000 residents. The Ripley Valley Priority Development Area (PDA) has been identified by Economic Development Queensland (EDQ) is an opportunity to provide approximately 50,000 dwellings to house a population of approximately 120,000 people however the implementation plan for the does not envisage the forecast population to eventuate for upwards of 25-30 years.

The more established suburb of Redbank Plains is located to the east of the SREWMF, beyond the Regional Business and Industry Buffer zone to nearby sensitive land uses, as shown in **Figure 20** below.

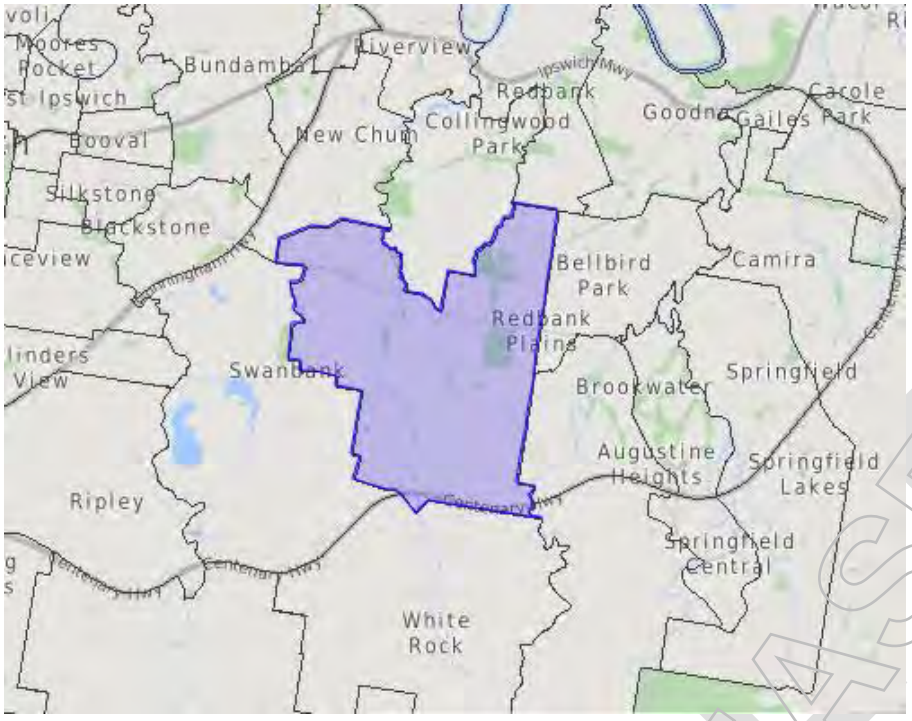

Figure 17 Redbank Plains ABS

In review of the 2016 Australian Bureau of Statistics Census Data for Redbank Plains:

- There were 19,299 people in Redbank Plains;
- The median age of people in Redbank Plains (State Suburbs) was 27 years;
- 6,367 private dwellings.

The Estimated Resident Population growth percentage in Redbank Plains has been 4.4% since 2011, marginally more than the more than the 3.2% for the Ipswich City Local Government Area (LGA).

This population growth data, both for nearby impacted communities and the wider Ipswich LGA, indicates that there will be continued impacts associated with waste management unless an alternative to existing practices can be implemented.

Accommodation and housing

There is not anticipated to be any material impacts on accommodation and housing as a result of the Project. The Project is located within an identified Regional Business & Industry Investigation zone and will not result in a loss of accommodation or housing.

5.2.1 Cultural heritage (Indigenous and non-indigenous)

Aboriginal cultural heritage is recognised, protected and conserved under the provisions of the *Aboriginal Cultural Heritage Act 2003,* which is administered by the Department of Aboriginal and Torres Strait Islander Partnerships (DATSIP).

A search of the DATSIP Cultural Heritage Database and Register did not identify any cultural heritage site points in proximity of the Subject Site.

The *Queensland Heritage Act 1992* provides for the conservation of Queensland's cultural (non-indigenous) heritage. No recorded places were identified within proximity to the Subject Site (i.e. that have achieved registration under the provisions of the *Queensland Heritage Act 1992*).A search of the Australian Heritage Register was also undertaken. There are no places of heritage significance recorded in proximity of the Subject Site.

5.3 Built environment

The proposal is entirely consistent with the nature of land uses within the locality. The Swanbank Regional Business and Industry Investigation Zone has been identified by Council for land uses consistent with the SREWMF and has

applied an appropriate Regional Business and Industry Buffer zone to nearby sensitive land uses to help to reduce potential amenity impacts associated with industrial activities with he nearest future and proposed residential locations approximately 1,500 metres from the proposed site (Lot 101).

There are no existing declared coordinated projects within the Ipswich City Local Government Area.

5.4 Traffic and transport

The project area is serviced by a range of State controlled roads and Council roads as shown in **Figure 21** below.

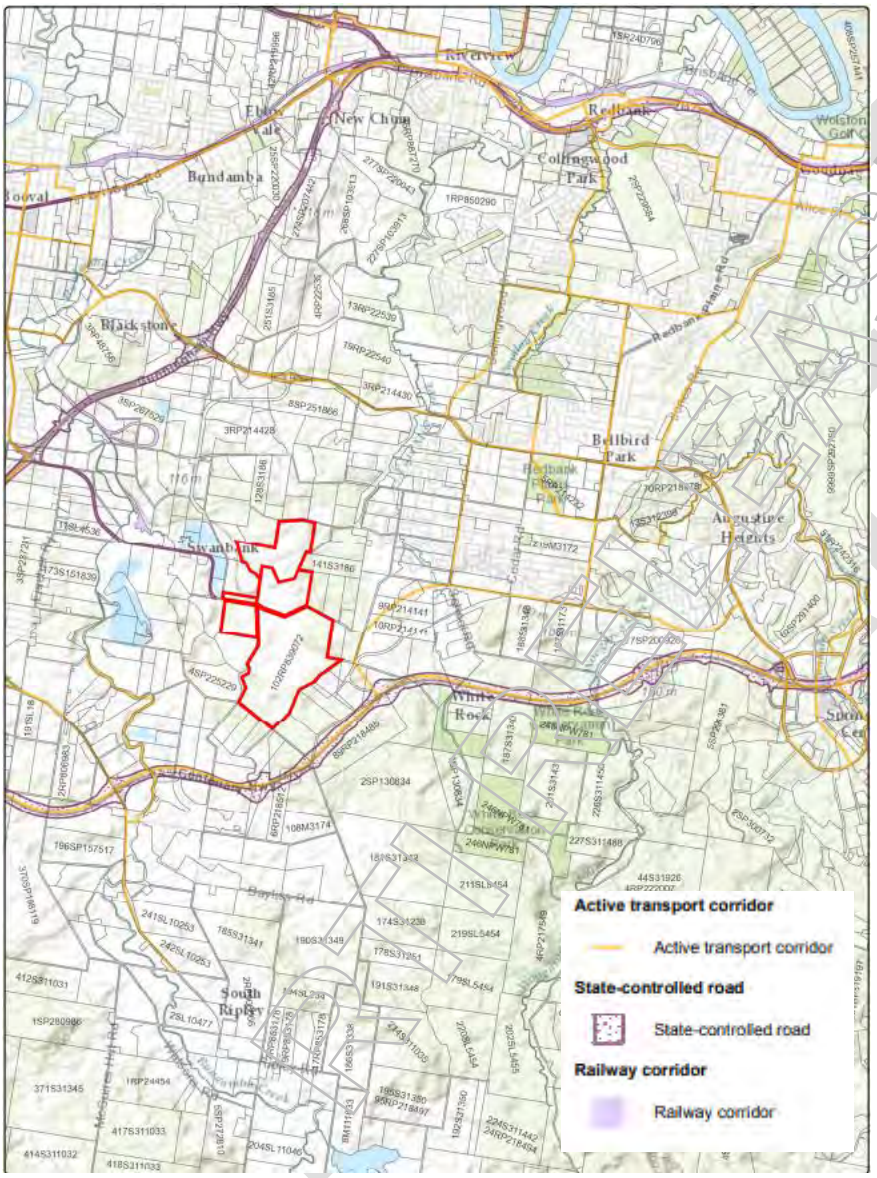

Figure 18 State controlled roads and council roads

Access to the site will continue to be via Swanbank Road and Cunningham Highway, with the proposal incorporating a new weighbridge and entry to Lot 101 on RP 839072.

Average Annual Daily Traffic (AADT) count data prepared by the Department of Transport and Main Roads (DTMR), indicates heavy vehicles accounted for approximately 33% of the 1,455 AADT estimated along Swanbank Road in 2013. This relatively high proportion of heavy vehicle traffic is largely due to the industrial nature of developments in the area. Since 2013, the coal-fired section of Swanbank Power Station was decommissioned. This is expected to have resulted in some reduction in AADT along Swanbank Road (GHD, 2015).

These vehicle use of Swanbank Road/Swanbank Coal Road and the Swanbank Road/Site Access/ Unnamed Road intersections and the associated numbers are not envisaged to change significantly as a result of the Project given the Residual Waste Fuel for the WtE facility is from the same source as existing landfill waste.

5.5 Land use and tenure

5.5.1 Key local and regional land tenures

The Swanbank Renewable Energy and Waste Management Facility is freehold and is surrounded by freehold land as shown in **Figure 22** below.

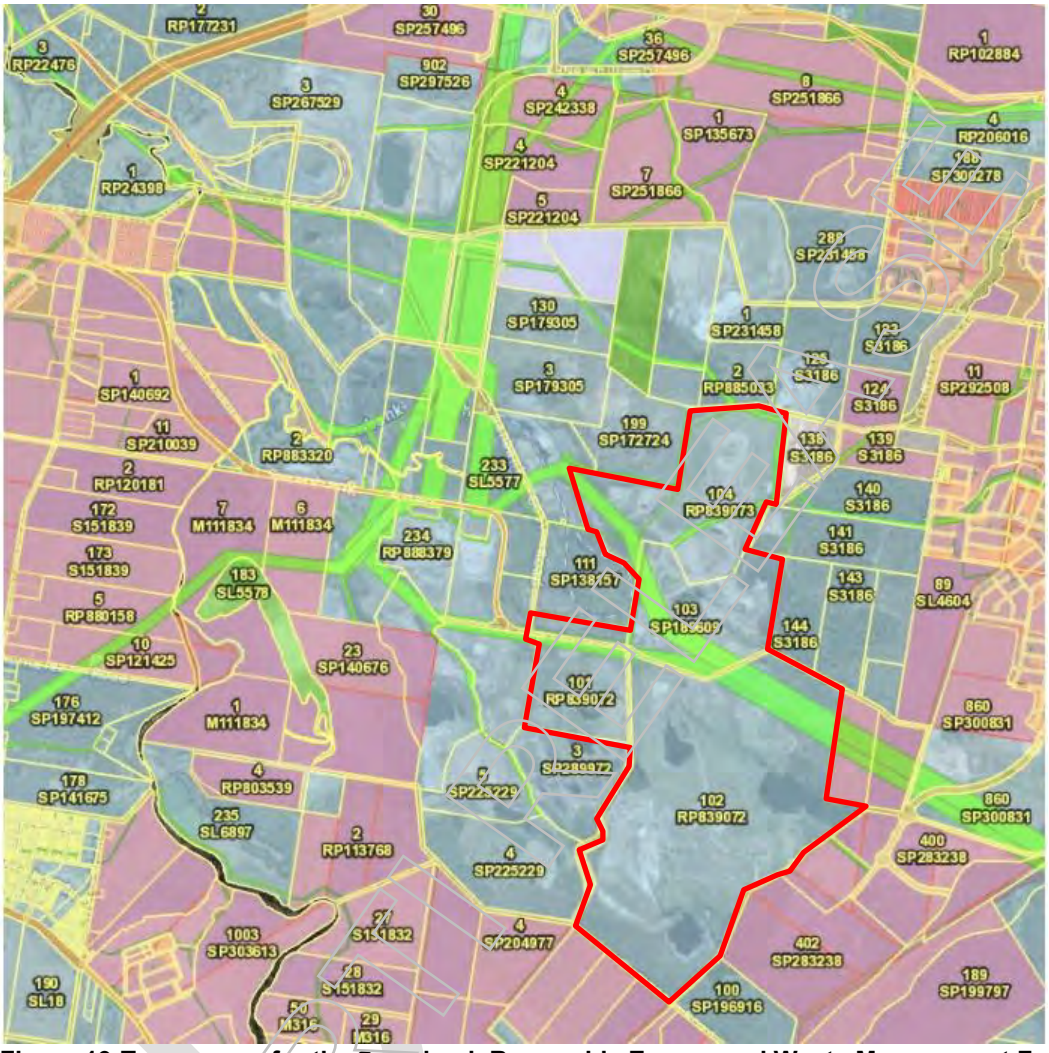

Figure 19 Tenure map for the Swanbank Renewable Energy and Waste Management Facility

The SREWMF is located within an area characterised by and planned for industrial land use under the planning scheme.

Areas of residential development exist and are proposed to the east and south, although most of this is more than 2 km from the SREWMF.

The footprint areas are zoned Regional Business and Industry Investigation under the Ipswich City planning scheme.

The SREWMF is separated from the nearest proposed residential areas by the Regional Business and Industry Buffer, which would help to reduce potential amenity impacts associated with industrial activities.

Areas to the east of the site are zoned as an emerging community, and are forecast to be developed within the next ten years.

The Ripley Valley PDA is located to the south of the SREWMF and some areas of the PDA are expected to be developed over the next ten years.

5.5.2 Native title

There is currently no registered Cultural Heritage Body for the subject site, on which the Project works will occur. The identified lots subject to the Project are all freehold title and are not identified as unallocated crown land.

5.6 Planning instruments, government policies

The following section provides an overview of the key legislation, policies and plans considered relevant to the Project. A detailed list of the likely project approvals, and the relevant legislation is provided at **Appendix A**.

5.6.1 Commonwealth

Environment Protection and Biodiversity Conservation Act 1999

The *Environment Protection and Biodiversity Conservation Act (Cth) 1999* (EPBC Act) is the Commonwealth Government's central piece of environmental legislation. The EPBC Act protects nine Matters of National Environmental Significance (MNES) including:

- listed threatened species and communities;
- listed migratory species;
- Ramsar wetlands of international importance;
- Commonwealth marine environment;
- world heritage properties;
- national heritage places;
- the Great Barrier Reef Marine Park;
- nuclear actions;
- a water resource, in relation to coal seam gas development and large coal mining development.

The EPBC Act provides a process for environmental assessment and approval of proposed actions that may have a significant impact on MNES, known as 'controlled actions'.

Under the EPBC Act, proponents proposing an action that may impact upon a MNES must refer the proposal to the Commonwealth Department of the Environment and Energy (DEE). This referral is used by the Commonwealth Minister for Environment to assist in deciding whether the proposal requires assessment and approval under the EPBC Act.

If the Project is deemed to be a controlled action it will be assessed under the EPBC Act in accordance with the Bilateral Agreement between the Commonwealth and the State of Queensland under Section 45 of the EPBC Act relating to environmental assessment.

The application of the EPBC Act to this Project is discussed further in **Section 7.5**.

Native Title Act 1993

The *Native Title Act (Cth) 1993* (NT Act) provides for the recognition and protection of native title rights for Australia's Indigenous people, as well as providing a legislative approach to address issues concerning native title. The legislation provides for the determination of native title claims, the treatment of future acts, which may impact on native title rights, and consultation and/or notification of relevant native title claimants where future acts are involved.

Aboriginal and Torres Strait Islander Heritage Protection Act 1984

The purpose of this act is to preserve and protect places, areas and objects of particular significance to Aboriginal people. This act is normally implemented through the provisions of the *Queensland Aboriginal Cultural Heritage Act 2003*.

5.6.2 State

The following Queensland state legislation could be triggered by the Project and will be considered in the approvals process.

Aboriginal Cultural Heritage Act 2003

The purpose of the *Aboriginal Cultural Heritage Act 2003* (ACH Act) is to provide for the effective recognition, protection and conservation of Aboriginal cultural heritage.

Biosecurity Act 2014

The *Biosecurity Act 2014* came into effect on 1 July 2016 and is designed to ensure consistent, modern, risk based and less prescriptive approach to biosecurity in Queensland.

Environmental Protection Act 1994

The *Environmental Protection Act 1994* (EP Act) is the principal environmental regulatory framework for environmental management and protection in Queensland. The EP Act objective is to protect the natural environment and associated ecological systems and processes while allowing for continued sustainable development.

The EP Act requires the Project's potential environmental impacts to be assessed and that measures be proposed to avoid or minimise any adverse impacts. To achieve this, the EP Act regulates activities that will or may have the potential to cause environmental harm.

Environmental Protection Regulation 2008

The EP Regulation supports and supplements the environmental assessment process outlined under the EP Act. It also specifies environmentally relevant activities (ERAs) that require approval, associated thresholds, specific approval details and reporting requirements.

Environmental Offsets Act 2014

The *Environmental Offsets Act 2014* (EO Act) coordinates the delivery of environmental offsets across jurisdictions. The EO Act purpose is to offset significant residual impact on prescribed environmental matters.

The *Environmental Offsets Regulation 2014* provides details on prescribed activities regulated under existing legislation and prescribed environmental matters to which the Act applies.

Land Act 1994

The Land Act 1994 (Land Act) provides the framework for State land, such as leasehold, roads and reserves and their subsequent management.

Under Chapter 4, Part 4 of the Land Act, a permit to occupy is required for the occupation of a reserve, road or area of unallocated State land. An application for a temporary road closure may also be required.

Local Government Act 2009

The purpose of the *Local Government Act 2009* (LG Act) is to outline the extent of local government responsibilities and powers within their respective jurisdictions. The Act provides local governments with the power to enact and enforce laws within the relevant local government area. These laws usually relate to the protection of amenity or other values important to communities including local roads, noise, light, waste management, vegetation, animals, parks and fencing.

Nature Conservation Act 1992

The *Nature Conservation Act 1992* (NC Act) is administered by EHP and regulates the environmental impacts on plants and animals through the protected plants framework and species management program requirements.

Developments in areas mapped as a Priority Koala Assessable Development Area or Koala Assessable Development Area need to be assessed under the *South East Queensland Koala Conservation State Planning Regulatory Provisions* which was developed under the *Sustainable Planning Act 2009.*

The subject site is not located within either of these priority area types, and as such the *South East Queensland Koala Conservation State Planning Regulatory Provisions* will not be triggered.

Nevertheless, requirements identified by the *Nature Conservation (Koala) Conservation Plan 2006* should be considered, including sequential clearing, having a koala spotter in attendance, and limits on the amount of habitat that can be cleared at any one time.

Planning Act 2016

The *Planning Act 2016* (Planning Act) establishes a system of land use planning (planning), development assessment and related matters that facilitates the achievement of ecological sustainability in Queensland. The Act coordinates development assessment in association with many of the other acts outlined below.

The Planning Act:

- manages the process by which development takes place, including ensuring the process;
- is accountable, effective and efficient and delivers sustainable outcomes;
- manages the effects of development on the environment (including managing the use of premises);
- coordinates and integrates planning at local, regional and state levels.

The assessment of the Project will consider the State Planning Policy (including the Queensland Plan) and South East Queensland Regional Plan, which applies to the area in which the Project is located.

Queensland Heritage Act 1992

The *Queensland Heritage Act 1992* (Heritage Act) protects heritage areas that are considered to be of State significance and are placed on the Queensland Heritage Register, administered by the Queensland Heritage Council. Local heritage is also addressed in the Act, with local governments being required to establish their own heritage registers.

State Development and Public Works Organisation Act 1971

The *State Development and Public Works Organisation Act 1971* (SDPWO Act) provides a framework for coordinated and environmentally responsible infrastructure planning and development to support Queensland's economic and social progress. The SDPWO Act provides the Queensland Coordinator-General with the power and responsibility to assess and authorise the most significant and complex projects.

Section 26 of the SDPWO Act permits the Queensland Coordinator-General to declare a project to be a 'coordinated project' for the purpose of requiring the proponent to prepare an EIS or an IAR.

The preparation of an IAR or EIS in accordance with Part 4 of the Queensland SDPWO Act also satisfies the requirements of Section 8 of the Commonwealth EPBC Act.

Vegetation Management Act 1999

The *Vegetation Management Act 1999* (VM Act), in conjunction with the Planning Act, regulates the conservation and management of vegetation communities and clearing of vegetation. The VM Act provides a State-wide system for the management of native vegetation on freehold and leasehold land based on the concept of regional ecosystem (RE) areas. The conservation status of each RE is assigned as one of three categories: 'endangered', 'of concern' or 'least concern', based upon an estimate of the regional ecosystem's pre-clearing distribution, and how much of it remains.

Schedule 10, part 3 of the *Planning Regulation 2016* makes clearing of native vegetation on prescribed land assessable development which requires a development permit, unless the clearing is otherwise exempt.

Waste Reduction and Recycling Act 2011

The main objectives of the Act in relation to waste management are to: promote waste avoidance and reduction; reduce the overall impact of waste generation; promote resource recovery and efficiency actions; promote the sustainable use of natural resources; encourage the use of recovered resources; and ensure a shared responsibility between government, business and industry and the community.

The Act is supported by the Waste Reduction and Recycling Regulation 2011, which provides mechanisms to achieve the objectives of the Act.

Water Act 2000

The *Water Act 2000* (Water Act) provides a framework for the sustainable management of Queensland's non-tidal water resources and riverine quarry material.

With respect to the Project, the Water Act establishes systems for the planning, allocation and use of non-tidal water, including regulation of impoundments. Allocation of quarry material and riverine protection provided for by the Act will be of relevance.

6.0 Potential project impacts

6.1 Natural environment

6.1.1 Land

The impact on land based environmental values is anticipated to be minimal, given the sites location in an established Industrial Precinct. Any impacts on this environmental value will largely relate to construction activities, where the footprint of these activities is generally isolated to Lot 101 on RP 839072 and located on REMONDIS property with existing infrastructure, as well as some road reserve land also affected.

Soils and geology are not expected to be significant concerns because the Project will be largely constrained to the existing disturbed areas of the SREWMF.

Visual amenity will be minimal due to the significance buffer distance to nearby sensitive land uses and the site topography. The impact assessment undertaken as part of the IAR or EIS will identify key land values within the Project area and determine any associated potential impacts. Identified mitigation measures will be outlined in the IAR or EIS.

6.1.2 Water

Potential environmental impacts in relation to water, arising from Project activities, comprise:

- increased sediment in surface water bodies resulting from earthwork activities, leading to changes in surface water quality;
- inadvertent release of potential pollutants to surface water bodies from activities such as vehicle refuelling/wash-down and uncontrolled or controlled release of contaminated water or treated/untreated sewage leading to changes in surface water quality;
- potential effects to groundwater flow (although the site has a history of highly disturbed groundwater due mining activities),

Due to the nature of the Project, there may be a range of impacts on water values. These impacts will range from typical construction project impacts (e.g. construction impacts on water quality) to more complicated site-specific impacts. Based on the variety of potential impacts and complexity/unknowns around some areas, REMONDIS proposes focused assessment to inform mitigation measures.

6.1.3 Air

This environmental value is anticipated to be a key environmental concern that would require focused assessment as the project has the potential to produce a number of air emissions through the processing and combustion of waste streams. The assessment of the air quality and suitable mitigation measures will be outlined in the Project IAR or EIS.

The flue gas treatment system involves several treatment steps which include scrubbing (for acidic gases and metals), selective non catalytic reduction (to remove NOx gases) and a baghouse filter (removes particulates) to minimise emissions.

The use of mixed waste in a WtE facility does not inevitably produce toxic air pollution although in some circumstances there is the potential to produce pollutants which is why the proposal incorporates gas-cleaning systems to collect the pollutants for treatment and disposal as prescribed by law.

In relation to potential greenhouse Gas emissions from the WtE facility, the proposal offers the potential benefit of reducing the production of GHG emissions, based on reduction of waste being diverted from landfill (thereby reducing methane production).

The cumulative effect GHG emissions produced and avoided, to determine the net GHG emissions likely to be associated with the operation, and the potential long term benefits of an alternative waste management and energy production alternative in reducing GHG emissions associated with landfill and traditional fuel/energy sources, will be determined through the engagement of a GHG emissions assessment in the detailed assessment phase of the application.

6.1.4 Ecosystems

The Project will require localised vegetation removal for construction, which may include some vegetation mapped as Regional Ecosystem (RE), subject to localised assessment. Nevertheless, the area of vegetation removal will be minimal, constrained to REMONDIS existing land, and is unlikely to fragment any habitat or create isolated patches of vegetation in the area.

Detailed ecological and vegetation studies will be engaged by REMONDIS in support of the Project to determine potential impacts and suitable mitigation measures will be outlined in the Project IAR or EIS.

6.1.5 Flora and Fauna

The proposal has the potential to result in the following environmental impacts:

- Vegetation clearing and fragmentation;
- Direct fauna injury and mortality during earthworks;
- Disturbance to fauna;
- Direct loss of habitat and breeding places;
- Importation and/or spread of weeds;
- Introduction and/or proliferation of pest fauna;
- Degradation of habitat through dust, sedimentation and erosion;
- Degradation of aquatic environments; and
- Impacts on adjacent bushland.

Direct impacts from the proposal will consist of clearing vegetation (subject to localised site investigations) has the potential to result in localised habitat fragmentation however the extent of any impact will need to be determined through detailed ecological and vegetation studies and outline suitable mitigation measures.

6.2 Amenity

Noise

The Project has the potential to have an impact on noise and vibration values as a result of:

- increased vehicular movements;
- foundation works, including piling;
- excavation works;
- earthworks;
- concrete batching;
- other construction activities.

The Project site is not located in proximity to sensitive receptors, and so construction noise is not anticipated to impact on receptors (however can be appropriately managed). The assessment of the Project's noise and vibration aspects and suitable mitigation measures will be outlined in the Project IAR or EIS.

Odour

The Project has the potential to be a source of odour from waste stored in the tipping hall, from opening and closing roller doors and odour associated with stack emissions. The tipping hall will be operated under negative pressure to minimise possible odour emissions. Further the tipping hall air will be used as combustion air in the process. If the unlikely situation occurs where waste is still present in the tipping hall during shutdowns the air will pass via the negative pressure flow and through filters. Sophisticated and proven off gas treatment systems greatly reduce the likelihood of stack odour emissions. Stack height will be determined by dispersion modelling.

The Project and the cumulative impacts in relation to odour in the context of the existing SREWMF need to be carefully considered throughout the design and assessment phase of the proposal.

Taking into account the location of the Project in an established Industrial Precinct, local climatic conditions and distance/buffer from the Project to nearby sensitive land uses, it is considered that the potential impacts associated with odour can be mitigated.

6.3 Social and economic impact

Social and Economic Impacts have been discussed here as these extend across the entire life of project. The economic and social impacts during the construction phase which will attract a peak work force estimated at 200 persons to the Ipswich region over the construction phase are significantly different from the operational impacts of a workforce likely to be sourced from personnel permanently settled to service the needs of this project.

A rigorous social impact assessment process will analyse potential social impacts in detail, with input from the community through ongoing consultation. This will identify how positive social impacts can be enhanced and negative impacts mitigated and/ or managed.

The REMONDIS SREWMF has a proven operational track record within the Swanbank locality for best practice waste management since commencement of site operations in 1998 which should provide comfort to nearby residents that the highest standards to mitigate impacts will be incorporated into the design and operation of the WtE facility.

As a major industrial and waste management project, the Project is forecast to deliver a range of positive socio-economic impacts targeting the Ipswich LGA but extending to the wider South East Queensland population.

6.4 Built environment

The design of the facility with respect to building form and heights has largely evolved in response to operational nature of the technology.

Figure 20 Artist's impression of the Waste to Energy Facility at Swanbank, Ipswich

The building design has a graduated form and scale with the heights of various elements stepping up in height as they move into the site. This design approach overcomes the potential for adverse impacts associated with bulk and scale at the street and provides a site responsive design.

The assessment of the Project's visual aesthetics and suitable mitigation measures will be outlined in the Project IAR or EIS.

6.5 MNES under the EPBC Act

An EPBC Act Protected Matters search has been undertaken for the Project site (**Appendix B).** The search report indicates that MNES are likely to occur in the Project area and may be affected by the proposed works.

Table 2: EPBC Matters of National Environmental Significance

Matters of National Environmental Significance	Comment
World Heritage Property	None
National Heritage Places	None
Ramsar Wetlands of International Significance	None
Nuclear actions.	None
Commonwealth Marine Area	None
Listed Threatened ecological communities	3

Matters of National Environmental Significance	Comment
Listed Threatened species	31
Listed Migratory Species	16

Based on the above, the proposed development is not considered to be a 'controlled action' pursuant to the *EPBC Act* however the construction and operational impacts will need to be assessed in greater detail by a suitably qualified ecologist as part of the IAR to confirm this position.

Should the potential for Project impacts warrant an EPBC Act referral to address legislative requirements in relation to MNES. REMONDIS will submit an EPBC referral for the project shortly after submission of the coordinated project application. Should the Project be declared a 'controlled action', REMONDIS requests the use of a bilateral assessment process.

7.0 Environmental management and mitigation measures

7.1 Natural environment

7.1.1 Land

Earthworks related to the Project will require an erosion and sediment control plan (ESCP) which will be a sub-plan of the CEMP.

The ESCP will be consistent with current practice for construction projects and align with International Erosion Control Association (IECA) guidance. Impacts on environmental values of land (soils and geology) are not expected to be a material issue during construction. Any impact mitigation measures are expected to be relatively typical of a construction project and conform to industry best practice.

7.1.2 Water

Focused assessment will be required to confirm the Project impacts on water values and appropriate mitigation measures, such as:

- Implementation of groundwater drainage system around the entirety of the proposed waste bunkers to assist groundwater re-entering the strata;
- Monitoring of groundwater surrounding the waste bunkers, by incorporation of inspection manhole to enable periodic inspection of groundwater levels surrounding the waste bunkers;
- A surface water quality monitoring program;
- The process will use demineralised water for steam production for the turbine. This water will be reused through the process and will incur minimal losses;
- Cooling water may be used for the plant. The options between using air cooling and water cooling will be considered for the project.

7.1.3 Air Quality

The primary emissions from the EfW facility, as defined by emission limits for waste incineration set by the European Union (EU) Industrial Emissions Directive (IED, Directive 2010/75/EU), are anticipated to be as follows:

- Particulate matter (PM), assumed to be emitted as PM10 and PM2.5a;
- Hydrogen Chloride (HCl);
- Hydrogen Fluoride (HF);
- Carbon Monoxide (CO);
- Sulfur Dioxide (SO2);
- Oxides of nitrogen (NOx) (expressed as Nitrogen Dioxide (NO2);
- Heavy metals (including Mercury (Hg), Cadmium (Cd), Arsenic (As) and Chromium (Cr);
- Gaseous and vaporous organic substances (expressed as total organic carbon (TOC));
- Dioxins and furans.

In addition to the atmospheric emissions identified in the EU IED, other potential emissions that have been addressed include:

- Hydrogen sulfide (H2S);
- Chlorine (Cl2);
- Ammonia (NH3);
- Polycyclic -aromatic hydrocarbons (PAHs).

Emissions from WtE facility are primarily controlled by the flue gas treatment process. The flue gas treatment proposed is designed to meet the in-stack concentrations limits for waste incineration set by the European Union Industrial Emissions Directive.

Stack emissions will be continuously monitored by a computer controlled system for the following compounds:

- Carbon monoxide;
- Hydrogen chloride;
- Nitrogen oxides;
- Ammonia;
- Volatile organic compounds (VOC's);
- Particulates;

- Sulphur dioxides.

Spot testing will take place at regulated frequencies for metals and dioxins/furans and Hydrogen fluoride.

The proposed Resource Recovery and Waste to Energy Facility is based on existing facilities Europe and will incorporate best available technology for flue gas treatment, designed to meet the stringent in-stack concentrations limits for waste incineration set by the Industrial Emissions Directive (IED). Remondis operate numerous such facilities in Europe.

To manage air quality the following mitigations measures are proposed:

- Implement Best Practice;
- Implement an appropriate maintenance schedule to ensure that FGT systems operate appropriately;
- The facility shall be managed by a duly qualified specialist and trained personnel;
- Implement continuous monitoring system to ensure facility operates within acceptable parameters;
- Management of incoming waste fuels received from external sources.

In addition, it is expected that human health risk studies will be conducted during the IAR / EIS process that will incorporate various relevant analyses based on normal and upset conditions scenarios on recognised sensitive receptors.

7.2 Flora and Fauna

Despite the identified impacts, the cumulative effect is considered acceptable in the context of the broader site that is used as an active industrial premises that is appropriately zoned for the intended development. In this circumstance, it is not possible to avoid the impact accordingly measures have been developed to mitigate and offset.

- Appointment of a project ecologist to undertake and oversee all flora and fauna pre-clearing, management and revegetation works;
- Preparation of a vegetation management plan;
- Measures to prevent tree impacts during construction and prevent clearing where possible;
- Revegetation where required.

7.3 Built environment

It is not envisaged, with the availability of existing infrastructure within the Swanbank Industrial Precinct and the existing SREWMF that the Project will have a significant effect on the built environment.

The existing Council and State Controlled Road network will continue to be the main mode of transporting machinery and infrastructure during construction and the vehicular movements associated with the operation and comparable to the current levels associated with the operation of the existing SREWMF.

7.4 Cultural heritage management plan (Indigenous)

The project will be assessed under the Cultural Heritage Duty of Care Guidelines (Queensland Aboriginal Cultural Heritage Act 2003).

It is not anticipated that a cultural heritage management plan (CHMP) will be required however will be undertaken should the findings of the assessment warrant its inclusion.

7.5 Non-Indigenous cultural heritage management

A non-indigenous cultural heritage survey of the Project site will be undertaken as part of the IAR or EIS process. No heritage listed sites are located in proximity to the site and due to the relatively modern age of the existing dam and water treatment structures, the heritage values of the site are expected to be negligible. However, any finds will be handled in accordance with the legislative requirements.

7.6 Greenhouse gas management plan

A greenhouse gas management plan will be developed as part of the proposal to ensure best practice standards are achieved in relation to GHG emissions.

- Use of Best Available Technology in flue gas treatment;
- Continuous emissions monitoring to ensure they are within acceptable limits;
- Reporting of emissions to QLD Environment Department.

7.7 Hazard and risk, and health and safety

Hazard and risk and health and safety assessments and management plans will be developed as required for the construction and operation phase of the Project.

7.8 Environmental management

Several management plans will be developed as part of the Project's environmental assessment and approvals phase.

These management plans will reflect REMONDIS's ongoing commitment to environmental management during construction and will incorporate management measures identified during the assessment process.

As part of the construction phase of the Project, and as referred to throughout section 8, a Construction Environmental Management Plan (CEMP) will be developed and will form an important management tool for the Project's impacts and mitigation measures.

The CEMP will incorporate environmental and social mitigation measures from the IAR or EIS as a framework for the ongoing management, monitoring, reporting and improvement during construction. Its primary purpose will be to identify the environmental values potentially affected by the Project and detail measures to manage the risk of potential adverse impacts to these environmental values. For each component, the CEMP will outline the following:

- environmental values;
- potential impacts;
- environmental protection objectives;
- management controls;
- monitoring programs.

8.0 Approvals required for the project

As per Section 34G (2) of the SDPWO Act, a draft IAR must contain a statement about whether or not any of the following approvals (each of which is notifiable approval) is required for the Project:

- a development approval if the development application for the approval would, under the Planning Act, require impact assessment;
- an environmental authority if the application for the authority would, under the Environmental Protection Act 1994, chapter 5, part 4, require public notification;
- another approval under an Act if—
  - the application for the approval requires, other than under the Planning Act or the Environmental Protection Act, chapter 5, an EIS or a similar statement to address the environmental effects of the approval; and
  - the application for, or the granting of, the approval requires public notification under the relevant Act.

The table at **Appendix A** provides a summary of approvals applicable to the project in accordance with these requirements. This will continuously be reviewed as the project is development and in consultation with the relevant State departments.

REMONDIS seeks declaration of the Project as a coordinated project pursuant to the SDPWO Act (Qld). As part of this declaration, REMONDIS seeks to utilise the IAR process. **Section 7.6** outlines the Acts and policies that were assessed as relevant to the Project.

Once the Project description has been sufficiently completed, following concept design optimisation and commencement of detailed design, a finalised list of required approvals will be presented as part of either the IAR or EIS. As a result, further approvals may be identified, while others that were identified at the preliminary stage (**Appendix A**) may not be required.

The approvals that REMONDIS intends to be coordinated during the IAR or EIS process are identified in **Appendix A**. Note that these are based on the assessment of required approvals at the concept design stage the Project. The required approvals are subject to change during detailed design development, as described above.

9.0 Cost and benefits summary

9.1 Local, state and national economies

An Economic Impact Assessment (EIA) will be submitted with the EIS. An EIA will assess benefits, values and potential impact areas resulting from the construction and operational phases of the Project.

The Project will bring some additional short term economic benefits to the regional economy during construction through the provision of construction and engineering services, along with long term cost benefits for Queensland households and businesses through the generation of up to 50MW of baseload renewable electricity.

9.2 Natural and social environments

The primary Project benefit is to provide an alternative waste management solution to landfilling. It is widely recognised that if Queensland maintains a "business as usual" approach to refuse disposal and waste recycling, Most of South East Queensland's landfills will have no capacity by 2040. The project provides a direct solution to this key State issue and an opportunity to divert thousands of tonnes of suitable waste away from landfill and into a best-practice WtE facility that will extend the life of south east Queensland's constrained landfills.

The SREWMF is an integrated waste facility, comprising landfill, recycling and, in the future, the proposed WtE facility. Adopting Energy from Waste technology will ensure that wastes with recoverable value are not sent to landfill and, instead, are put to beneficial use. The world leader in waste management, the European Union, encourages construction of "state-of-the-art energy-efficient" Energy from Waste plants to "create new capacity for the treatment of residual waste" in member states.

It is the intention of the EIS/IAR process to investigate the possible impacts and define suitable environmental mitigation strategies to be incorporated into management protocols and plans in support of anticipated approvals.

REMONDIS will implement mitigation strategies as part of the construction and operation of the Project. Where impacts are unavoidable, the intent will be to offset such impacts to land-based and ecological values.

An assessment of the existing social environment and possible impacts associated with the Project will be submitted in the EIS/IAR. Most of the potential social impacts are anticipated to be positive for the area including economic diversification and increased economic, employment and training opportunities. The proponent believes that this will in turn raise the level of confidence in the region.

The social environments will benefit from increased local expenditure in Ipswich and the broader region due to additional expenditure. Strategies will be developed through the Social Impact Assessment conducted as part of the EIS/IAR process to avoid or mitigate against social impacts.

10.0 Community and stakeholder consultation

REMONDIS will consult and engage with stakeholders and the local community in accordance with regulatory requirements and in consideration of relevant guidelines. This includes local, Queensland and Commonwealth Government authorities, potentially affected neighbours, local communities and special interest groups in the Project area.

Community engagement undertaken prior to the lodgement of the Initial Advice Statement, REMONDIS has included consultation with the Office of Coordinator-General to provide an overview of the proposed Waste to Energy Facility and confirm an intention for the application to proceed via the coordinated project pathway.

As part of its preparations for the lodgement of the Initial Advice Statement, REMONDIS has commissioned the preparation of a Community and Stakeholder Engagement Plan in order to fully inform the Office of the Coordinator-General, the local community, affected neighbours and specialist interest groups of its intentions with respect to the project and community engagement.

The Community and Stakeholder Engagement Plan (the "Plan") has been developed by specialist consultants Three Plus, and has been based on a four-stage approach as outlined below:

Stage 1: Active support for the Office of Coordinator-General draft Terms Of Reference advertising phase

REMONDIS is committed to the preparation of a key stakeholders briefing paper and to offer face to face interview for the local community members and potentially affected neighbours. Those neighbours directly impacted will be specifically informed of the project via a direct letter mail out to ensure they are provided extensive opportunity to clearly understand the proposal and provide their comments.

In addition to the community and stakeholder engagement activities planned for the IAR phase, REMONDIS has determined that it will support the public comment phase on the Coordinator-General's draft Terms of Reference (TOR).

The draft TOR will outline the issues that should be considered in preparing the IAR and will seek community and Agency feedback/opinion on the TOR's suitability and robustness.

The final TOR will provide the framework for the IAR, including information on the purpose and role of the IAR and the factors considered to be most significant for the project.

To help ensure comprehensive and well-supported Terms of Reference are developed, REMONDIS will undertake a dedicated round of pre-TOR stakeholder briefings, including a Community Information Day to support the draft TOR public advertising period which will provide information about the project and encourage feedback on the draft TOR (to the Coordinator-General).

As part of the Stage 1 engagement activities, REMONDIS has activated a project website to provide information on the project and provide opportunity for interest parties to review the proposal and provide feedback.

Stage 2: Baseline Studies - IAR research and preparation, including technical investigations and community consultation

Should the project be declared a coordinated project, REMONDIS and their project team will commence the preparation of an Impact Assessment Report (IAR) or an Environmental Impact Statement (EIS) dependent on the preferred approvals pathway and documentation requirements identified by the Office of Coordinator-General.

Concurrently to the preparation of the IAR/EIS report, REMONDIS is committed to undertaking a second Community Information Day to update key stakeholders and provide additional information on the progress of the proposal. REMONDIS considers it to be an essential part of the process to offer face to face interviews with impacts owners and affected neighbouring properties and seeks to ensure the ongoing identification and consultation of impacted stakeholders. It is the intent of REMONDIS that any potential issues and concerns raised during the engagement process will inform the detailed design and the documentation phase of the IAR/EIS.

A third Community Information Day will be conducted to provide further opportunities to consult with Queensland and Commonwealth Government authorities, potentially affected neighbours, local communities and special interest groups in the Project area and provide a transparent approach to the potential impacts and proposed mitigation measures that will be developed to ensure the highest standards achieved. As more information is completed during the reporting phase of project, REMONDIS want to ensure that up to date information is available to key stakeholders.

Stage 3: Active support for the IAR public comment phase, and finalisation of the IAR

A fourth Community Information Day is proposed following completion of the baseline studies and prior to lodgement of the IAR/EIS with the Office of Coordinator-General. It is imperative for REMONDIS that a response to all issues and concerns identified within the first two phases of the project have been appropriately addressed as part of the reporting and the community, affected neighbours and key stakeholders have comfort that all steps have been taken by REMONDIS to alleviate any concerns.

Stage 4: Post IAR stakeholder follow-up

The coordinated project approvals pathway is subject to a formal public exhibition component to allow the community, affected neighbours and key stakeholders to formally have their say on the project and make representations to the approval authority. REMONDIS welcomes this phase of the project and will ensure that all submissions are addressed.

A fifth Community Information Day is proposed post lodgement to ensure an ongoing exchange of information.

A goal of the Community and Stakeholder Engagement Plan is to ensure the community understands the need for the project, the scope of work, likely impacts and the benefits of the Project. Matters of concern, as raised by key stakeholders will be addressed in the meetings with the most up to date information available, to ensure those affected are well informed and engaged.

11.0 References and data sources

- AECOM. (2008). *Swanbank Landfill Stage 1A and 1B - Flora and Fauna Assessment.*
- Applied Ecology. (1998). *Swanbank Landfill Extension of the Facility - Environmental Report.*
- DEE (2018). EPBC Act Protected Matters Report. Commonwealth Department of the Environment, Canberra. Report created: 25/09/18.
- Department of State Development, Manufacturing, Infrastructure and Planning, *Social Impact Assessment Guideline*, March 2018.
- KBR. (2012). *Bundamba Creek Flood Study and Risk Management Plan.* Ipswich: Ipswich City Council.
- Sattler, P. S. and Williams, R.D. (Eds) (1999). The Conservation Status of Queensland's Bioregional Ecosystems, Environmental Protection Agency.
- Vegetation Survey of Proposed Dump Site, Swanbank (Bostock and Forster, 1988)
- Swanbank Landfill Stage 2 (Oxbow Consulting, 1998)
- Swanbank Landfill Extension of the Facility – Environmental Report (Applied Ecology, 1998)
- Swanbank Landfill Stage 1A and 1B - Flora and Fauna Assessment (AECOM, 2008)
- Flinders Karawatha Corridor - Environmental Values and Land Use Data Report (EHP, 2013)
- "Emissions from Waste-to-Energy: A comparison with Coal-fire Power Plants" (DOI: 10.1115/IMECE2003-55295)
- https://www.researchgate.net/publication/242108296_Emissions_from_Waste-to-Energy_A_Comparison_with_Coal-fired_Power_Plants

Appendix A. Approvals required for the project

Legislation and Administering Authority	Approval Trigger	Approval	Relevance to the Project	Applicability
Commonwealth				
Environment Protection and Biodiversity Conservation Act 1999 (EPBC Act) **DEE**	Actions that have, or are likely to have, a significant impact on a MNES	EPBC Act Referral – controlled action or not a controlled action	Due to the presence of High Value Koala Habitat and the potential occurrence of threatened species, the Project *may* need to be referred to DEE to determine if the proposed works constitute a 'controlled action' under the EPBC Act.	Unlikely Applicable
Native Title Act 1993 **Native Title (Queensland) Act 1993** **National Native Title Tribunal**	Works to be undertaken on land subject to Native Title	An Indigenous Land Use Agreement (ILUA) is required if works are to be undertaken on land subject to Native Title	The site consists of freehold titles not subject to Native Title	No
State				
Non-Planning Act and Regulation Approvals				
State Development and Public Works Organisation Act 1971 **Coordinator-General**	A project with one or more of the following characteristics may apply to have it declared a 'Coordinated Project' under the *State Development and Public Works Organisation Act 1971*(SDPWO Act): • complex approval requirements, involving local, state and federal governments • significant environmental effects • strategic significance to the locality, region or state, including for the infrastructure, economic and social benefits, capital investment	Coordinated Project Declaration	As outlined within this Initial Advice Statement (IAS), the project is considered of strategic significance to the Region for the economic and social benefits, capital investment and employment opportunities it would provide. By obtaining 'coordinated project' declaration from the Coordinator-General, the project would benefit from: • a clear approvals framework for the Project; • coordinated and targeted whole-of-government advice with respect to scoping technical investigations and/or environmental assessments necessary to facilitate Project approvals. The Proponent considers the IAR process as suitable	Yes

Legislation and Administering Authority	Approval Trigger	Approval	Relevance to the Project	Applicability
	or employment opportunities it may provide • significant infrastructure requirements		for the Coordinator-General to assess the project in the event that the project is declared a 'Coordinated Project'. As outlined within this IAS, the potential environmental impacts of the project are well defined and low-medium risk and do not warrant an EIS. Furthermore, the project would previously have been subject to code assessment under the Planning Act 2016, recognising its acceptance in principle. The Proponent has resolved, in any event, to adopt best practice measures to minimise and mitigate any potential environmental impacts associated with the project.	
Land Act 1994 **DNRME**	Temporary or permit road closure Permit to occupy	Road closure permit or permit to occupy	An application for a temporary road closure may be required to facilitate the works. Requirements will be confirmed through detailed design.	Yes, if required
Nature Conservation Act 1992 **DES**	Clearing protected plants or tampering with animal breeding places	Clearing Permit – Protected plants Permit to tamper with animal breeding places	A clearing permit may be required for clearing within a high risk area on the Protected Plants Flora survey trigger map. Clearing requirements will be determined through detailed design. Additionally the removal or disturbance of native animal breeding places by earthwork activities, requires a permit with approved species management programme.	Yes, if required.
Aboriginal Cultural Heritage Act 2003 **Torres Strait Islander Cultural Heritage Act 2003** **DATSIP**	Duty of care to not harm cultural heritage sites or items of significance	Cultural Heritage Management Plan	All persons must take all reasonable and practicable measures to ensure their activities do not harm Aboriginal cultural heritage. The duty of care applies regardless of the tenure of the land and regardless of whether it has been	Unlikely applicable

Legislation and Administering Authority	Approval Trigger	Approval	Relevance to the Project	Applicability
			identified or recorded in a database. Development may require assessment against the Duty of Care Guidelines. Additionally, if an EIS is required, an approved Cultural Heritage Management Plan (CHMP) is mandatory.	
Water Act 2000 **DNRME**	Taking of water	Licence to take water	Development may require a licence to take water. Requirements will be confirmed through detailed design.	Yes, if required
Waste Reduction and Recycling Act 2011 **Waste Reduction and Recycling Regulation 2011** **DNRME**	Using a resource for an industrial activity	End of waste approval	A waste can be approved as a resource if it meets specified quality criteria for its specific use. As the project involves the use of waste as a resource for generating electricity it is considered that an end of waste approval is required.	Yes
Electricity Act 1994 **Electricity Regulation 2006** **DNRME**	If the WtE plant exceeds 30MW in capacity a General Authority is required. If less than 30MW a Special Approval is required. A transmission authority is also required to connect the proposed plan to a transmitting grid	A General Authority Or A Special Approval permit (s130) And A Transmission Authority	The type of permit is contingent upon the capacity of the proposed WtE plant. A transmission authority is required irrespective of the capacity in order to connect to the grid.	Yes
Planning Act and Planning Regulation and associated Legislative Approvals				
Planning Act 2016 **DSDMIP**	Development Assessment (DA) Rules under Section 68(1) of the Planning Act		The assessment process in the DA Rules involves the following parts: • Part 1 – Application • Part 2 – Referral • Part 3 – Information Request • Part 4 – Public notification (if required) • Part 5 – Decision An Applicant is required to identify the development type, applicable assessment manager and	Yes

Legislation and Administering Authority	Approval Trigger	Approval	Relevance to the Project	Applicability
			relevant referral agencies as prescribed under the Planning Regulation.	
Planning Regulation 2017, Schedule 10, Part 3 **Vegetation Management Act 1999** **DNRME**	Clearing native vegetation	Development Permit – Operational Works for clearing native vegetation	A development permit for operational works may be required for clearing certain vegetation. Clearing requirements will be confirmed through detailed design.	Yes, if required
Planning Regulation 2017, Schedule 10, Part 4 **Environmental Protection Act 1994** **DES**	Material change of use on contaminated land	Development Permit – Material Change of Use on contaminated land	A development permit for material change of use may be required for the proposed use as the premises are listed on the contaminated land register/environmental management register and may involve an accessible underground facility. This will be confirmed through detailed design.	Yes, if required
Planning Regulation 2017, Schedule 10, Part 5 **Environmental Protection Act 1994** **DES**	Material change of use for an environmentally relevant activity	Development Permit – Material Change of Use for an environmentally relevant activity	A development permit for a material change of use may be required for certain environmentally relevant activities, including ERA 14 (electricity generation), ERA 15 (Fuel Burning), ERA 55 (regulated waste recycling or reprocessing), ERA 56 (regulated waste storage) and ERA 57 (regulated waste transport). The full list of applicable ERAs will be confirmed through detailed design.	Yes
Planning Regulation 2017, Schedule 10, Part 19 **Water Act 2000** **DNRME**	Taking or interfering with water	Development Permit – Operational Works that involves taking or interfering with water	A development permit for operational works may be required for the project if it involves taking or interfering with a watercourse, lake or spring; or a dam ; underground water or taking overland flow water. The extent of taking or interfering with water will be confirmed through detailed design.	Yes, if required

Legislation and Administering Authority	Approval Trigger	Approval	Relevance to the Project	Applicability
Ipswich Planning Scheme 2006 **Ipswich City Council**	Material change of use assessable against the planning scheme	Development Permit – Material Change of Use	A development approval is required for a material change of use for Special Industry and Major Utility (full extent of land use definitions to be confirmed).	Yes

Appendix B. Desktop searches and mapping

State Planning Policy - Lot Plan Search

Making or amending a local planning instrument
and designating land for community infrastructure

Date: 27/09/2018

Queensland Government

Department of State Development
Manufacturing, Infrastructure
and Planning

0 440 880 1,320 1,760

Metres

Disclaimer: This map has been prepared with due care based on the best available information at the time of publication. However, the State of Queensland (acting through the department) makes no representations, either express or implied, that the map is free from errors, inconsistencies or omissions. Reliance on information contained in this map is the sole responsibility of the user. The State disclaims responsibility for any loss, damage or inconvenience caused as a result of reliance on information or data contained in this map.

State Planning Policy mapping layers - consolidated list for all selected Lot Plans

(Note: Please refer to following pages for State Interests listed for each selected Lot Plan)

BIODIVERSITY
- MSES - Wildlife habitat
- MSES - Regulated vegetation (category B)
- MSES - Regulated vegetation (essential habitat)
- MSES - Regulated vegetation (intersecting a watercourse)

NATURAL HAZARDS RISK AND RESILIENCE
- Flood hazard area - Local Government flood mapping area*
- Bushfire prone area

ENERGY AND WATER SUPPLY
- Pipelines and channels (Seqwater)
- Major electricity infrastructure (Powerlink)

STRATEGIC AIRPORTS AND AVIATION FACILITIES
- Wildlife hazard buffer zone
- Height restriction zone 45m
- Height restriction zone 90m

Queensland Government
Department of State Development, Manufacturing, Infrastructure and Planning

State Planning Policy mapping layers for each selected Lot Plan

Lot Plan: 101RP839072 (Area: 218900 m^2)
BIODIVERSITY
- MSES - Wildlife habitat
- MSES - Regulated vegetation (intersecting a watercourse)
NATURAL HAZARDS RISK AND RESILIENCE
- Flood hazard area - Local Government flood mapping area*
- Bushfire prone area
ENERGY AND WATER SUPPLY
- Major electricity infrastructure (Powerlink)
STRATEGIC AIRPORTS AND AVIATION FACILITIES
- Wildlife hazard buffer zone
- Height restriction zone 90m

Lot Plan: 102RP839072 (Area: 1437000 m^2)
BIODIVERSITY
- MSES - Wildlife habitat
- MSES - Regulated vegetation (category B)
- MSES - Regulated vegetation (essential habitat)
- MSES - Regulated vegetation (intersecting a watercourse)
NATURAL HAZARDS RISK AND RESILIENCE
- Flood hazard area - Local Government flood mapping area*
- Bushfire prone area
ENERGY AND WATER SUPPLY
- Major electricity infrastructure (Powerlink)
STRATEGIC AIRPORTS AND AVIATION FACILITIES
- Wildlife hazard buffer zone
- Height restriction zone 45m

Lot Plan: 103SP189609 (Area: 359800 m^2)
BIODIVERSITY
- MSES - Wildlife habitat
- MSES - Regulated vegetation (category B)
- MSES - Regulated vegetation (essential habitat)
- MSES - Regulated vegetation (intersecting a watercourse)
NATURAL HAZARDS RISK AND RESILIENCE
- Flood hazard area - Local Government flood mapping area*
- Bushfire prone area
ENERGY AND WATER SUPPLY
- Major electricity infrastructure (Powerlink)
STRATEGIC AIRPORTS AND AVIATION FACILITIES
- Wildlife hazard buffer zone
- Height restriction zone 45m
- Height restriction zone 90m

Lot Plan: 104RP839073 (Area: 533100 m^2)
BIODIVERSITY

Queensland Government

Department of State Development, Manufacturing, Infrastructure and Planning

State Planning Policy mapping layers for each selected Lot Plan

...Continued from previous page
- MSES - Wildlife habitat
- MSES - Regulated vegetation (intersecting a watercourse)

NATURAL HAZARDS RISK AND RESILIENCE
- Flood hazard area - Local Government flood mapping area*
- Bushfire prone area

ENERGY AND WATER SUPPLY
- Pipelines and channels (Seqwater)
- Major electricity infrastructure (Powerlink)

STRATEGIC AIRPORTS AND AVIATION FACILITIES
- Wildlife hazard buffer zone
- Height restriction zone 45m
- Height restriction zone 90m

Lot Plan: 3RP214256 (Area: 42980 m^2)

BIODIVERSITY
- MSES - Wildlife habitat
- MSES - Regulated vegetation (essential habitat)
- MSES - Regulated vegetation (intersecting a watercourse)

NATURAL HAZARDS RISK AND RESILIENCE
- Flood hazard area - Local Government flood mapping area*
- Bushfire prone area

ENERGY AND WATER SUPPLY
- Major electricity infrastructure (Powerlink)

STRATEGIC AIRPORTS AND AVIATION FACILITIES
- Wildlife hazard buffer zone
- Height restriction zone 45m
- Height restriction zone 90m

Queensland Government
Department of State Development, Manufacturing, Infrastructure and Planning

Queensland Government

Department of Environment and Science

Environmental Reports

Biodiversity and Conservation Values

Biodiversity Planning Assessments and Aquatic Conservation Assessments

For the selected area of interest
Lot: 3 Plan: RP214256

Environmental Reports - General Information

The Environmental Reports portal provides for the assessment of selected matters of interest relevant to a user specified location, or Area of Interest (AOI). All area and derivative figures are relevant to the extent of matters of interest contained within the AOI unless otherwise stated. Please note, if a user selects an AOI via the "Central co-ordinates" option, the resulting assessment area encompasses an area extending from 2km radius from the point of interest.

All area and area derived figures included in this report have been calculated via reprojecting relevant spatial features to Albers equal-area conic projection (central meridian = 146, datum Geocentric Datum of Australia 1994). As a result, area figures may differ slightly if calculated for the same features using a different co-ordinate system.

Figures in tables may be affected by rounding.

The matters of interest reported on in this document are based upon available state mapped datasets. Where the report indicates that a matter of interest is not present within the AOI (e.g. where area related calculations are equal to zero, or no values are listed), this may be due either to the fact that state mapping has not been undertaken for the AOI, that state mapping is incomplete for the AOI, or that no values have been identified within the site.

The information presented in this report should be considered as a guide only and field survey may be required to validate values on the ground.

Please direct queries about these reports to: biodiversity.planning@des.qld.gov.au

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Table of Contents

Summary Information

Tables 1 to 8 provide an overview of the AOI with respect to selected topographic and environmental values.

Table 1: Area of interest details: Lot: 3 Plan: RP214256

Size (ha)	4.24
Local Government(s)	Ipswich City
Bioregion(s)	Southeast Queensland
Subregion(s)	Moreton Basin
Catchment(s)	Brisbane

The following table identifies available Biodiversity Planning Assessments (BPAs) and Aquatic Conservation Assessments (ACAs) with respect to the AOI.

Table 2: Available Biodiversity Planning and Aquatic Conservation Assessments

Assessment Type	Assessment Area and Version
Biodiversity Planning Assessment(s)	Southeast Queensland v4.1
Aquatic Conservation Assessment(s) (riverine)	South East Queensland Catchments v1.1
Aquatic Conservation Assessment(s) (non-riverine)	South East Queensland Catchments v1.1

Table 3: Remnant regional ecosystems within the AOI as per the Qld Herbarium's 'biodiversity status'

Biodiversity Status	Area (Ha)	% of AOI
Endangered	0.0	0.0
Of concern	0.0	0.0
No concern at present	1.52	35.94

The following table identifies the extent and proportion of the user specified area of interest (AOI) which is mapped as being of "State", "Regional" or "Local" significance via application of the Queensland Department of Environment and Science's *Biodiversity Assessment and Mapping Methodology* (BAMM).

Table 4: Summary table, biodiversity significance

Biodiversity significance	Area (Ha)	% of AOI
State Habitat for EVNT taxa	0.0	0.0
State	1.52	35.85
Regional	0.0	0.0
Local or Other Values	0.0	0.0

Table 5: Non-riverine wetlands intersecting the AOI

Non-riverine wetland types intersecting the area of interest	#
(No Records)	

NB. The figures presented in the table above are derived from the relevant non-riverine Aquatic Conservation Assessment(s). Later releases of wetland mapping produced via the Queensland Wetland Mapping Program may provide more recent

information in regards to wetland extent.

Table 6: Named waterways intersecting the AOI

(no results)

Refer to **Map 1** for general locality information.

The following two tables identify the extent and proportion of the user specified AOI which is mapped as being of "Very High", "High", "Medium", "Low", or "Very Low" aquatic conservation value for riverine and non-riverine wetlands via application of the Queensland Department of Environment and Science's *Aquatic Biodiversity Assessment and Mapping Method* (AquaBAMM).

Table 7: Summary table, aquatic conservation significance (riverine)

Aquatic conservation significance (riverine wetlands)	Area (Ha)	% of AOI
Very High	0.0	0.0
High	4.24	100.0
Medium	0.0	0.0
Low	0.0	0.0
Very Low	0.0	0.0

Table 8: Summary table, aquatic conservation significance (non-riverine)

Aquatic conservation significance (non-riverine wetlands)	Area (Ha)	% of AOI
(No Records)		

Biodiversity Planning Assessments

Introduction

The Department of Environment and Science (DES) attributes biodiversity significance on a bioregional scale through a Biodiversity Planning Assessment (BPA). A BPA involves the integration of ecological criteria using the *Biodiversity assessment and Mapping Methodology* (BAMM) and is developed in two stages: 1) **diagnostic criteria**, and 2) **expert panel criteria**. The diagnostic criteria are based on existing data which is reliable and uniformly available across a bioregion, while the expert panel criteria allows for the refinement of the mapped information from the diagnostic output by incorporating local knowledge and expert opinion.

The BAMM methodology has application for identifying areas with various levels of significance solely for biodiversity reasons. These include threatened ecosystems or taxa, large tracts of habitat in good condition, ecosystem diversity, landscape context and connection, and buffers to wetlands or other types of habitat important for the maintenance of biodiversity or ecological processes. While natural resource values such as dryland salinity, soil erosion potential or land capability are not dealt with explicitly, they are included to some extent within the biodiversity status of regional ecosystems recognised by the DES.

Biodiversity Planning Assessments (BPAs) assign three levels of overall biodiversity significance.

- **State significance** - areas assessed as being significant for biodiversity at the bioregional or state scales. They also include areas assessed by other studies/processes as being significant at national or international scales. In addition, areas flagged as being of State significance due to the presence of endangered, vulnerable and/or near threatened taxa, are identified as "State Habitat for EVNT taxa".
- **Regional significance** - areas assessed as being significant for biodiversity at the subregional scale. These areas have lower significance for biodiversity than areas assessed as being of State significance.
- **Local significance and/or other values** - areas assessed as not being significant for biodiversity at state or regional scales. Local values are of significance at the local government scale.

For further information on released BPAs and a copy of the underlying methodology, go to:

http://www.qld.gov.au/environment/plants-animals/biodiversity/planning/

The GIS results can be downloaded from the Queensland Spatial Catalogue at:

http://qspatial.information.qld.gov.au/geoportal/

The following table identifies the extent and proportion of the user specified AOI which is mapped as being of "State", "Regional" or "Local" significance via application of the BAMM.

Table 9: Summary table, biodiversity significance

Biodiversity significance	Area (Ha)	% of AOI
State Habitat for EVNT taxa	0.0	0.0
State	1.52	35.85
Regional	0.0	0.0
Local or Other Values	0.0	0.0

Refer to **Map 2** for further information.

Diagnostic Criteria

Diagnostic criteria are based on existing data which is reliable and uniformly available across a bioregion. These criteria are diagnostic in that they are used to filter the available data and provide a "first-cut" or initial determination of biodiversity significance. This initial assessment is then combined through a second group of other essential criteria.

A description of the individual diagnostic criteria is provided in the following sections.

Criteria A. Habitat for EVNT taxa: Classifies areas according to their significance based on the presence of endangered, vulnerable and/or rare (EVNT) taxa. EVNT taxa are those scheduled under the *Nature Conservation Act 1992* and/or the

Environment Protection and Biodiversity Conservation Act 1999. It excludes highly mobile fauna taxa which are instead considered in Criterion H and brings together information on EVNT taxa using buffering of recorded sites or habitat suitability models (HSM) where available.

Criteria B. Ecosystem value: Classifies on the basis of biodiversity status of regional ecosystems, their extent in protected areas (presence of poorly conserved regional ecosystems), the presence of significant wetlands; and areas of national importance such as the presence of Threatened Ecological Communities, World Heritage areas and Ramsar sites. Ecosystem value is applied at a bioregional (**B1**) and regional (**B2**) scale.

Criteria C. Tract size: Measures the relative size of tracts of vegetation in the landscape. The size of any tract is a major indicator of ecological significance, and is also strongly correlated with the long-term viability of biodiversity values. Larger tracts are less susceptible to ecological edge effects and are more likely to sustain viable populations of native flora and fauna than smaller tracts.

Criteria D. Relative size of regional ecosystems: Classifies the relative size of each regional ecosystem unit within its bioregion (**D1**) and its subregion (**D2**). Remnant units are compared with all other occurrences with the same regional ecosystem. Large examples of a regional ecosystem are more significant than smaller examples of the same regional ecosystem because they are more representative of the biodiversity values particular to the regional ecosystem, are more resilient to the effects of disturbance, and constitute a significant proportion of the total area of the regional ecosystem.

Criteria F. Ecosystem diversity: Is an indicator of the number of regional ecosystems occurring within an area. An area with high ecosystem diversity will have many regional ecosystems and ecotones relative to other areas within the bioregion.

Criteria G. Context and connection: Represents the extent to which a remnant unit incorporates, borders or buffers areas such as significant wetlands, endangered ecosystems; and the degree to which it is connected to other vegetation.

A summary of the biodiversity status based upon the diagnostic criteria is provided in the following table.

Table 10: Summary of biodiversity significance based upon diagnostic criteria with respect to the AOI

Biodiversity significance	Description	Area (Ha)	% of AOI
Local or Other Values	Refer to diagnostic data for additional information	1.52	35.85

Assessment of diagnostic criteria with respect to the AOI

The following table reflects an assessment of the individual diagnostic criteria noted above in regards to the AOI.

Table 11: Assessment of individual diagnostic criteria with respect to the AOI

Diagnostic Criteria	Very High Rating - Area (Ha)	Very High Rating - % of AOI	High Rating - Area (Ha)	High Rating - % of AOI	Medium Rating - Area (Ha)	Medium Rating - % of AOI	Low Rating - Area (Ha)	Low Rating - % of AOI
A: Habitat for EVNT Taxa					1.52	35.8		
B1: Ecosystem Value (Bioregion)					1.52	35.8		
B2: Ecosystem Value (Subregion)					1.52	35.8		
C: Tract Size							1.52	35.8
D1: Relative RE Size (Bioregion)							1.52	35.8
D2: Relative RE Size (Subregion)							1.52	35.8
F: Ecosystem Diversity							1.52	35.8
G: Context and Connection							1.52	35.8

Other Essential Criteria

Other essential criteria (also known as expert panel criteria) are based on non-uniform information sources and which may rely more upon expert opinion than on quantitative data. These criteria are used to provide a "second-cut" determination of biodiversity significance, which is then combined with the diagnostic criteria for an overall assessment of relative biodiversity significance. A summary of the biodiversity status based upon the other essential criteria is provided in the following table.

Table 12: Summary of biodiversity significance based upon other essential criteria with respect to the AOI

Biodiversity significance	Description	Area (Ha)	% of AOI
State	Remnant contains Core Habitat for Priority Taxa (H) & Remnant forms part of a bioregional corridor (J)	1.52	35.85

A description of each of the other essential criteria and associated assessment in regards to the AOI is provided in the following sections.

Criteria H. Essential and general habitat for priority taxa: Priority taxa are those which are at risk or of management concern, taxa of scientific interest as relictual (ancient or primitive), endemic taxa or locally significant populations (such as a flying fox camp or heronry), highly specialised taxa whose habitat requirements are complex and distributions are not well correlated with any particular regional ecosystem, taxa important for maintaining genetic diversity (such as complex spatial patterns of genetic variation, geographic range limits, highly disjunct populations), taxa critical for management or monitoring of biodiversity (functionally important or ecological indicators), or economic and culturally important taxa.

Criteria I. Special biodiversity values: areas with special biodiversity values are important because they contain multiple taxa in a unique ecological and often highly biodiverse environment. Areas with special biodiversity values can include the following:

- Ia - centres of endemism - areas where concentrations of taxa are endemic to a bioregion or subregion are found.
- Ib - wildlife refugia (Morton *et al*. 1995), for example, islands, mound springs, caves, wetlands, gorges, mountain ranges and topographic isolates, ecological refuges, refuges from exotic animals, and refuges from clearing. The latter may include large areas that are not suitable for clearing because of land suitability/capability.
- Ic - areas with concentrations of disjunct populations.
- Id - areas with concentrations of taxa at the limits of their geographic ranges.
- Ie - areas with high species richness.
- If - areas with concentrations of relictual populations (ancient and primitive taxa).
- Ig - areas containing REs with distinct variation in species composition associated with geomorphology and other environmental variables.
- Ih - an artificial waterbody or managed/manipulated wetland considered by the panel/s to be of ecological significance.
- Ii - areas with a high density of hollow-bearing trees that provide habitat for animals.
- Ij - breeding or roosting sites used by a significant number of individuals.
- Ik - climate change refuge.

The following table identifies the value and extent area of the Other Essential Criteria H and I within the AOI.

Table 13: Relative importance of expert panel criteria (H and I) used to access overall biodiversity significance with respect to the AOI

Expert Panel	Very High Rating - Area (Ha)	Very High Rating - % of AOI	High Rating - Area (Ha)	High Rating - % of AOI	Medium Rating - Area (Ha)	Medium Rating - % of AOI	Low Rating - Area (Ha)	Low Rating - % of AOI
H: Core Habitat Priority Taxa	1.52	35.8						
Ia: Centres of Endemism								
Ib: Wildlife Refugia								
Ic: Disjunct Populations								
Id: Limits of Geographic Ranges								
Ie: High Species Richness								
If: Relictual Populations								
Ig: Variation in Species Composition								
Ih: Artificial Wetland								

Expert Panel	Very High Rating - Area (Ha)	Very High Rating - % of AOI	High Rating - Area (Ha)	High Rating - % of AOI	Medium Rating - Area (Ha)	Medium Rating - % of AOI	Low Rating - Area (Ha)	Low Rating - % of AOI
Ii: Hollow Bearing Trees								
Ij: Breeding or Roosting Site								
Ik: Climate Refugia								

NB. Whilst biodiversity values associated with Criteria I may be present within the site (refer to tables 12 and 15), for the New England Tableland and Central Queensland Coast BPAs, area and % area figures associated with Criteria Ia through to Ij cannot be listed in the table above (due to slight variations in data formats between BPAs).

Criteria J. Corridors: areas identified under this criterion qualify either because they are existing vegetated corridors important for contiguity, or cleared areas that could serve this purpose if revegetated. Some examples of corridors include riparian habitats, transport corridors and "stepping stones".

Bioregional and subregional conservation corridors have been identified in the more developed bioregions of Queensland through the BPAs, using an intensive process involving expert panels. Map 3 displays the location of corridors as identified under the Statewide Corridor network. The Statewide Corridor network incorporates BPA derived corridors and for bioregions where no BPA has been assessed yet, corridors derived under other planning processes. *Note: as a result of updating and developing a statewide network, the alignment of corridors may differ slightly in some instances when compared to those used in individual BPAs.*

The functions of these corridors are:

- **Terrestrial** Bioregional corridors, in conjunction with large tracts of remnant vegetation, maintain ecological and evolutionary processes at a landscape scale, by:

  • Maintaining long term evolutionary/genetic processes that allow the natural change in distributions of species and connectivity between populations of species over long periods of time;

  • Maintaining landscape/ecosystems processes associated with geological, altitudinal and climatic gradients, to allow for ecological responses to climate change;

  • Maintaining large scale seasonal/migratory species processes and movement of fauna;

  • Maximising connectivity between large tracts/patches of remnant vegetation;

  • Identifying key areas for rehabilitation and offsets; and

- **Riparian** Bioregional Corridors also maintain and encourage connectivity of riparian and associated ecosystems.

The location of the corridors is determined by the following principles:

- Terrestrial

  • Complement riparian landscape corridors (i.e. minimise overlap and maximise connectivity);

  • Follow major watershed/catchment and/or coastal boundaries;

  • Incorporate major altitudinal/geological/climatic gradients;

  • Include and maximise connectivity between large tracts/patches of remnant vegetation;

  • Include and maximise connectivity between remnant vegetation in good condition; and

- Riparian

  • Located on the major river or creek systems within the bioregion in question.

The total extent of remnant vegetation triggered as being of "State", "Regional" or "Local" significance due to the presence of an overlying BPA derived terrestrial or riparian corridor within the AOI, is provided in the following table. For further information on how remnant vegetation is triggered due to the presence of an overlying BPA derived corridor, refer to the relevant landscape BPA expert panel report(s).

Table 14: Extent of triggered remnant vegetation due to the presence of BPA derived corridors with respect to the AOI

Biodiversity Significance	Area (Ha)	% of AOI
State	0.0	0.0
Regional	1.52	35.85
Local	0.0	0.0

NB: area figures associated with the extent of corridor triggered remnant vegetation are only available for those bioregions where a BPA has been undertaken.

Refer to **Map 3** for further information.

Threatening process/condition (Criteria K) - areas identified by experts under this criterion may be used to amend (upgrade or downgrade) biodiversity significance arising from the "first-cut" analysis. The condition of remnant vegetation is affected by threatening processes such as weeds, ferals, grazing and burning regime, selective timber harvesting/removal, salinity, soil erosion, and climate change.

Assessment of Criteria K with respect to the AOI is not currently included in the "Biodiversity and Conservation Values" report, as it has not been applied to the majority of Queensland due to data/information limitations and availability.

Special Area Decisions

Expert panel derived "Special Area Decisions" are used to assign values to Other Essential Criteria. The specific decisions which relate to the AOI in question are listed in the table below.

Table 15: Expert panel decisions for assigning levels of biodiversity significance with respect to the AOI

Decision Number	Description	Panel Recommended Significance	Criteria Values
seqs_l_22	Terrestrial bioregional corridors	State or Regional	Criterion J

Expert panel decision descriptions:

seqs_l_22

The expert panel reviewed the existing bioregional corridors for southern SEQ. Corridors were assigned as being of State or Regional significance.

For further information, refer to section 2.3.2 and 3.2 of this report.

Aquatic Conservation Assessments

Introduction

The Aquatic Biodiversity Assessment and Mapping Method or AquaBAMM (Clayton *et al.* 2006), was developed to assess conservation values of wetlands in queensland, and may also have application in broader geographical contexts. It is a comprehensive method that uses available data, including data resulting from expert opinion, to identify relative wetland conservation/ecological values within a specified study area (usually a catchment). The product of applying this method is an Aquatic Conservation Assessment (ACA) for the study area.

An ACA using AquaBAMM is non-social, non-economic and identifies the conservation/ecological values of wetlands at a user-defined scale. It provides a robust and objective conservation assessment using criteria, indicators and measures that are founded upon a large body of national and international literature. The criteria, each of which may have variable numbers of indicators and measures, are naturalness (aquatic), naturalness (catchment), diversity and richness, threatened species and ecosystems, priority species and ecosystems, special features, connectivity and representativeness. An ACA using AquaBAMM is a powerful decision support tool that is easily updated and simply interrogated through a geographic information system (GIS).

Where they have been conducted, ACAs can provide a source of baseline wetland conservation/ecological information to support natural resource management and planning processes. They are useful as an independent product or as an important foundation upon which a variety of additional environmental and socio-economic elements can be added and considered (i.e. an early input to broader 'triple-bottom-line' decision-making processes). An ACA can have application in:

- determining priorities for protection, regulation or rehabilitation of wetlands and other aquatic ecosystems
- on-ground investment in wetlands and other aquatic ecosystems
- contributing to impact assessment of large-scale development (e.g. dams)
- water resource and strategic regional planning prcesses

For a detailed explanation of the methodology please refer to the summary and expert panel reports relevant to the ACA utilised in this assessment. These reports can be accessed at Wetland *Info*:

http://wetlandinfo.des.qld.gov.au/wetlands/assessment/assessment-methods/aca

The GIS results can be downloaded from the Queensland Spatial Catalogue at:

http://qspatial.information.qld.gov.au/geoportal/

Explanation of Criteria

Under the AquaBAMM, eight criteria are assessed to derive an overall conservation value. Similar to the Biodiversity Assessment and Mapping Methodology, the criteria may be primarily diagnostic (quantitative) or primarily expert opinion (qualitative) in nature. The following sections provide a brief description of each of the 8 criteria.

Criteria 1. Naturalness - Aquatic: This attribute reflects the extent to which a wetland's (riverine, non-riverine, estuarine) aquatic state of naturalness is affected through relevant influencing indicators which include: presence of exotic flora and fauna; presence of aquatic communities; degree of habitat modification and degree of hydrological modification.

Criteria 2. Naturalness - Catchment: The naturalness of the terrestrial systems of a catchment can have an influence on many wetland characteristics including: natural ecological processes e.g. nutrient cycling, riparian vegetation, water chemistry, and flow. The indicators utilised to assess this criterion include: presence of exotic flora and/or fauna; riparian, catchment and flow modification.

Criteria 3. Naturalness - Diversity and Richness: This criterion is common to many ecological assessment methods and can include both physical and biological features. It includes such indicators as species richness, riparian ecosystem richness and geomorphological diversity.

Criteria 4. Threatened Species and Ecosystems: This criterion evaluates ecological rarity characteristics of a wetland. This includes both species rarity and rarity of communities / assemblages. The communities and assemblages are best represented by regional ecosystems. Species rarity is determined by NCA and EPBC status with Endangered, Vulnerable or Near-threatened species being included in the evaluation. Ecosystem rarity is determined by regional ecosystem biodiversity status i.e. Endangered, Of Concern, or Not of Concern.

Criteria 5. Priority Species and Ecosystems: Priority flora and fauna species lists are expert panel derived. These are aquatic, semi-aquatic and riparian species which exhibit at least 1 particular trait in order to be eligible for consideration. For

flora species the traits included:

- It forms significant macrophyte beds (in shallow or deep water).
- It is an important food source.
- It is important/critical habitat.
- It is implicated in spawning or reproduction for other fauna and/or flora species.
- It is at its distributional limit or is a disjunct population.
- It provides stream bank or bed stabilisation or has soil binding properties.
- It is a small population and subject to threatening processes.

Fauna species are included if they meet at least one of the following traits:

- It is endemic to the study area (>75 per cent of its distribution is in the study area/catchment).
- It has experienced, or is suspected of experiencing, a serious population decline.
- It has experienced a significant reduction in its distribution and has a naturally restricted distribution in the study area/catchment.
- It is currently a small population and threatened by loss of habitat.
- It is a significant disjunct population.
- It is a migratory species (other than birds).
- A significant proportion of the breeding population (>one per cent for waterbirds, >75 per cent other species) occurs in the waterbody (see Ramsar criterion 6 for waterbirds).
- Limit of species range.

See the individual expert panel reports for the priority species traits specific to an ACA.

Criteria 6. Special Features: Special features are areas identified by flora, fauna and ecology expert panels which exhibit characteristics beyond those identified in other criteria and which the expert panels consider to be of the highest ecological importance. Special feature traits can relate to, but are not solely restricted to geomorphic features, unique ecological processes, presence of unique or distinct habitat, presence of unique or special hydrological regimes e.g. spring-fed streams. Special features are rated on a 1 - 4 scale (4 being the highest).

Criteria 7. Connectivity: This criterion is based on the concept that appropriately connected aquatic ecosystems are healthy and resilient, with maximum potential biodiversity and delivery of ecosystem services.

Criteria 8. Representativeness: This criterion applies primarily to non-riverine assessments, evaluates the rarity and uniqueness of a wetland type in relation to specific geographic areas. Rarity is determined by the degree of wetland protection within "protected Areas" estate or within an area subject to the *Fisheries Act 1994*, *Coastal Protection and Management Act 1995*, or *Marine Parks Act 2004*. Wetland uniqueness evaluates the relative abundance and size of a wetland or wetland management group within geographic areas such as catchment and subcatchment.

Riverine Wetlands

Riverine wetlands are all wetlands and deepwater habitats within a channel. The channels are naturally or artificially created, periodically or continuously contain moving water, or connecting two bodies of standing water. AquaBAMM, when applied to riverine wetlands uses a discrete spatial unit termed subsections. A subsection can be considered as an area which encompasses discrete homogeneous stream sections in terms of their natural attributes (i.e. physical, chemical, biological and utilitarian values) and natural resources. Thus in an ACA, an aquatic conservation significance score is calculated for each subsection and applies to all streams within a subsection, rather than individual streams as such.

Please note, the area figures provided in Tables 16 and 17, are derived using the extent of riverine subsections within the AOI. Refer to **Map 5** for further information. A summary of the conservation significance of riverine wetlands within the AOI is provided in the following table.

Table 16: Overall level/s of riverine aquatic conservation significance

Aquatic conservation significance (riverine wetlands)	Area (Ha)	% of AOI
Very High	0.0	0.0

Aquatic conservation significance (riverine wetlands)	Area (Ha)	% of AOI
High	4.24	100.0
Medium	0.0	0.0
Low	0.0	0.0
Very Low	0.0	0.0

The individual aquatic conservation criteria ratings for riverine wetlands within the AOI are listed below.

Table 17: Level/s of riverine aquatic conservation significance based on selected criteria

Criteria	Very High Rating - Area (Ha)	Very High Rating - % of AOI	High Rating - Area (Ha)	High Rating - % of AOI	Medium Rating - Area (Ha)	Medium Rating - % of AOI	Low Rating - Area (Ha)	Low Rating - % of AOI
1. Naturalness aquatic					4.24	100.0		
2. Naturalness catchment							4.24	100.0
3. Diversity and richness	4.24	100.0						
4. Threatened species and ecosystems	4.24	100.0						
5. Priority species and ecosystems	4.24	100.0						
6. Special features								
7. Connectivity							4.24	100.0
8. Representative-ness								

The table below lists and describes the relevant expert panel decisions used to assign conservation significance values to riverine wetlands within the AOI.

Table 18: Expert panel decisions for assigning overall levels of riverine aquatic conservation significance

Decision number	Special feature	Catchment	Criteria/Indicator/Measure	Conservation rating (1-4)
(No Records)				

4 is the highest rating/value

Expert panel decision descriptions:

(No Records)

Non-riverine Wetlands

Non-riverine wetlands include both lacustrine and palustrine wetlands, however, do not currently incorporate estuarine, marine or subterranean wetland types. A summary of the conservation significance of non-riverine wetlands within the AOI is provided in the following table. Refer to **Map 6** for further information.

Table 19: Overall level/s of non-riverine aquatic conservation significance

Aquatic conservation significance (non-riverine wetlands)	Area (Ha)	% of AOI
(No Records)		

The following table provides an assessment of non-riverine wetlands within the AOI and associated aquatic conservation criteria values.

Table 20: Level/s of non-riverine aquatic conservation significance based on selected criteria

Criteria	Very High Rating - Area (Ha)	Very High Rating - % of AOI	High Rating - Area (Ha)	High Rating - % of AOI	Medium Rating - Area (Ha)	Medium Rating - % of AOI	Low Rating - Area (Ha)	Low Rating - % of AOI
(No Records)								

The table below lists and describes the relevant expert panel decisions used to assign conservation significance values to non-riverine wetlands within the AOI.

Table 21: Expert panel decisions for assigning overall levels of non-riverine aquatic conservation significance.

Decision number	Special feature	Catchment	Criteria/Indicator/Measure	Conservation rating (1-4)
(No Records)				

4 is the highest rating/value

Expert panel decision descriptions:

(No Records)

Threatened and Priority Species

Introduction

This chapter contains a list of threatened and priority flora and/or fauna species that have been recorded on, or within 4km of the Assessment Area.

The information presented in this chapter with respect to species presence is derived from compiled databases developed primarily for the purpose of BPAs and ACAs. Data is collated from a number of sources and is updated periodically.

It is important to note that the list of species provided in this report, may differ when compared to other reports generated from other sources such as the State government's WildNet, Herbrecs or the federal government's EPBC database for a number of reasons.

Records for threatened and priority species are filtered and checked based on a number of rules including:

- Taxonomic nomenclature - current scientific names and status,
- Location - cross-check co-ordinates with location description,
- Taxon by location - requires good knowledge of the taxon and history of the record,
- Duplicate records - identify and remove,
- Expert panels - check records and provide new records,
- Flora cultivated records excluded,
- Use precise records less than or equal to 2000m,
- Use recent records greater than or equal to 1975 animals, greater than or equal to 1950 plants.

Threatened Species

Threatened species are those species classified as "Endangered" or "Vulnerable" under the *Environment Protection and Biodiversity Conservation Act 1999* or "Endangered", "Vulnerable" or "Near threatened" under the *Nature Conservation Act 1992*.

The following threatened species have been recorded on, or within approximately 4km of the AOI.

Table 22: Threatened species recorded on, or within 4km of the AOI

Species	Common name	NCA status	EPBC status	Back on Track rank	Migratory species*	Wetland species**	Identified flora/fauna
Adelotus brevis	Tusked Frog	V		Medium		Y	FA
Lathamus discolor	Swift Parrot	E	CE	Medium	Y		FA
Marsdenia coronata	slender milkvine	V		Low			FL
Ninox strenua	Powerful Owl	V		Medium			FA
Petauroides volans	Greater Glider	V	V	Low			FA
Phascolarctos cinereus	Koala	V	V	Low			FA
Plectranthus habrophyllus		E	E	Low			FL
Rostratula australis	Australian Painted Snipe	V	E	Medium		Y	FA

NB. Please note that the threatened species listed in this section are based upon the most recently compiled DES internal state-wide threatened species dataset. This dataset may contain additional records that were not originally available for inclusion in the relevant individual BPAs and ACAs.

**JAMBA - Japan-Australia Migratory Bird Agreement; CAMBA - China-Australia Migratory Bird Agreement; ROKAMBA - Republic of Korea-Australia Migratory Bird Agreement; CMS - Convention on the Conservation of Migratory Species.*

***Y - wetland indicator species.*

BPA Priority Species

A list of BPA priority species that have been recorded on, or within approximately 4km of the AOI is contained in the following table.

Table 23: Priority species recorded on, or within 4km of the AOI

Species	Common name	Back on Track rank	Identified flora/fauna
Cheramoeca leucosterna	White-backed Swallow	Low	FA
Delma plebeia	Common Delma	Medium	FA
Ephippiorhynchus asiaticus	Black-necked Stork	Low	FA
Gyrocochlea raveni	Raven's Pinwheel Snail		FA
Litoria dentata	Bleating Treefrog	Low	FA
Lophoictinia isura	Square-tailed Kite	Low	FA
Melaleuca quinquenervia	swamp paperbark		FL
Melithreptus gularis	Black-chinned Honeyeater	Low	FA
Moretonistes mansueta	Moreton Bay Woodland Snail		FA
Pomatostomus temporalis	Grey-crowned Babbler		FA
Pseudophryne coriacea	Red Backed Broodfrog	Low	FA
Scoteanax rueppellii	Greater Broad-nosed Bat	Medium	FA

NB. Please note that the list of priority species is based on those species identified in the BPAs, however records for these species may be more recent than the originals used. furthermore, the BPA priority species databases are updated from time to time. At each update, the taxonomic details for all species are amended as necessary to reflect current taxonomic name and/or status changes.

ACA Priority Species

A list of ACA priority species used in riverine and non-riverine ACAs that have been recorded on, or within approximately 4km of the AOI are contained in the following tables.

Table 24: Priority species recorded on, or within 4 km of the AOI - riverine

Species	Common name	Back on Track rank	Identified flora/fauna
Acrocephalus australis	Australian Reed-Warbler	L	FA
Actitis hypoleucos	Common Sandpiper	L	FA
Ardea ibis	Cattle Egret	Low	FA
Ardea modesta	Eastern Great Egret	Low	FA
Eucalyptus tereticornis			FL
Ficus coronata	creek sandpaper fig		FL
Gallinago hardwickii	Latham's Snipe	L	FA
Haliaeetus leucogaster	White-bellied Sea-Eagle	L	FA
Melaleuca quinquenervia	swamp paperbark		FL
Rostratula australis	Australian Painted Snipe	M	FA

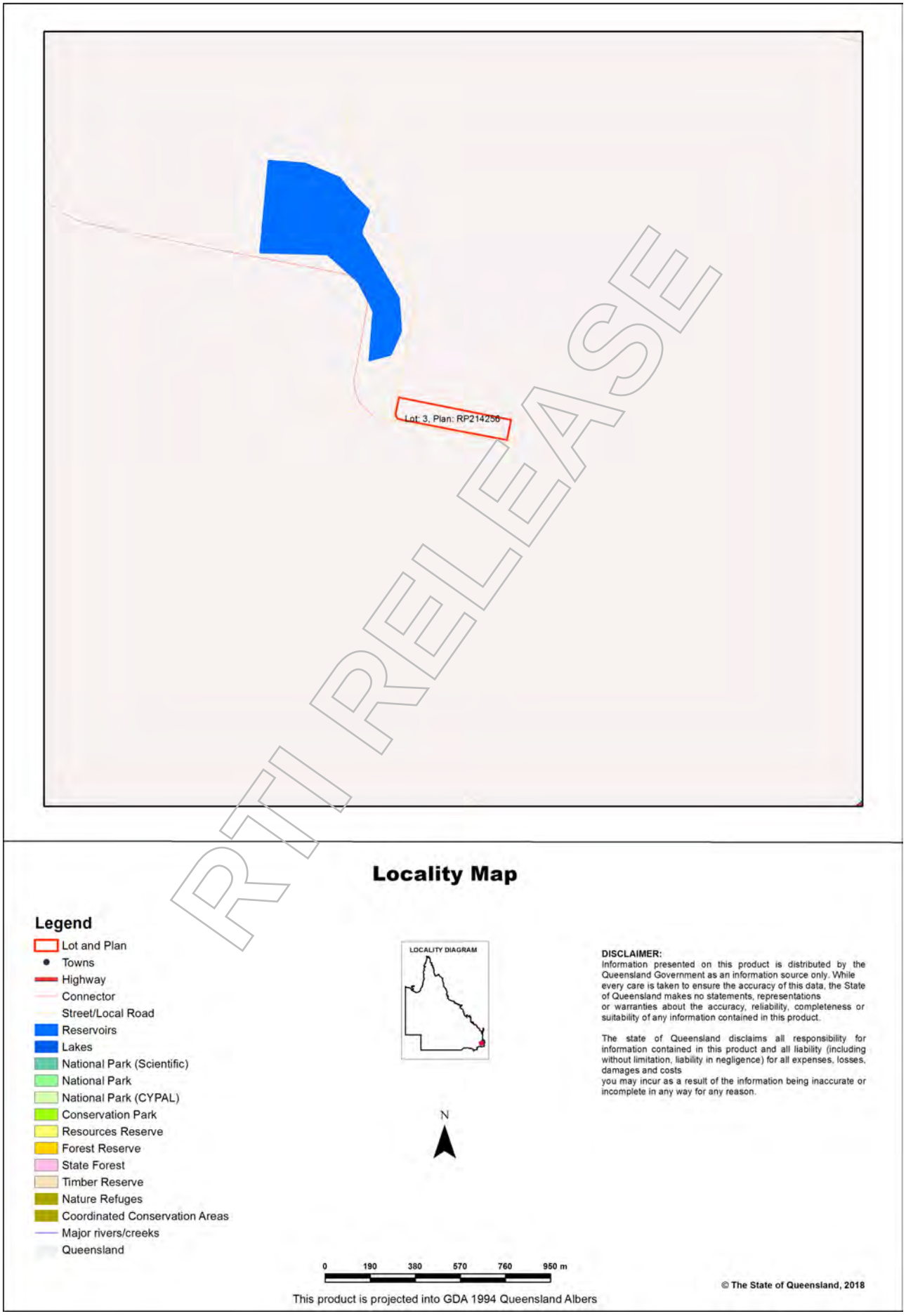
Table 25: Priority species recorded on, or within 4 km of the AOI - non-riverine

Species	Common name	Back on Track rank	Identified flora/fauna
Acrocephalus australis	Australian Reed-Warbler	L	FA
Ardea ibis	Cattle Egret	Low	FA
Ardea modesta	Eastern Great Egret	Low	FA
Calidris acuminata	Sharp-tailed Sandpiper	L	FA
Eucalyptus tereticornis			FL
Gallinago hardwickii	Latham's Snipe	L	FA
Haliaeetus leucogaster	White-bellied Sea-Eagle	L	FA
Limosa limosa	Black-tailed Godwit	L	FA
Melaleuca quinquenervia	swamp paperbark		FL
Plegadis falcinellus	Glossy Ibis	L	FA
Rostratula australis	Australian Painted Snipe	M	FA
Tringa stagnatilis	Marsh Sandpiper	L	FA

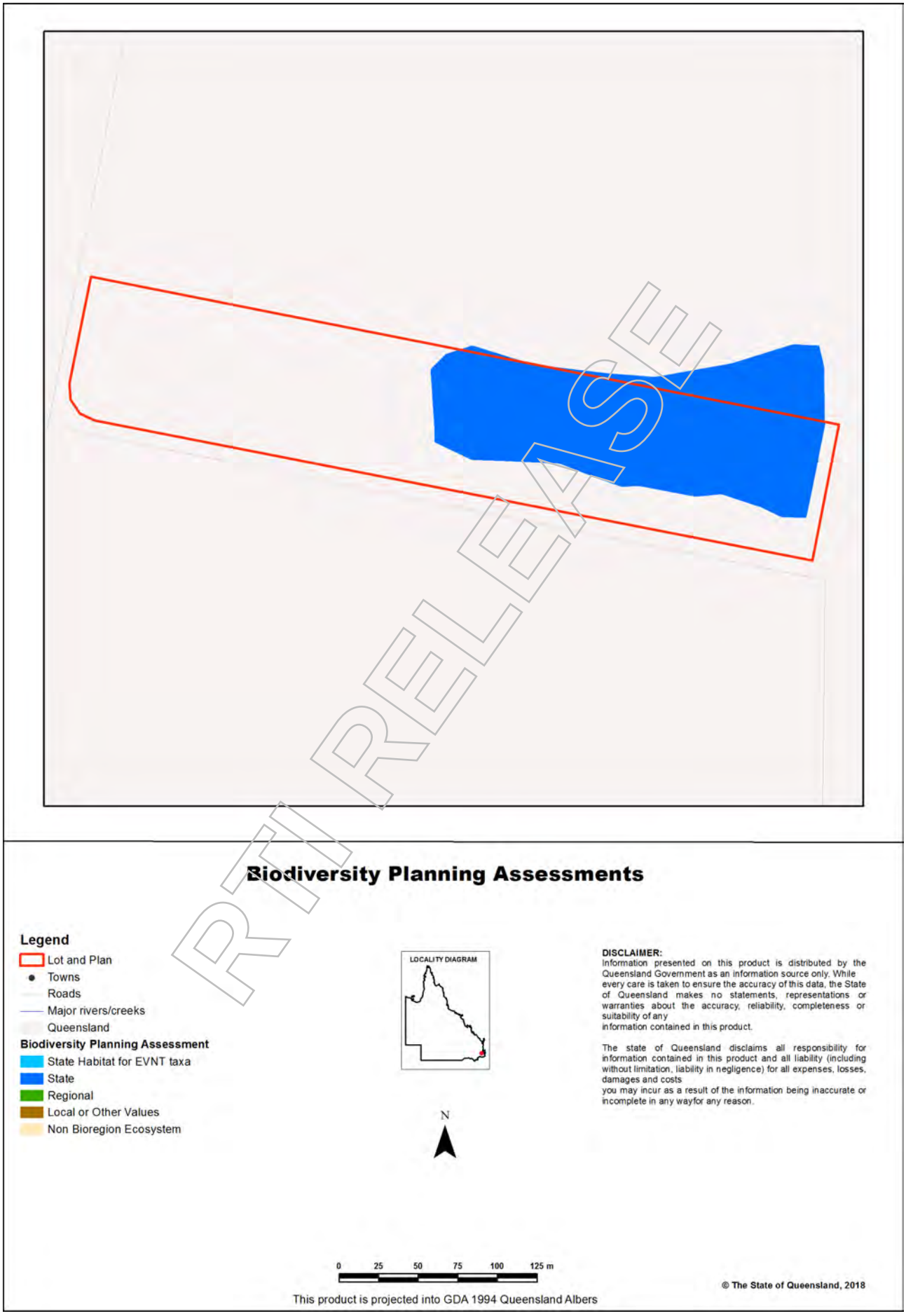
NB. Please note that the priority species records used in the above two tables are comprised of those adopted for the released individual ACAs. The ACA riverine and non-riverine priority species databases are updated from time to time to reflect new release of ACAs. At each update, the taxonomic details for all ACAs records are amended as necessary to reflect current taxonomic name and/or status changes.

Maps

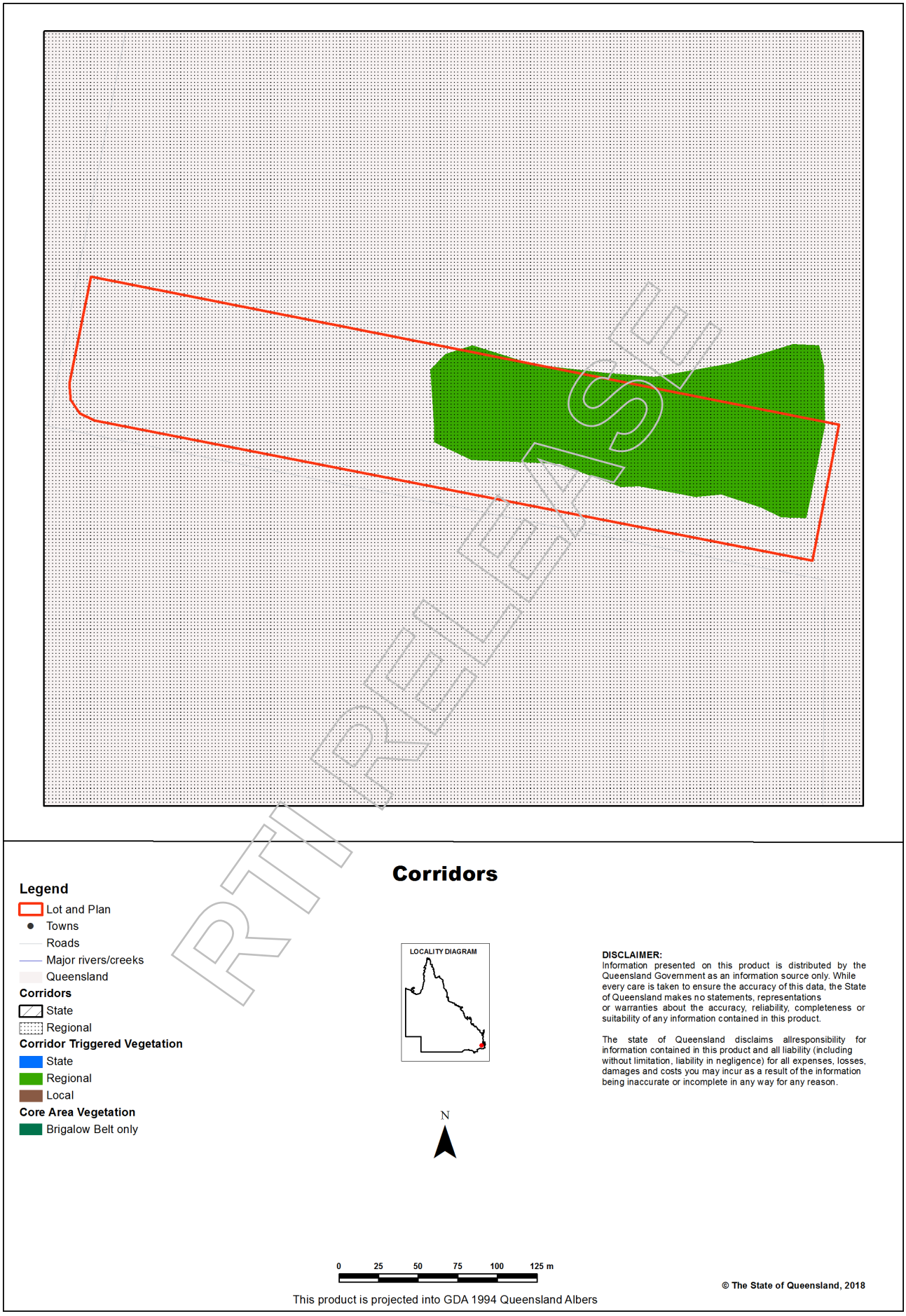
Map 1 - Locality Map



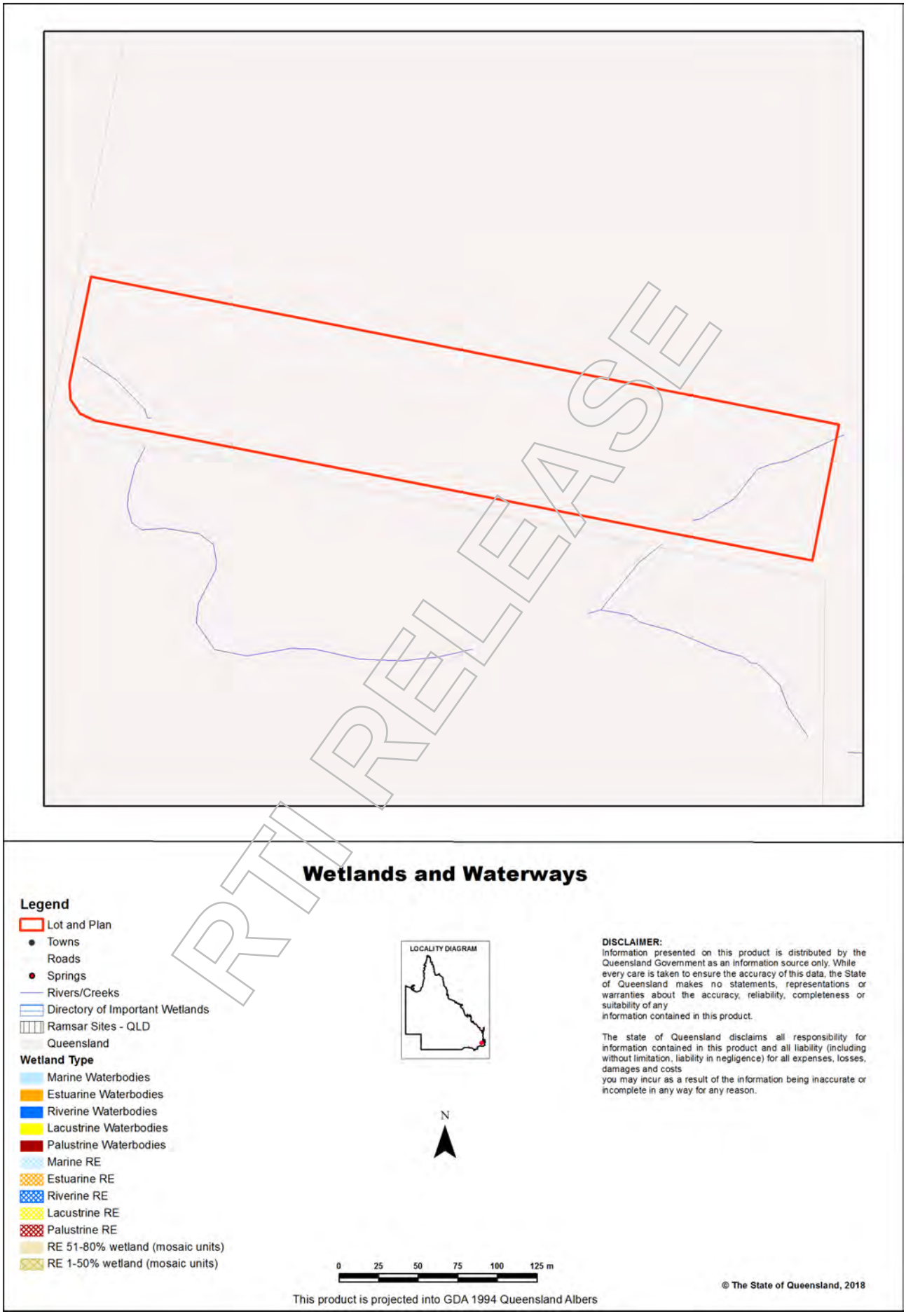
Map 2 - Biodiversity Planning Assessment (BPA)



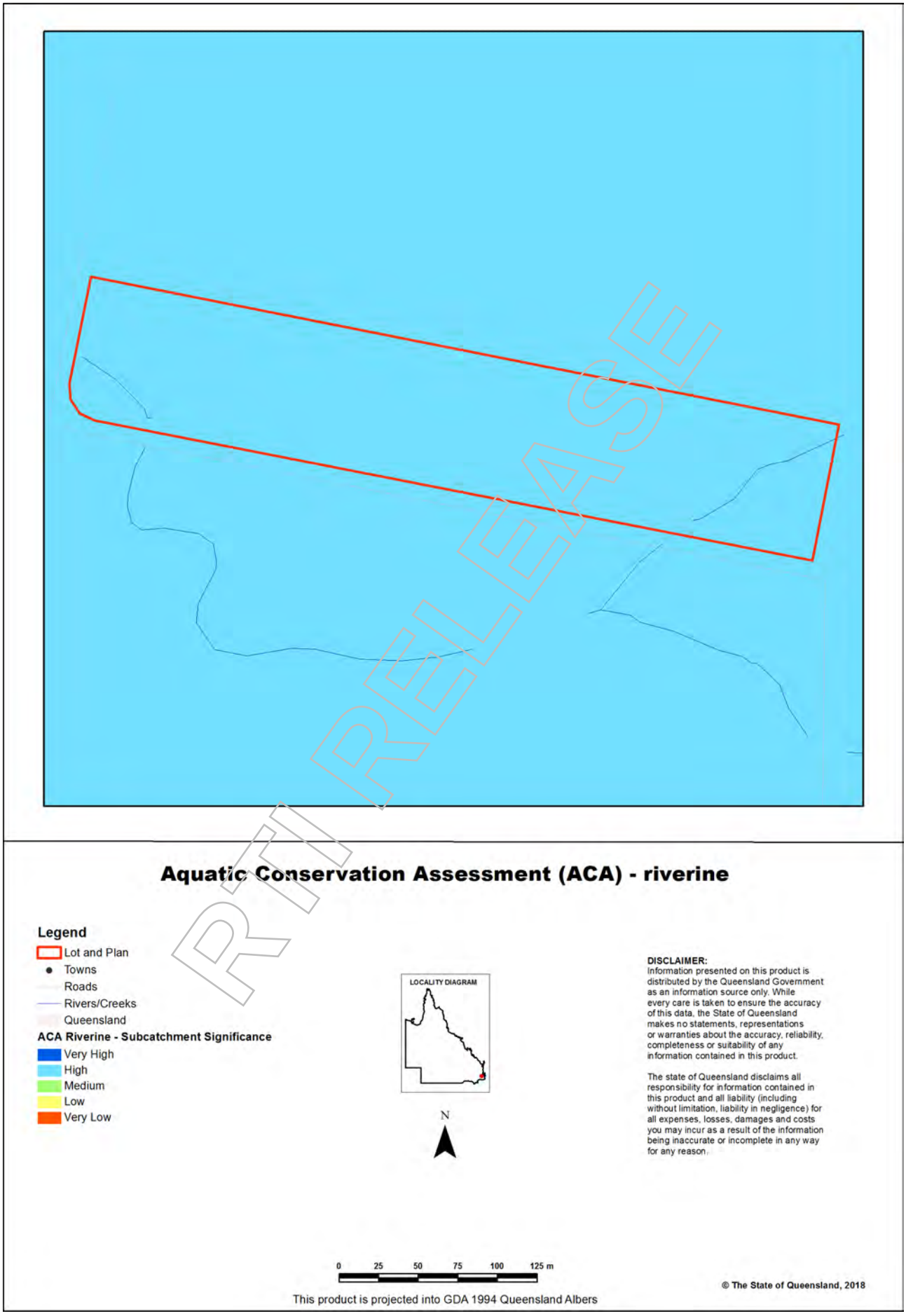
Map 3 - Corridors



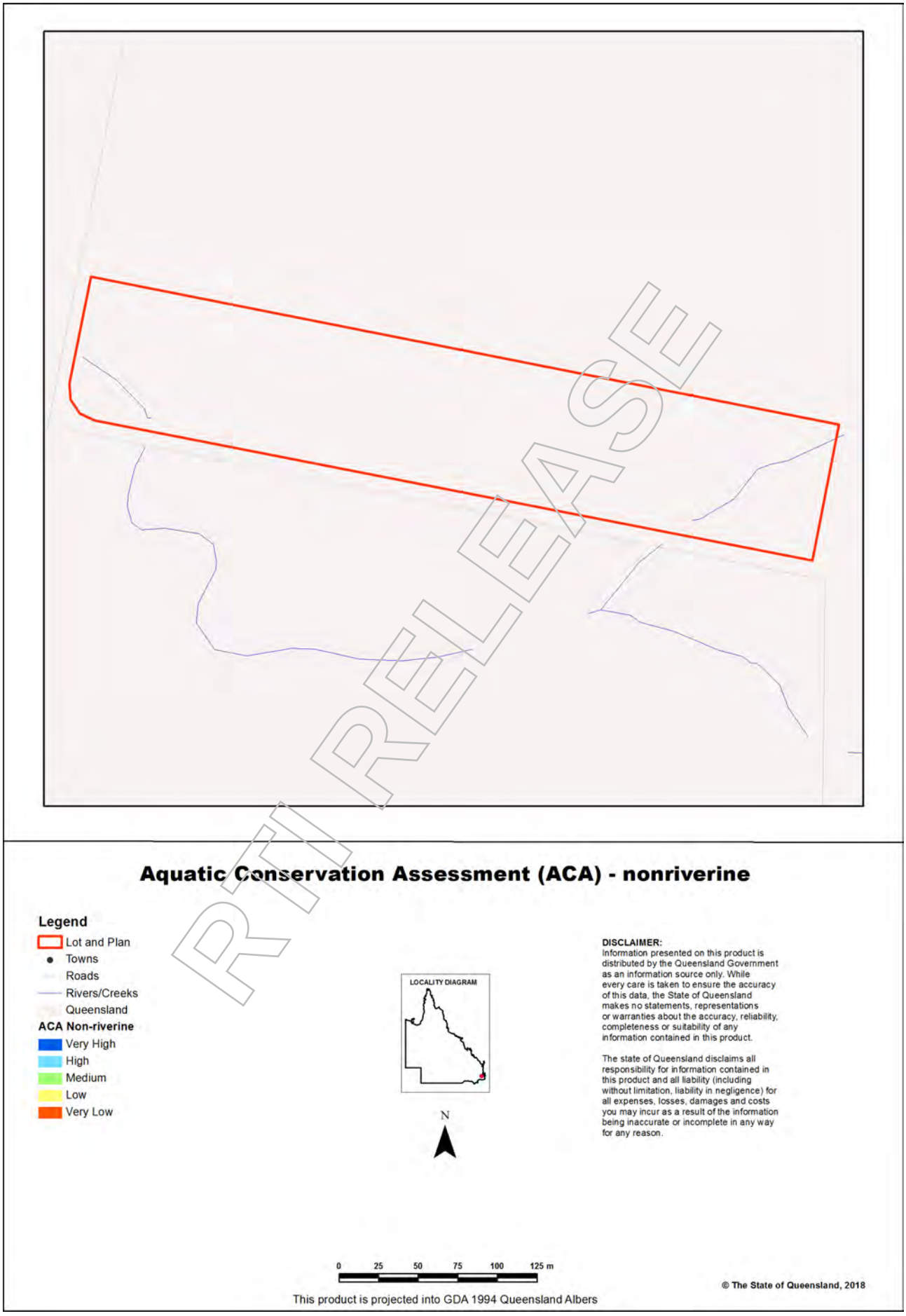
Map 4 - Wetlands and waterways



Map 5 - Aquatic Conservation Assessment (ACA) - riverine



Map 6 - Aquatic Conservation Assessment (ACA) - non-riverine



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Clayton, P.D., Fielder, D.F., Howell, S. and Hill, C.J. (2006) *Aquatic biodiversity assessment and mapping method (AquaBAMM): a conservation values assessment tool for wetlands with trial application in the Burnett River catchment.* Published by the Environmental Protection Agency, Brisbane. ISBN 1-90928-07-3. Available at

http://wetlandinfo.des.qld.gov.au/wetlands/assessment/assessment-methods/aca/

Environmental Protection Agency (2002) *Biodiversity Assessment and Mapping Methodology. Version 2.1, July 2002.* (Environmental Protection Agency, Brisbane).

Morton, S. R., Short, J. and Barker, R. D. with an Appendix by G.F. Griffin and G. Pearce (1995). *Refugia for Biological Diversity in Arid and Semi-arid Australia. Biodiversity Series* , Paper No. 4, Biodiversity Unit, Environment Australia.

Sattler, P.S. and Williams, R.D. (eds) (1999). *The Conservation Status of Queensland's Bioregional Ecosystems*. Environmental Protection Agency, Brisbane.

Appendices

Appendix 1 - Source Data

Theme	Datasets
Aquatic Conservation Assessments Non-riverine*	Combination of the following datasets: Cape York Peninsula Non-riverine v1.1 Eastern Gulf of Carpentaria v1.1 Great Barrier Reef Catchment Non-riverine v1.3 Lake Eyre and Bulloo Basins v1.1 QMDB Non-riverine ACA v1.4 Southeast Queensland ACA v1.1 WBB Non-riverine ACA v1.1
Aquatic Conservation Assessments Riverine*	Combination of the following datasets: Cape York Peninsula Riverine v1.1 Eastern Gulf of Carpentaria v1.1 Great Barrier Reef Catchment Riverine v1.1 Lake Eyre and Bulloo Basins v1.1 QMDB Riverine ACA v1.4 Southeast Queensland ACA v1.1 WBB Riverine ACA v1.1
Biodiversity Planning Assessments*	Combination of the following datasets: Brigalow Belt BPA v2.1 Cape York Peninsula BPA v1.1 Central Queensland Coast BPA v1.3 Channel Country BPA v1.1 Desert Uplands BPA v1.3 Einasleigh Uplands BPA v1.1 Gulf Plains BPA v1.1 Mitchell Grass Downs BPA v1.1 Mulga Lands BPA v1.4 New England Tableland v2.3 Southeast Queensland v4.1
Statewide BPA Corridors*	Statewide corridors v1.4
Threatened Species	An internal DES database compiled from Wildnet, Herbrecs, Corveg, the QLD Museum, as well as other incidental sources.
BPA Priority Species	An internal DES database compiled from Wildnet, Herbrecs, Corveg, the QLD Museum, as well as other incidental sources.
ACA Priority Species	An internal DES database compiled from Wildnet, Herbrecs, Corveg, the QLD Museum, as well as other incidental sources.

***These datasets are available at:**

http://dds.information.qld.gov.au/DDS

Appendix 2 - Acronyms and Abbreviations

AOI	- Area of Interest
ACA	- Aquatic Conservation Assessment
AQUABAMM	- Aquatic Biodiversity Assessment and Mapping Methodology
BAMM	- Biodiversity Assessment and Mapping Methodology
BoT	- Back on Track
BPA	- Biodiversity Planning Assessment
CAMBA	- China-Australia Migratory Bird Agreement
DES	- Department of Environment and Science
EPBC	- *Environment Protection and Biodiversity Conservation Act 1999*
EVNT	- Endangered, Vulnerable, Near Threatened
GDA94	- Geocentric Datum of Australia 1994
GIS	- Geographic Information System
JAMBA	- Japan-Australia Migratory Bird Agreement
NCA	- *Nature Conservation Act 1992*
RE	- Regional Ecosystem
REDD	- Regional Ecosystem Description Database
ROKAMBA	- Republic of Korea-Australia Migratory Bird Agreement

Queensland Government

Department of Environment and Science

Environmental Reports

Biodiversity and Conservation Values

Biodiversity Planning Assessments and Aquatic Conservation Assessments

For the selected area of interest
Lot: 101 Plan: RP839072

Environmental Reports - General Information

The Environmental Reports portal provides for the assessment of selected matters of interest relevant to a user specified location, or Area of Interest (AOI). All area and derivative figures are relevant to the extent of matters of interest contained within the AOI unless otherwise stated. Please note, if a user selects an AOI via the "Central co-ordinates" option, the resulting assessment area encompasses an area extending from 2km radius from the point of interest.

All area and area derived figures included in this report have been calculated via reprojecting relevant spatial features to Albers equal-area conic projection (central meridian = 146, datum Geocentric Datum of Australia 1994). As a result, area figures may differ slightly if calculated for the same features using a different co-ordinate system.

Figures in tables may be affected by rounding.

The matters of interest reported on in this document are based upon available state mapped datasets. Where the report indicates that a matter of interest is not present within the AOI (e.g. where area related calculations are equal to zero, or no values are listed), this may be due either to the fact that state mapping has not been undertaken for the AOI, that state mapping is incomplete for the AOI, or that no values have been identified within the site.

The information presented in this report should be considered as a guide only and field survey may be required to validate values on the ground.

Please direct queries about these reports to: biodiversity.planning@des.qld.gov.au

Disclaimer

Whilst every care is taken to ensure the accuracy of the information provided in this report, the Queensland Government makes no representations or warranties about its accuracy, reliability, completeness, or suitability, for any particular purpose and disclaims all responsibility and all liability (including without limitation, liability in negligence) for all expenses, losses, damages (including indirect or consequential damage) and costs which the user may incur as a consequence of the information being inaccurate or incomplete in any way and for any reason.

Table of Contents

Summary Information

Tables 1 to 8 provide an overview of the AOI with respect to selected topographic and environmental values.

Table 1: Area of interest details: Lot: 101 Plan: RP839072

Size (ha)	21.95
Local Government(s)	Ipswich City
Bioregion(s)	Southeast Queensland
Subregion(s)	Moreton Basin
Catchment(s)	Brisbane

The following table identifies available Biodiversity Planning Assessments (BPAs) and Aquatic Conservation Assessments (ACAs) with respect to the AOI.

Table 2: Available Biodiversity Planning and Aquatic Conservation Assessments

Assessment Type	Assessment Area and Version
Biodiversity Planning Assessment(s)	Southeast Queensland v4.1
Aquatic Conservation Assessment(s) (riverine)	South East Queensland Catchments v1.1
Aquatic Conservation Assessment(s) (non-riverine)	South East Queensland Catchments v1.1

Table 3: Remnant regional ecosystems within the AOI as per the Qld Herbarium's 'biodiversity status'

Biodiversity Status	Area (Ha)	% of AOI
Endangered	0.0	0.0
Of concern	0.0	0.0
No concern at present	0.0	0.0

The following table identifies the extent and proportion of the user specified area of interest (AOI) which is mapped as being of "State", "Regional" or "Local" significance via application of the Queensland Department of Environment and Science's *Biodiversity Assessment and Mapping Methodology* (BAMM).

Table 4: Summary table, biodiversity significance

Biodiversity significance	Area (Ha)	% of AOI
(No Records)		

Table 5: Non-riverine wetlands intersecting the AOI

Non-riverine wetland types intersecting the area of interest	#
(No Records)	

NB. The figures presented in the table above are derived from the relevant non-riverine Aquatic Conservation Assessment(s). Later releases of wetland mapping produced via the Queensland Wetland Mapping Program may provide more recent information in regards to wetland extent.

Table 6: Named waterways intersecting the AOI

(no results)

Refer to **Map 1** for general locality information.

The following two tables identify the extent and proportion of the user specified AOI which is mapped as being of "Very High", "High", "Medium", "Low", or "Very Low" aquatic conservation value for riverine and non-riverine wetlands via application of the Queensland Department of Environment and Science's *Aquatic Biodiversity Assessment and Mapping Method* (AquaBAMM).

Table 7: Summary table, aquatic conservation significance (riverine)

Aquatic conservation significance (riverine wetlands)	Area (Ha)	% of AOI
Very High	0.0	0.0
High	21.95	100.0
Medium	0.0	0.0
Low	0.0	0.0
Very Low	0.0	0.0

Table 8: Summary table, aquatic conservation significance (non-riverine)

Aquatic conservation significance (non-riverine wetlands)	Area (Ha)	% of AOI
(No Records)		

Biodiversity Planning Assessments

Introduction

The Department of Environment and Science (DES) attributes biodiversity significance on a bioregional scale through a Biodiversity Planning Assessment (BPA). A BPA involves the integration of ecological criteria using the *Biodiversity assessment and Mapping Methodology* (BAMM) and is developed in two stages: 1) **diagnostic criteria**, and 2) **expert panel criteria**. The diagnostic criteria are based on existing data which is reliable and uniformly available across a bioregion, while the expert panel criteria allows for the refinement of the mapped information from the diagnostic output by incorporating local knowledge and expert opinion.

The BAMM methodology has application for identifying areas with various levels of significance solely for biodiversity reasons. These include threatened ecosystems or taxa, large tracts of habitat in good condition, ecosystem diversity, landscape context and connection, and buffers to wetlands or other types of habitat important for the maintenance of biodiversity or ecological processes. While natural resource values such as dryland salinity, soil erosion potential or land capability are not dealt with explicitly, they are included to some extent within the biodiversity status of regional ecosystems recognised by the DES.

Biodiversity Planning Assessments (BPAs) assign three levels of overall biodiversity significance.

- **State significance** - areas assessed as being significant for biodiversity at the bioregional or state scales. They also include areas assessed by other studies/processes as being significant at national or international scales. In addition, areas flagged as being of State significance due to the presence of endangered, vulnerable and/or near threatened taxa, are identified as "State Habitat for EVNT taxa".
- **Regional significance** - areas assessed as being significant for biodiversity at the subregional scale. These areas have lower significance for biodiversity than areas assessed as being of State significance.
- **Local significance and/or other values** - areas assessed as not being significant for biodiversity at state or regional scales. Local values are of significance at the local government scale.

For further information on released BPAs and a copy of the underlying methodology, go to:

http://www.qld.gov.au/environment/plants-animals/biodiversity/planning/

The GIS results can be downloaded from the Queensland Spatial Catalogue at:

http://qspatial.information.qld.gov.au/geoportal/

The following table identifies the extent and proportion of the user specified AOI which is mapped as being of "State", "Regional" or "Local" significance via application of the BAMM.

Table 9: Summary table, biodiversity significance

Biodiversity significance	Area (Ha)	% of AOI
(No Records)		

Refer to **Map 2** for further information.

Diagnostic Criteria

Diagnostic criteria are based on existing data which is reliable and uniformly available across a bioregion. These criteria are diagnostic in that they are used to filter the available data and provide a "first-cut" or initial determination of biodiversity significance. This initial assessment is then combined through a second group of other essential criteria.

A description of the individual diagnostic criteria is provided in the following sections.

Criteria A. Habitat for EVNT taxa: Classifies areas according to their significance based on the presence of endangered, vulnerable and/or rare (EVNT) taxa. EVNT taxa are those scheduled under the *Nature Conservation Act 1992* and/or the *Environment Protection and Biodiversity Conservation Act 1999*. It excludes highly mobile fauna taxa which are instead considered in Criterion H and brings together information on EVNT taxa using buffering of recorded sites or habitat suitability models (HSM) where available.

Criteria B. Ecosystem value: Classifies on the basis of biodiversity status of regional ecosystems, their extent in protected areas (presence of poorly conserved regional ecosystems), the presence of significant wetlands; and areas of national importance such as the presence of Threatened Ecological Communities, World Heritage areas and Ramsar sites. Ecosystem value is applied at a bioregional (**B1**) and regional (**B2**) scale.

Criteria C. Tract size: Measures the relative size of tracts of vegetation in the landscape. The size of any tract is a major indicator of ecological significance, and is also strongly correlated with the long-term viability of biodiversity values. Larger tracts are less susceptible to ecological edge effects and are more likely to sustain viable populations of native flora and fauna than smaller tracts.

Criteria D. Relative size of regional ecosystems: Classifies the relative size of each regional ecosystem unit within its bioregion (**D1**) and its subregion (**D2**). Remnant units are compared with all other occurrences with the same regional ecosystem. Large examples of a regional ecosystem are more significant than smaller examples of the same regional ecosystem because they are more representative of the biodiversity values particular to the regional ecosystem, are more resilient to the effects of disturbance, and constitute a significant proportion of the total area of the regional ecosystem.

Criteria F. Ecosystem diversity: Is an indicator of the number of regional ecosystems occurring within an area. An area with high ecosystem diversity will have many regional ecosystems and ecotones relative to other areas within the bioregion.

Criteria G. Context and connection: Represents the extent to which a remnant unit incorporates, borders or buffers areas such as significant wetlands, endangered ecosystems; and the degree to which it is connected to other vegetation.

A summary of the biodiversity status based upon the diagnostic criteria is provided in the following table.

Table 10: Summary of biodiversity significance based upon diagnostic criteria with respect to the AOI

Biodiversity significance	Description	Area (Ha)	% of AOI
(No Records)			

Assessment of diagnostic criteria with respect to the AOI

The following table reflects an assessment of the individual diagnostic criteria noted above in regards to the AOI.

Table 11: Assessment of individual diagnostic criteria with respect to the AOI

Diagnostic Criteria	Very High Rating - Area (Ha)	Very High Rating - % of AOI	High Rating - Area (Ha)	High Rating - % of AOI	Medium Rating - Area (Ha)	Medium Rating - % of AOI	Low Rating - Area (Ha)	Low Rating - % of AOI
(No Records)								

Other Essential Criteria

Other essential criteria (also known as expert panel criteria) are based on non-uniform information sources and which may rely more upon expert opinion than on quantitative data. These criteria are used to provide a "second-cut" determination of biodiversity significance, which is then combined with the diagnostic criteria for an overall assessment of relative biodiversity significance. A summary of the biodiversity status based upon the other essential criteria is provided in the following table.

Table 12: Summary of biodiversity significance based upon other essential criteria with respect to the AOI

Biodiversity significance	Description	Area (Ha)	% of AOI
(No Records)			

A description of each of the other essential criteria and associated assessment in regards to the AOI is provided in the following sections.

Criteria H. Essential and general habitat for priority taxa: Priority taxa are those which are at risk or of management concern, taxa of scientific interest as relictual (ancient or primitive), endemic taxa or locally significant populations (such as a flying fox camp or heronry), highly specialised taxa whose habitat requirements are complex and distributions are not well correlated with any particular regional ecosystem, taxa important for maintaining genetic diversity (such as complex spatial patterns of genetic variation, geographic range limits, highly disjunct populations), taxa critical for management or monitoring of biodiversity (functionally important or ecological indicators), or economic and culturally important taxa.

Criteria I. Special biodiversity values: areas with special biodiversity values are important because they contain multiple taxa in a unique ecological and often highly biodiverse environment. Areas with special biodiversity values can include the following:

- Ia - centres of endemism - areas where concentrations of taxa are endemic to a bioregion or subregion are found.
- Ib - wildlife refugia (Morton *et al*. 1995), for example, islands, mound springs, caves, wetlands, gorges, mountain ranges and topographic isolates, ecological refuges, refuges from exotic animals, and refuges from clearing. The latter may include large areas that are not suitable for clearing because of land suitability/capability.
- Ic - areas with concentrations of disjunct populations.
- Id - areas with concentrations of taxa at the limits of their geographic ranges.
- Ie - areas with high species richness.
- If - areas with concentrations of relictual populations (ancient and primitive taxa).
- Ig - areas containing REs with distinct variation in species composition associated with geomorphology and other environmental variables.
- Ih - an artificial waterbody or managed/manipulated wetland considered by the panel/s to be of ecological significance.
- Ii - areas with a high density of hollow-bearing trees that provide habitat for animals.

- Ij - breeding or roosting sites used by a significant number of individuals.
- Ik - climate change refuge.

The following table identifies the value and extent area of the Other Essential Criteria H and I within the AOI.

Table 13: Relative importance of expert panel criteria (H and I) used to access overall biodiversity significance with respect to the AOI

Expert Panel	Very High Rating - Area (Ha)	Very High Rating - % of AOI	High Rating - Area (Ha)	High Rating - % of AOI	Medium Rating - Area (Ha)	Medium Rating - % of AOI	Low Rating - Area (Ha)	Low Rating - % of AOI
(No Records)								

NB. Whilst biodiversity values associated with Criteria I may be present within the site (refer to tables 12 and 15), for the New England Tableland and Central Queensland Coast BPAs, area and % area figures associated with Criteria Ia through to Ij cannot be listed in the table above (due to slight variations in data formats between BPAs).

Criteria J. Corridors: areas identified under this criterion qualify either because they are existing vegetated corridors important for contiguity, or cleared areas that could serve this purpose if revegetated. Some examples of corridors include riparian habitats, transport corridors and "stepping stones".

Bioregional and subregional conservation corridors have been identified in the more developed bioregions of Queensland through the BPAs, using an intensive process involving expert panels. Map 3 displays the location of corridors as identified under the Statewide Corridor network. The Statewide Corridor network incorporates BPA derived corridors and for bioregions where no BPA has been assessed yet, corridors derived under other planning processes. *Note: as a result of updating and developing a statewide network, the alignment of corridors may differ slightly in some instances when compared to those used in individual BPAs.*

The functions of these corridors are:

- **Terrestrial** Bioregional corridors, in conjunction with large tracts of remnant vegetation, maintain ecological and evolutionary processes at a landscape scale, by:
  - Maintaining long term evolutionary/genetic processes that allow the natural change in distributions of species and connectivity between populations of species over long periods of time;
  - Maintaining landscape/ecosystems processes associated with geological, altitudinal and climatic gradients, to allow for ecological responses to climate change;
  - Maintaining large scale seasonal/migratory species processes and movement of fauna;
  - Maximising connectivity between large tracts/patches of remnant vegetation;
  - Identifying key areas for rehabilitation and offsets; and

- **Riparian** Bioregional Corridors also maintain and encourage connectivity of riparian and associated ecosystems.

The location of the corridors is determined by the following principles:

- Terrestrial
  - Complement riparian landscape corridors (i.e. minimise overlap and maximise connectivity);
  - Follow major watershed/catchment and/or coastal boundaries;
  - Incorporate major altitudinal/geological/climatic gradients;
  - Include and maximise connectivity between large tracts/patches of remnant vegetation;
  - Include and maximise connectivity between remnant vegetation in good condition; and

- Riparian
  - Located on the major river or creek systems within the bioregion in question.

The total extent of remnant vegetation triggered as being of "State", "Regional" or "Local" significance due to the presence of an overlying BPA derived terrestrial or riparian corridor within the AOI, is provided in the following table. For further information on how remnant vegetation is triggered due to the presence of an overlying BPA derived corridor, refer to the relevant landscape BPA expert panel report(s).

Table 14: Extent of triggered remnant vegetation due to the presence of BPA derived corridors with respect to the AOI

Biodiversity Significance	Area (Ha)	% of AOI
(No Records)		

NB: area figures associated with the extent of corridor triggered remnant vegetation are only available for those bioregions where a BPA has been undertaken.

Refer to **Map 3** for further information.

Threatening process/condition (Criteria K) - areas identified by experts under this criterion may be used to amend (upgrade or downgrade) biodiversity significance arising from the "first-cut" analysis. The condition of remnant vegetation is affected by threatening processes such as weeds, ferals, grazing and burning regime, selective timber harvesting/removal, salinity, soil erosion, and climate change.

Assessment of Criteria K with respect to the AOI is not currently included in the "Biodiversity and Conservation Values" report, as it has not been applied to the majority of Queensland due to data/information limitations and availability.

Special Area Decisions

Expert panel derived "Special Area Decisions" are used to assign values to Other Essential Criteria. The specific decisions which relate to the AOI in question are listed in the table below.

Table 15: Expert panel decisions for assigning levels of biodiversity significance with respect to the AOI

Decision Number	Description	Panel Recommended Significance	Criteria Values
(No Records)			

Expert panel decision descriptions:

(No Records)

Aquatic Conservation Assessments

Introduction

The Aquatic Biodiversity Assessment and Mapping Method or AquaBAMM (Clayton *et al.* 2006), was developed to assess conservation values of wetlands in queensland, and may also have application in broader geographical contexts. It is a comprehensive method that uses available data, including data resulting from expert opinion, to identify relative wetland conservation/ecological values within a specified study area (usually a catchment). The product of applying this method is an Aquatic Conservation Assessment (ACA) for the study area.

An ACA using AquaBAMM is non-social, non-economic and identifies the conservation/ecological values of wetlands at a user-defined scale. It provides a robust and objective conservation assessment using criteria, indicators and measures that are founded upon a large body of national and international literature. The criteria, each of which may have variable numbers of indicators and measures, are naturalness (aquatic), naturalness (catchment), diversity and richness, threatened species and ecosystems, priority species and ecosystems, special features, connectivity and representativeness. An ACA using AquaBAMM is a powerful decision support tool that is easily updated and simply interrogated through a geographic information system (GIS).

Where they have been conducted, ACAs can provide a source of baseline wetland conservation/ecological information to support natural resource management and planning processes. They are useful as an independent product or as an important foundation upon which a variety of additional environmental and socio-economic elements can be added and considered (i.e. an early input to broader 'triple-bottom-line' decision-making processes). An ACA can have application in:

- determining priorities for protection, regulation or rehabilitation of wetlands and other aquatic ecosystems
- on-ground investment in wetlands and other aquatic ecosystems
- contributing to impact assessment of large-scale development (e.g. dams)
- water resource and strategic regional planning prcesses

For a detailed explanation of the methodology please refer to the summary and expert panel reports relevant to the ACA utilised in this assessment. These reports can be accessed at Wetland *Info*:

http://wetlandinfo.des.qld.gov.au/wetlands/assessment/assessment-methods/aca

The GIS results can be downloaded from the Queensland Spatial Catalogue at:

http://qspatial.information.qld.gov.au/geoportal/

Explanation of Criteria

Under the AquaBAMM, eight criteria are assessed to derive an overall conservation value. Similar to the Biodiversity Assessment and Mapping Methodology, the criteria may be primarily diagnostic (quantitative) or primarily expert opinion (qualitative) in nature. The following sections provide a brief description of each of the 8 criteria.

Criteria 1. Naturalness - Aquatic: This attribute reflects the extent to which a wetland's (riverine, non-riverine, estuarine) aquatic state of naturalness is affected through relevant influencing indicators which include: presence of exotic flora and fauna; presence of aquatic communities; degree of habitat modification and degree of hydrological modification.

Criteria 2. Naturalness - Catchment: The naturalness of the terrestrial systems of a catchment can have an influence on many wetland characteristics including: natural ecological processes e.g. nutrient cycling, riparian vegetation, water chemistry, and flow. The indicators utilised to assess this criterion include: presence of exotic flora and/or fauna; riparian, catchment and flow modification.

Criteria 3. Naturalness - Diversity and Richness: This criterion is common to many ecological assessment methods and can include both physical and biological features. It includes such indicators as species richness, riparian ecosystem richness and geomorphological diversity.

Criteria 4. Threatened Species and Ecosystems: This criterion evaluates ecological rarity characteristics of a wetland. This includes both species rarity and rarity of communities / assemblages. The communities and assemblages are best represented by regional ecosystems. Species rarity is determined by NCA and EPBC status with Endangered, Vulnerable or Near-threatened species being included in the evaluation. Ecosystem rarity is determined by regional ecosystem biodiversity status i.e. Endangered, Of Concern, or Not of Concern.

Criteria 5. Priority Species and Ecosystems: Priority flora and fauna species lists are expert panel derived. These are aquatic, semi-aquatic and riparian species which exhibit at least 1 particular trait in order to be eligible for consideration. For

flora species the traits included:

- It forms significant macrophyte beds (in shallow or deep water).
- It is an important food source.
- It is important/critical habitat.
- It is implicated in spawning or reproduction for other fauna and/or flora species.
- It is at its distributional limit or is a disjunct population.
- It provides stream bank or bed stabilisation or has soil binding properties.
- It is a small population and subject to threatening processes.

Fauna species are included if they meet at least one of the following traits:

- It is endemic to the study area (>75 per cent of its distribution is in the study area/catchment).
- It has experienced, or is suspected of experiencing, a serious population decline.
- It has experienced a significant reduction in its distribution and has a naturally restricted distribution in the study area/catchment.
- It is currently a small population and threatened by loss of habitat.
- It is a significant disjunct population.
- It is a migratory species (other than birds).
- A significant proportion of the breeding population (>one per cent for waterbirds, >75 per cent other species) occurs in the waterbody (see Ramsar criterion 6 for waterbirds).
- Limit of species range.

See the individual expert panel reports for the priority species traits specific to an ACA.

Criteria 6. Special Features: Special features are areas identified by flora, fauna and ecology expert panels which exhibit characteristics beyond those identified in other criteria and which the expert panels consider to be of the highest ecological importance. Special feature traits can relate to, but are not solely restricted to geomorphic features, unique ecological processes, presence of unique or distinct habitat, presence of unique or special hydrological regimes e.g. spring-fed streams. Special features are rated on a 1 - 4 scale (4 being the highest).

Criteria 7. Connectivity: This criterion is based on the concept that appropriately connected aquatic ecosystems are healthy and resilient, with maximum potential biodiversity and delivery of ecosystem services.

Criteria 8. Representativeness: This criterion applies primarily to non-riverine assessments, evaluates the rarity and uniqueness of a wetland type in relation to specific geographic areas. Rarity is determined by the degree of wetland protection within "protected Areas" estate or within an area subject to the *Fisheries Act 1994*, *Coastal Protection and Management Act 1995*, or *Marine Parks Act 2004*. Wetland uniqueness evaluates the relative abundance and size of a wetland or wetland management group within geographic areas such as catchment and subcatchment.

Riverine Wetlands

Riverine wetlands are all wetlands and deepwater habitats within a channel. The channels are naturally or artificially created, periodically or continuously contain moving water, or connecting two bodies of standing water. AquaBAMM, when applied to riverine wetlands uses a discrete spatial unit termed subsections. A subsection can be considered as an area which encompasses discrete homogeneous stream sections in terms of their natural attributes (i.e. physical, chemical, biological and utilitarian values) and natural resources. Thus in an ACA, an aquatic conservation significance score is calculated for each subsection and applies to all streams within a subsection, rather than individual streams as such.

Please note, the area figures provided in Tables 16 and 17, are derived using the extent of riverine subsections within the AOI. Refer to **Map 5** for further information. A summary of the conservation significance of riverine wetlands within the AOI is provided in the following table.

Table 16: Overall level/s of riverine aquatic conservation significance

Aquatic conservation significance (riverine wetlands)	Area (Ha)	% of AOI
Very High	0.0	0.0

Aquatic conservation significance (riverine wetlands)	Area (Ha)	% of AOI
High	21.95	100.0
Medium	0.0	0.0
Low	0.0	0.0
Very Low	0.0	0.0

The individual aquatic conservation criteria ratings for riverine wetlands within the AOI are listed below.

Table 17: Level/s of riverine aquatic conservation significance based on selected criteria

Criteria	Very High Rating - Area (Ha)	Very High Rating - % of AOI	High Rating - Area (Ha)	High Rating - % of AOI	Medium Rating - Area (Ha)	Medium Rating - % of AOI	Low Rating - Area (Ha)	Low Rating - % of AOI
1. Naturalness aquatic					21.95	100.0		
2. Naturalness catchment							21.95	100.0
3. Diversity and richness	21.95	100.0						
4. Threatened species and ecosystems	21.95	100.0						
5. Priority species and ecosystems	21.95	100.0						
6. Special features								
7. Connectivity							21.95	100.0
8. Representative-ness								

The table below lists and describes the relevant expert panel decisions used to assign conservation significance values to riverine wetlands within the AOI.

Table 18: Expert panel decisions for assigning overall levels of riverine aquatic conservation significance

Decision number	Special feature	Catchment	Criteria/Indicator/Measure	Conservation rating (1-4)
(No Records)				

4 is the highest rating/value

Expert panel decision descriptions:

(No Records)

Non-riverine Wetlands

Non-riverine wetlands include both lacustrine and palustrine wetlands, however, do not currently incorporate estuarine, marine or subterranean wetland types. A summary of the conservation significance of non-riverine wetlands within the AOI is provided in the following table. Refer to **Map 6** for further information.

Table 19: Overall level/s of non-riverine aquatic conservation significance

Aquatic conservation significance (non-riverine wetlands)	Area (Ha)	% of AOI
(No Records)		

The following table provides an assessment of non-riverine wetlands within the AOI and associated aquatic conservation criteria values.

Table 20: Level/s of non-riverine aquatic conservation significance based on selected criteria

Criteria	Very High Rating - Area (Ha)	Very High Rating - % of AOI	High Rating - Area (Ha)	High Rating - % of AOI	Medium Rating - Area (Ha)	Medium Rating - % of AOI	Low Rating - Area (Ha)	Low Rating - % of AOI
(No Records)								

The table below lists and describes the relevant expert panel decisions used to assign conservation significance values to non-riverine wetlands within the AOI.

Table 21: Expert panel decisions for assigning overall levels of non-riverine aquatic conservation significance.

Decision number	Special feature	Catchment	Criteria/Indicator/Measure	Conservation rating (1-4)
(No Records)				

4 is the highest rating/value

Expert panel decision descriptions:

(No Records)

Threatened and Priority Species

Introduction

This chapter contains a list of threatened and priority flora and/or fauna species that have been recorded on, or within 4km of the Assessment Area.

The information presented in this chapter with respect to species presence is derived from compiled databases developed primarily for the purpose of BPAs and ACAs. Data is collated from a number of sources and is updated periodically.

It is important to note that the list of species provided in this report, may differ when compared to other reports generated from other sources such as the State government's WildNet, Herbrecs or the federal government's EPBC database for a number of reasons.

Records for threatened and priority species are filtered and checked based on a number of rules including:

- Taxonomic nomenclature - current scientific names and status,
- Location - cross-check co-ordinates with location description,
- Taxon by location - requires good knowledge of the taxon and history of the record,
- Duplicate records - identify and remove,
- Expert panels - check records and provide new records,
- Flora cultivated records excluded,
- Use precise records less than or equal to 2000m,
- Use recent records greater than or equal to 1975 animals, greater than or equal to 1950 plants.

Threatened Species

Threatened species are those species classified as "Endangered" or "Vulnerable" under the *Environment Protection and Biodiversity Conservation Act 1999* or "Endangered", "Vulnerable" or "Near threatened" under the *Nature Conservation Act 1992*.

The following threatened species have been recorded on, or within approximately 4km of the AOI.

Table 22: Threatened species recorded on, or within 4km of the AOI

Species	Common name	NCA status	EPBC status	Back on Track rank	Migratory species*	Wetland species**	Identified flora/fauna
Adelotus brevis	Tusked Frog	V		Medium		Y	FA
Eucalyptus curtisii	Plunkett mallee	NT		Low			FL
Lathamus discolor	Swift Parrot	E	CE	Medium	Y		FA
Marsdenia coronata	slender milkvine	V		Low			FL
Melaleuca irbyana		E		Medium			FL
Ninox strenua	Powerful Owl	V		Medium			FA
Petauroides volans	Greater Glider	V	V	Low			FA
Phascolarctos cinereus	Koala	V	V	Low			FA
Plectranthus habrophyllus		E	E	Low			FL
Rostratula australis	Australian Painted Snipe	V	E	Medium		Y	FA

NB. Please note that the threatened species listed in this section are based upon the most recently compiled DES internal state-wide threatened species dataset. This dataset may contain additional records that were not originally available for inclusion in the relevant individual BPAs and ACAs.

**JAMBA - Japan-Australia Migratory Bird Agreement; CAMBA - China-Australia Migratory Bird Agreement; ROKAMBA - Republic of Korea-Australia Migratory Bird Agreement; CMS - Convention on the Conservation of Migratory Species.*

***Y - wetland indicator species.*

BPA Priority Species

A list of BPA priority species that have been recorded on, or within approximately 4km of the AOI is contained in the following table.

Table 23: Priority species recorded on, or within 4km of the AOI

Species	Common name	Back on Track rank	Identified flora/fauna
Cheramoeca leucosterna	White-backed Swallow	Low	FA
Delma plebeia	Common Delma	Medium	FA
Ephippiorhynchus asiaticus	Black-necked Stork	Low	FA
Gyrocochlea raveni	Raven's Pinwheel Snail		FA
Litoria dentata	Bleating Treefrog	Low	FA
Lophoictinia isura	Square-tailed Kite	Low	FA
Melaleuca quinquenervia	swamp paperbark		FL
Melithreptus gularis	Black-chinned Honeyeater	Low	FA
Moretonistes mansueta	Moreton Bay Woodland Snail		FA
Pomatostomus temporalis	Grey-crowned Babbler		FA
Pseudophryne coriacea	Red Backed Broodfrog	Low	FA
Scoteanax rueppellii	Greater Broad-nosed Bat	Medium	FA

NB. Please note that the list of priority species is based on those species identified in the BPAs, however records for these species may be more recent than the originals used. furthermore, the BPA priority species databases are updated from time to time. At each update, the taxonomic details for all species are amended as necessary to reflect current taxonomic name and/or status changes.

ACA Priority Species

A list of ACA priority species used in riverine and non-riverine ACAs that have been recorded on, or within approximately 4km of the AOI are contained in the following tables.

Table 24: Priority species recorded on, or within 4 km of the AOI - riverine

Species	Common name	Back on Track rank	Identified flora/fauna
Acrocephalus australis	Australian Reed-Warbler	L	FA
Actitis hypoleucos	Common Sandpiper	L	FA
Ardea ibis	Cattle Egret	Low	FA
Ardea modesta	Eastern Great Egret	Low	FA
Eucalyptus tereticornis			FL
Ficus coronata	creek sandpaper fig		FL
Gallinago hardwickii	Latham's Snipe	L	FA
Haliaeetus leucogaster	White-bellied Sea-Eagle	L	FA
Melaleuca quinquenervia	swamp paperbark		FL
Rostratula australis	Australian Painted Snipe	M	FA

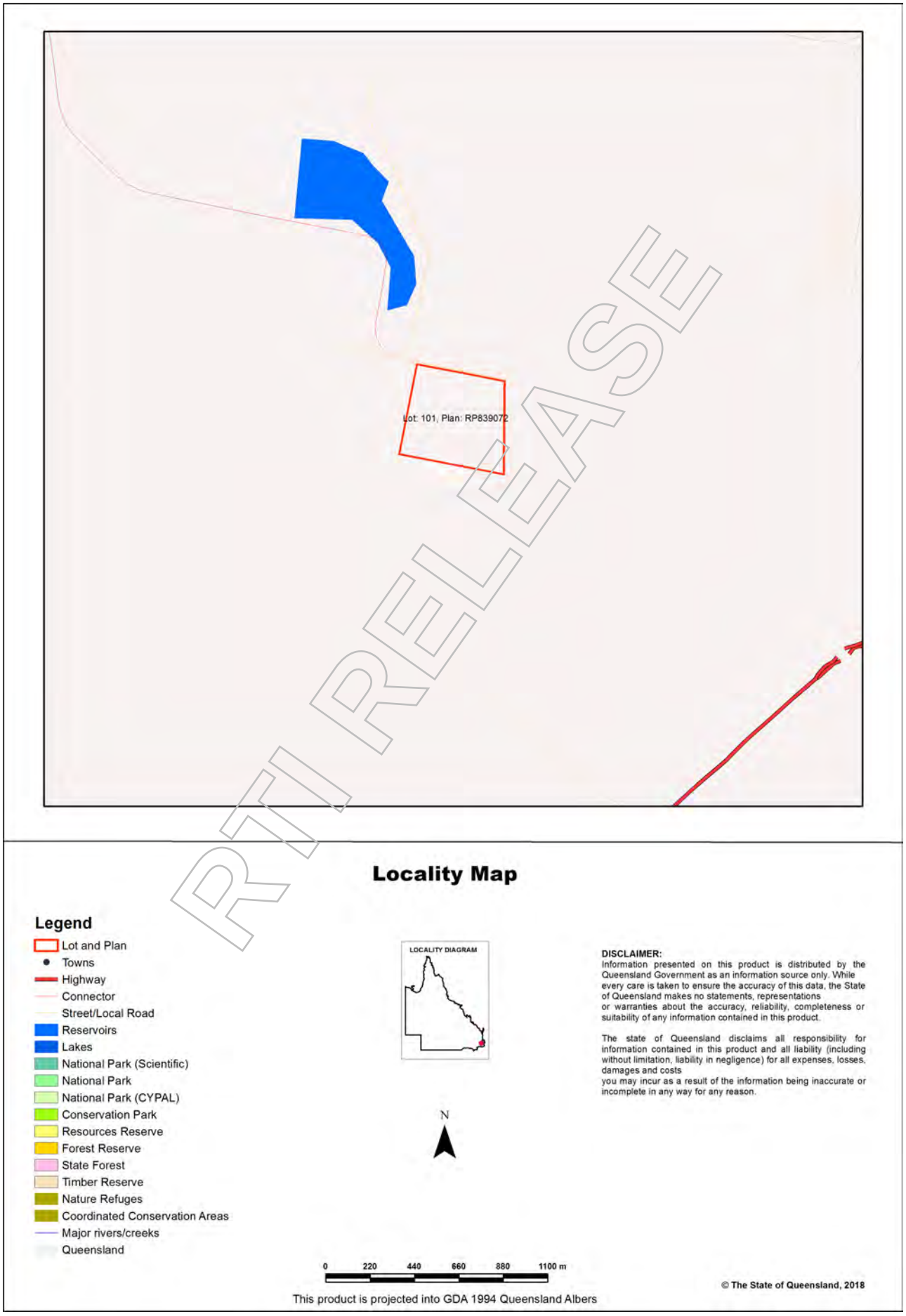
Table 25: Priority species recorded on, or within 4 km of the AOI - non-riverine

Species	Common name	Back on Track rank	Identified flora/fauna
Acrocephalus australis	Australian Reed-Warbler	L	FA
Ardea ibis	Cattle Egret	Low	FA
Ardea modesta	Eastern Great Egret	Low	FA
Calidris acuminata	Sharp-tailed Sandpiper	L	FA
Eucalyptus tereticornis			FL
Gallinago hardwickii	Latham's Snipe	L	FA
Haliaeetus leucogaster	White-bellied Sea-Eagle	L	FA
Limosa limosa	Black-tailed Godwit	L	FA
Melaleuca quinquenervia	swamp paperbark		FL
Plegadis falcinellus	Glossy Ibis	L	FA
Rostratula australis	Australian Painted Snipe	M	FA
Tringa stagnatilis	Marsh Sandpiper	L	FA

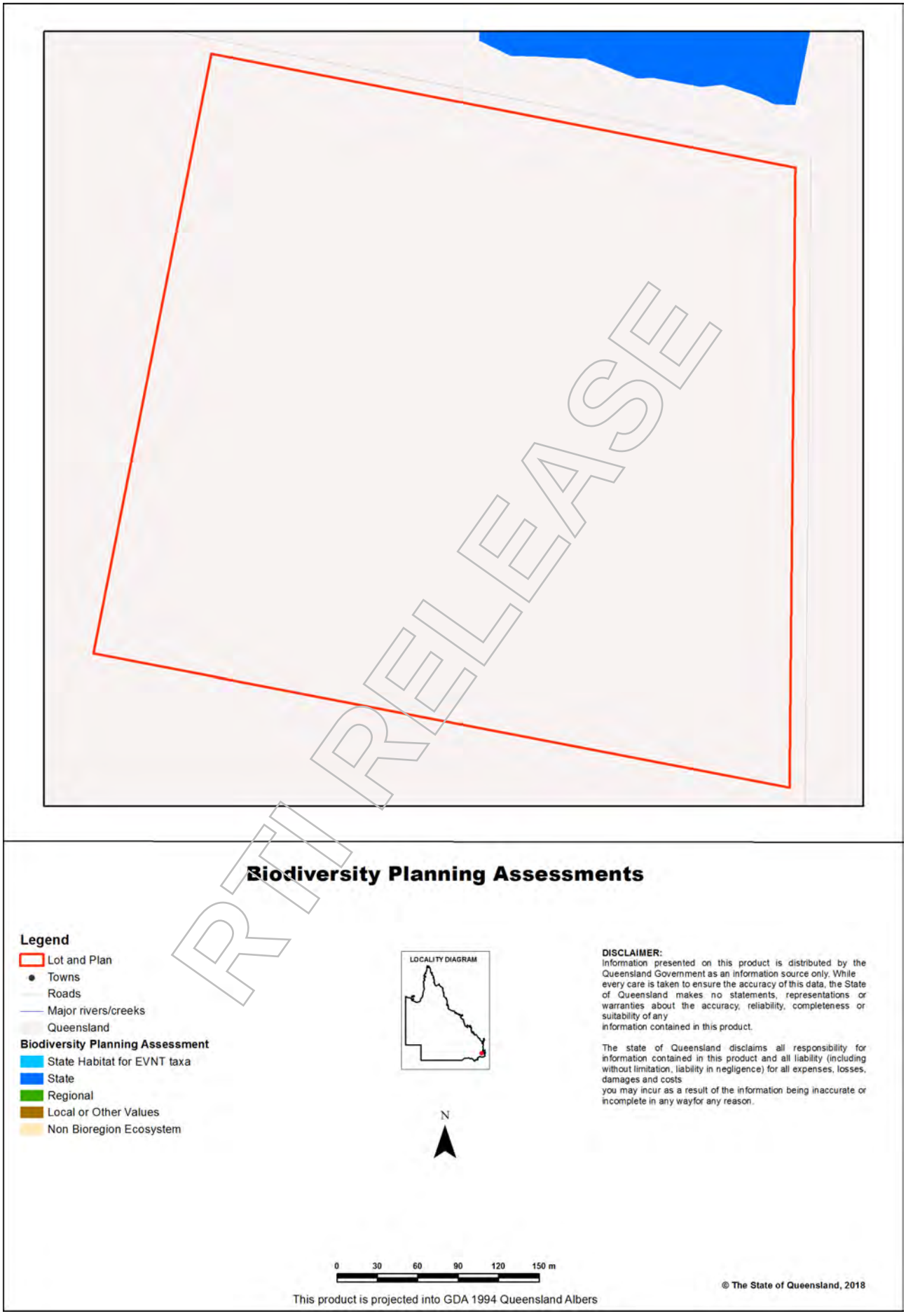
NB. Please note that the priority species records used in the above two tables are comprised of those adopted for the released individual ACAs. The ACA riverine and non-riverine priority species databases are updated from time to time to reflect new release of ACAs. At each update, the taxonomic details for all ACAs records are amended as necessary to reflect current taxonomic name and/or status changes.

Maps

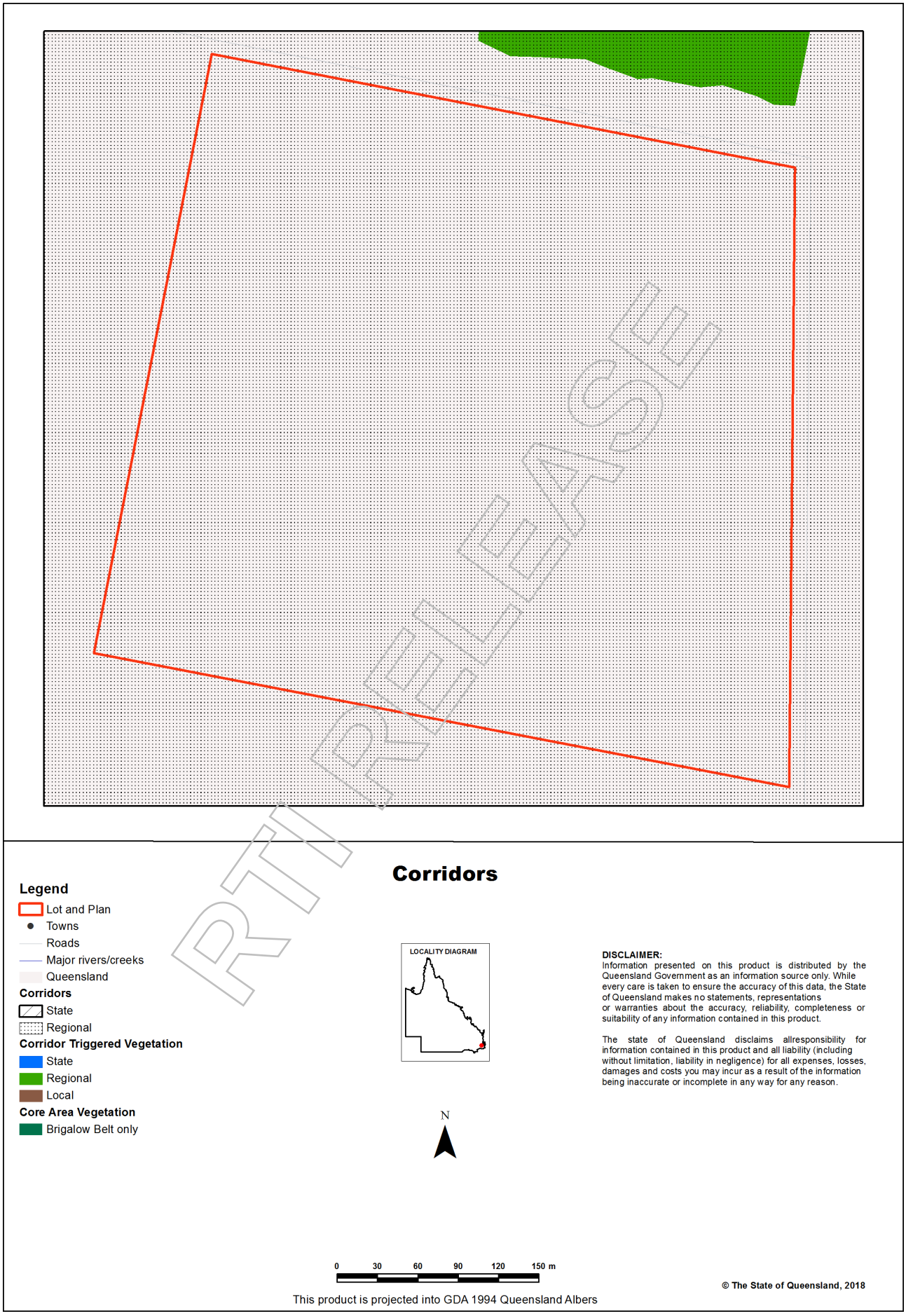
Map 1 - Locality Map



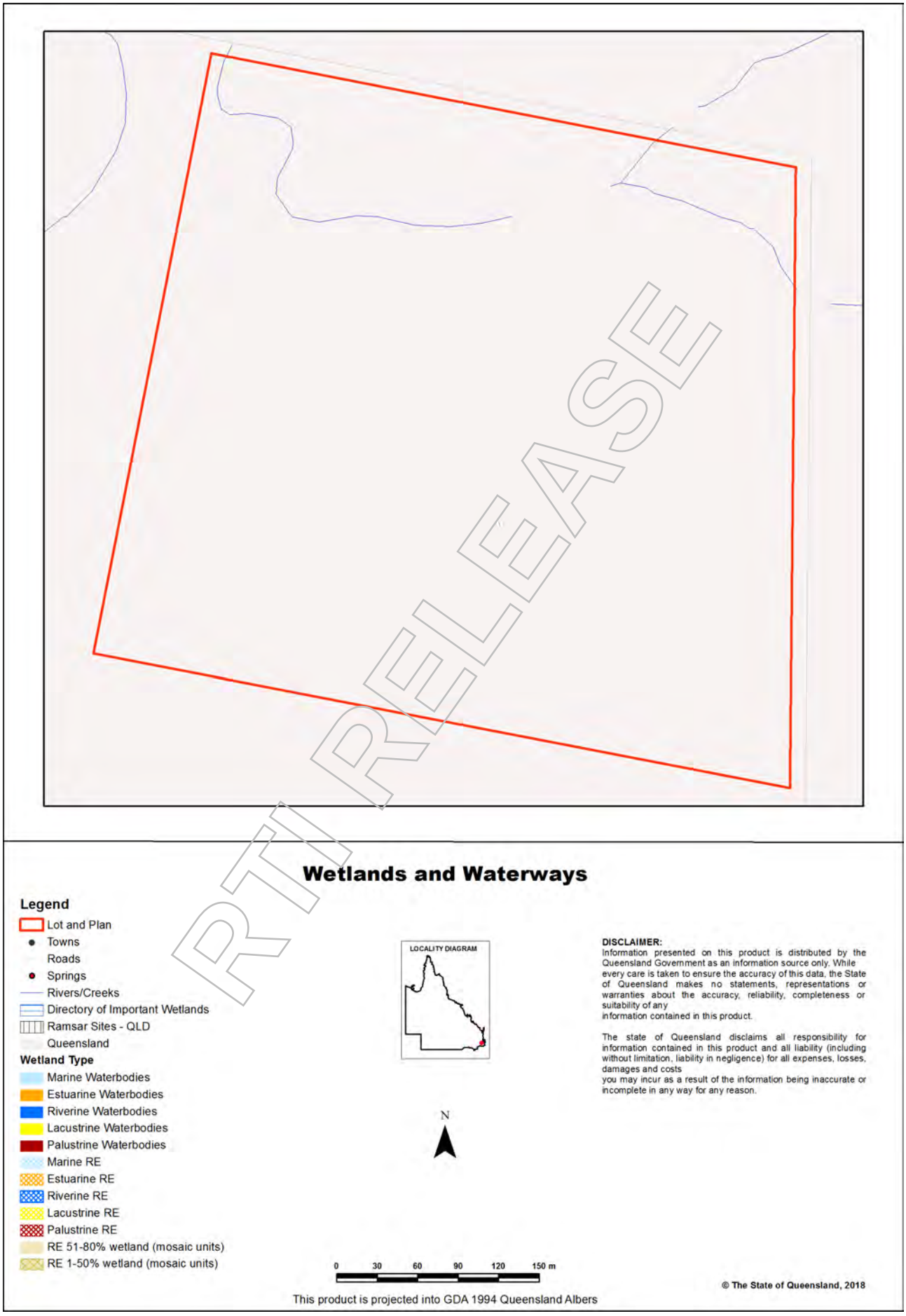
Map 2 - Biodiversity Planning Assessment (BPA)



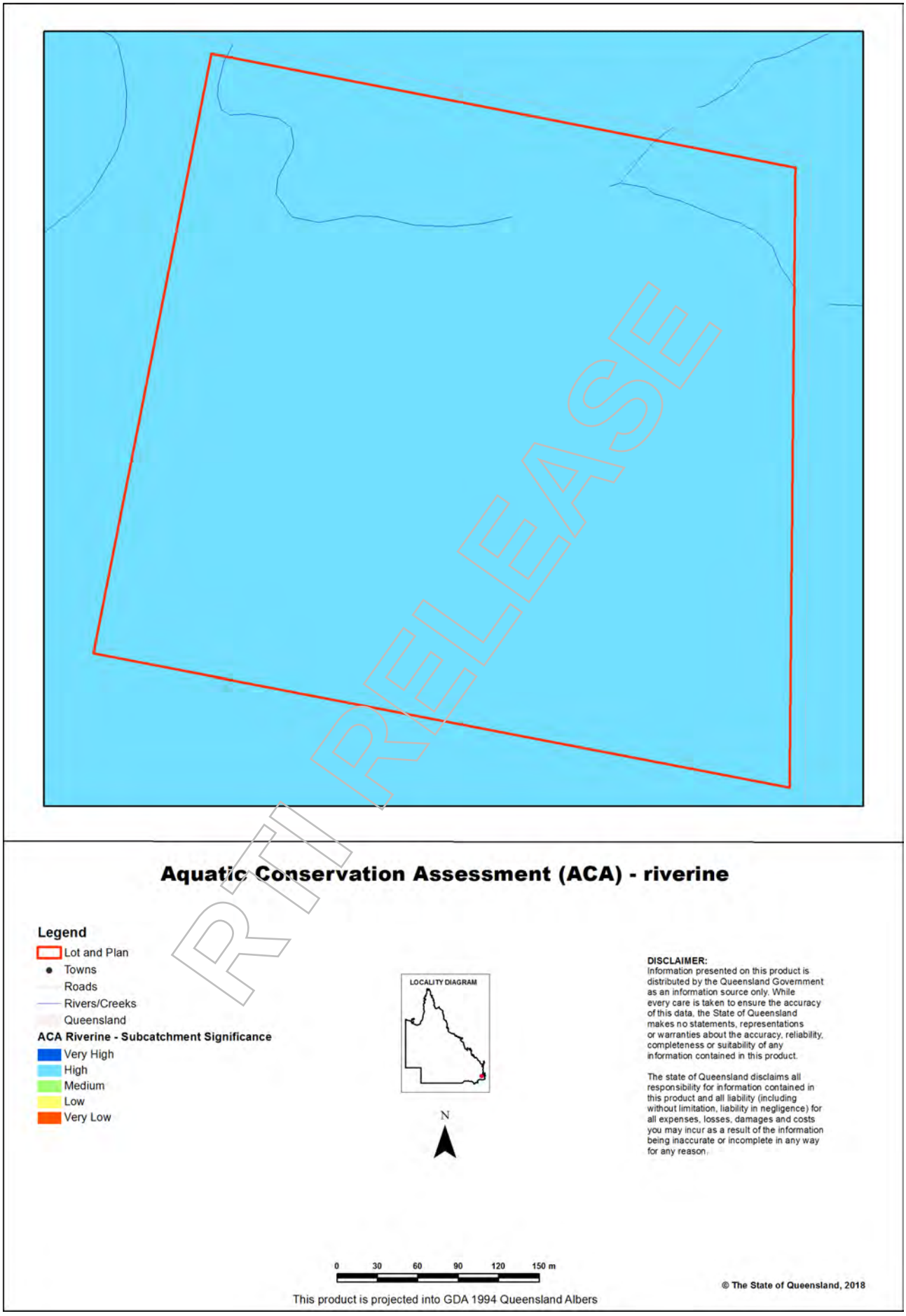
Map 3 - Corridors



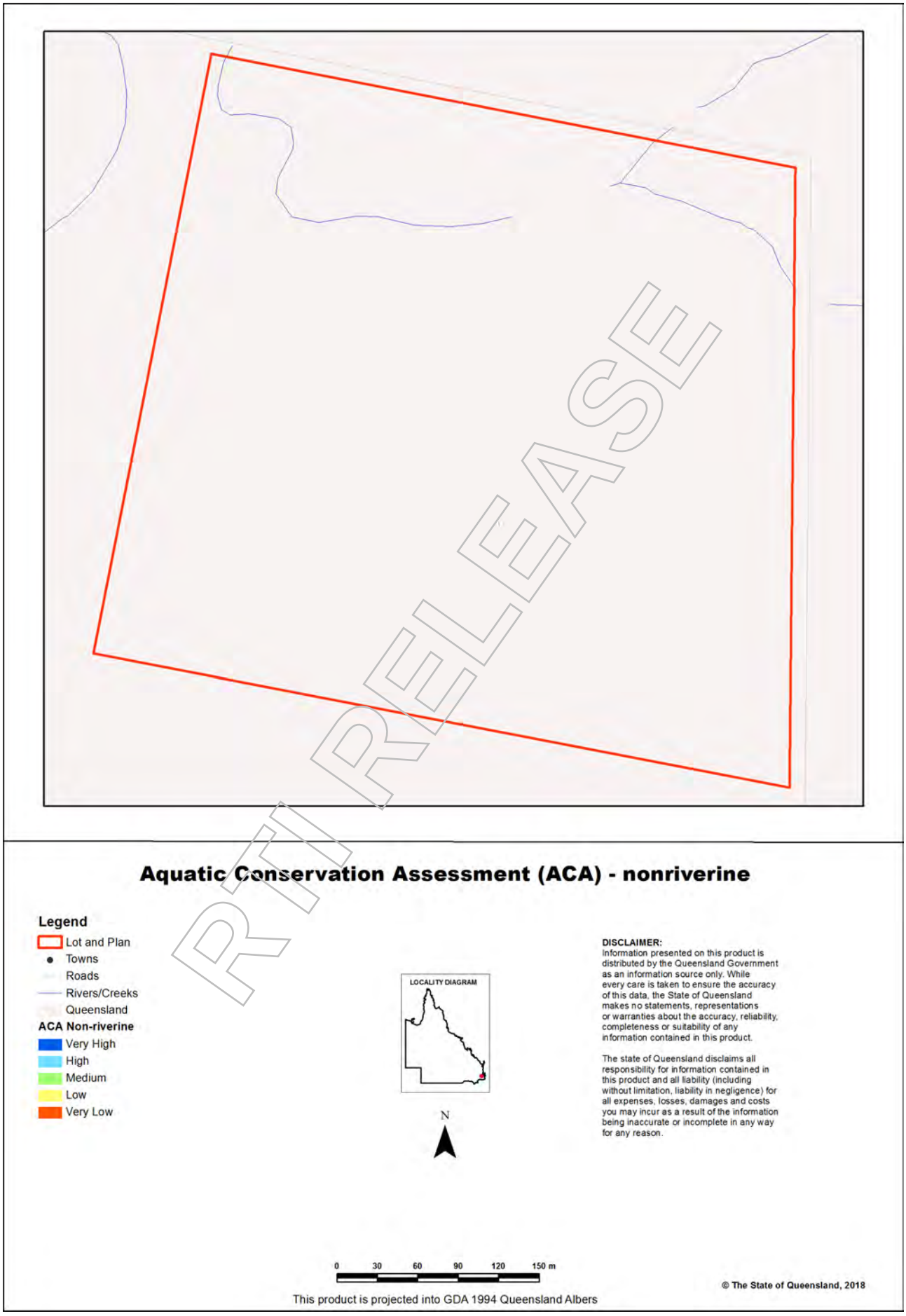
Map 4 - Wetlands and waterways



Map 5 - Aquatic Conservation Assessment (ACA) - riverine



Map 6 - Aquatic Conservation Assessment (ACA) - non-riverine



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http://wetlandinfo.des.qld.gov.au/wetlands/assessment/assessment-methods/aca/

Environmental Protection Agency (2002) *Biodiversity Assessment and Mapping Methodology. Version 2.1, July 2002.* (Environmental Protection Agency, Brisbane).

Morton, S. R., Short, J. and Barker, R. D. with an Appendix by G.F. Griffin and G. Pearce (1995). *Refugia for Biological Diversity in Arid and Semi-arid Australia. Biodiversity Series* , Paper No. 4, Biodiversity Unit, Environment Australia.

Sattler, P.S. and Williams, R.D. (eds) (1999). *The Conservation Status of Queensland's Bioregional Ecosystems*. Environmental Protection Agency, Brisbane.

Appendices

Appendix 1 - Source Data

Theme	Datasets
Aquatic Conservation Assessments Non-riverine*	Combination of the following datasets: Cape York Peninsula Non-riverine v1.1 Eastern Gulf of Carpentaria v1.1 Great Barrier Reef Catchment Non-riverine v1.3 Lake Eyre and Bulloo Basins v1.1 QMDB Non-riverine ACA v1.4 Southeast Queensland ACA v1.1 WBB Non-riverine ACA v1.1
Aquatic Conservation Assessments Riverine*	Combination of the following datasets: Cape York Peninsula Riverine v1.1 Eastern Gulf of Carpentaria v1.1 Great Barrier Reef Catchment Riverine v1.1 Lake Eyre and Bulloo Basins v1.1 QMDB Riverine ACA v1.4 Southeast Queensland ACA v1.1 WBB Riverine ACA v1.1
Biodiversity Planning Assessments*	Combination of the following datasets: Brigalow Belt BPA v2.1 Cape York Peninsula BPA v1.1 Central Queensland Coast BPA v1.3 Channel Country BPA v1.1 Desert Uplands BPA v1.3 Einasleigh Uplands BPA v1.1 Gulf Plains BPA v1.1 Mitchell Grass Downs BPA v1.1 Mulga Lands BPA v1.4 New England Tableland v2.3 Southeast Queensland v4.1
Statewide BPA Corridors*	Statewide corridors v1.4
Threatened Species	An internal DES database compiled from Wildnet, Herbrecs, Corveg, the QLD Museum, as well as other incidental sources.
BPA Priority Species	An internal DES database compiled from Wildnet, Herbrecs, Corveg, the QLD Museum, as well as other incidental sources.
ACA Priority Species	An internal DES database compiled from Wildnet, Herbrecs, Corveg, the QLD Museum, as well as other incidental sources.

***These datasets are available at:**

http://dds.information.qld.gov.au/DDS

Appendix 2 - Acronyms and Abbreviations

AOI	- Area of Interest
ACA	- Aquatic Conservation Assessment
AQUABAMM	- Aquatic Biodiversity Assessment and Mapping Methodology
BAMM	- Biodiversity Assessment and Mapping Methodology
BoT	- Back on Track
BPA	- Biodiversity Planning Assessment
CAMBA	- China-Australia Migratory Bird Agreement
DES	- Department of Environment and Science
EPBC	- *Environment Protection and Biodiversity Conservation Act 1999*
EVNT	- Endangered, Vulnerable, Near Threatened
GDA94	- Geocentric Datum of Australia 1994
GIS	- Geographic Information System
JAMBA	- Japan-Australia Migratory Bird Agreement
NCA	- *Nature Conservation Act 1992*
RE	- Regional Ecosystem
REDD	- Regional Ecosystem Description Database
ROKAMBA	- Republic of Korea-Australia Migratory Bird Agreement

Queensland Government

Department of Environment and Science

Environmental Reports

Biodiversity and Conservation Values

Biodiversity Planning Assessments and Aquatic Conservation Assessments

For the selected area of interest
Lot: 102 Plan: RP839072

Environmental Reports - General Information

The Environmental Reports portal provides for the assessment of selected matters of interest relevant to a user specified location, or Area of Interest (AOI). All area and derivative figures are relevant to the extent of matters of interest contained within the AOI unless otherwise stated. Please note, if a user selects an AOI via the "Central co-ordinates" option, the resulting assessment area encompasses an area extending from 2km radius from the point of interest.

All area and area derived figures included in this report have been calculated via reprojecting relevant spatial features to Albers equal-area conic projection (central meridian = 146, datum Geocentric Datum of Australia 1994). As a result, area figures may differ slightly if calculated for the same features using a different co-ordinate system.

Figures in tables may be affected by rounding.

The matters of interest reported on in this document are based upon available state mapped datasets. Where the report indicates that a matter of interest is not present within the AOI (e.g. where area related calculations are equal to zero, or no values are listed), this may be due either to the fact that state mapping has not been undertaken for the AOI, that state mapping is incomplete for the AOI, or that no values have been identified within the site.

The information presented in this report should be considered as a guide only and field survey may be required to validate values on the ground.

Please direct queries about these reports to: biodiversity.planning@des.qld.gov.au

Disclaimer

Whilst every care is taken to ensure the accuracy of the information provided in this report, the Queensland Government makes no representations or warranties about its accuracy, reliability, completeness, or suitability, for any particular purpose and disclaims all responsibility and all liability (including without limitation, liability in negligence) for all expenses, losses, damages (including indirect or consequential damage) and costs which the user may incur as a consequence of the information being inaccurate or incomplete in any way and for any reason.

Table of Contents

Summary Information

Tables 1 to 8 provide an overview of the AOI with respect to selected topographic and environmental values.

Table 1: Area of interest details: Lot: 102 Plan: RP839072

Size (ha)	143.21
Local Government(s)	Ipswich City
Bioregion(s)	Southeast Queensland
Subregion(s)	Moreton Basin
Catchment(s)	Brisbane

The following table identifies available Biodiversity Planning Assessments (BPAs) and Aquatic Conservation Assessments (ACAs) with respect to the AOI.

Table 2: Available Biodiversity Planning and Aquatic Conservation Assessments

Assessment Type	Assessment Area and Version
Biodiversity Planning Assessment(s)	Southeast Queensland v4.1
Aquatic Conservation Assessment(s) (riverine)	South East Queensland Catchments v1.1
Aquatic Conservation Assessment(s) (non-riverine)	South East Queensland Catchments v1.1

Table 3: Remnant regional ecosystems within the AOI as per the Qld Herbarium's 'biodiversity status'

Biodiversity Status	Area (Ha)	% of AOI
Endangered	0.0	0.0
Of concern	3.94	2.75
No concern at present	15.74	10.99

The following table identifies the extent and proportion of the user specified area of interest (AOI) which is mapped as being of "State", "Regional" or "Local" significance via application of the Queensland Department of Environment and Science's *Biodiversity Assessment and Mapping Methodology* (BAMM).

Table 4: Summary table, biodiversity significance

Biodiversity significance	Area (Ha)	% of AOI
State Habitat for EVNT taxa	0.0	0.0
State	1.37	0.96
Regional	18.31	12.79
Local or Other Values	0.0	0.0

Table 5: Non-riverine wetlands intersecting the AOI

Non-riverine wetland types intersecting the area of interest	#
Number of Palustrine wetlands	0
Number of Lacustrine wetlands	5
Total number of non-riverine wetlands	5

NB. The figures presented in the table above are derived from the relevant non-riverine Aquatic Conservation Assessment(s). Later releases of wetland mapping produced via the Queensland Wetland Mapping Program may provide more recent information in regards to wetland extent.

Table 6: Named waterways intersecting the AOI

(no results)

Refer to **Map 1** for general locality information.

The following two tables identify the extent and proportion of the user specified AOI which is mapped as being of "Very High", "High", "Medium", "Low", or "Very Low" aquatic conservation value for riverine and non-riverine wetlands via application of the Queensland Department of Environment and Science's *Aquatic Biodiversity Assessment and Mapping Method* (AquaBAMM).

Table 7: Summary table, aquatic conservation significance (riverine)

Aquatic conservation significance (riverine wetlands)	Area (Ha)	% of AOI
Very High	0.0	0.0
High	143.21	100.0
Medium	0.0	0.0
Low	0.0	0.0
Very Low	0.0	0.0

Table 8: Summary table, aquatic conservation significance (non-riverine)

Aquatic conservation significance (non-riverine wetlands)	Area (Ha)	% of AOI
Very High	0.0	0.0
High	0.0	0.0
Medium	14.21	9.92
Low	0.0	0.0
Very Low	0.0	0.0

Biodiversity Planning Assessments

Introduction

The Department of Environment and Science (DES) attributes biodiversity significance on a bioregional scale through a Biodiversity Planning Assessment (BPA). A BPA involves the integration of ecological criteria using the *Biodiversity assessment and Mapping Methodology* (BAMM) and is developed in two stages: 1) **diagnostic criteria**, and 2) **expert panel criteria**. The diagnostic criteria are based on existing data which is reliable and uniformly available across a bioregion, while the expert panel criteria allows for the refinement of the mapped information from the diagnostic output by incorporating local knowledge and expert opinion.

The BAMM methodology has application for identifying areas with various levels of significance solely for biodiversity reasons. These include threatened ecosystems or taxa, large tracts of habitat in good condition, ecosystem diversity, landscape context and connection, and buffers to wetlands or other types of habitat important for the maintenance of biodiversity or ecological processes. While natural resource values such as dryland salinity, soil erosion potential or land capability are not dealt with explicitly, they are included to some extent within the biodiversity status of regional ecosystems recognised by the DES.

Biodiversity Planning Assessments (BPAs) assign three levels of overall biodiversity significance.

- **State significance** - areas assessed as being significant for biodiversity at the bioregional or state scales. They also include areas assessed by other studies/processes as being significant at national or international scales. In addition, areas flagged as being of State significance due to the presence of endangered, vulnerable and/or near threatened taxa, are identified as "State Habitat for EVNT taxa".
- **Regional significance** - areas assessed as being significant for biodiversity at the subregional scale. These areas have lower significance for biodiversity than areas assessed as being of State significance.
- **Local significance and/or other values** - areas assessed as not being significant for biodiversity at state or regional scales. Local values are of significance at the local government scale.

For further information on released BPAs and a copy of the underlying methodology, go to:

http://www.qld.gov.au/environment/plants-animals/biodiversity/planning/

The GIS results can be downloaded from the Queensland Spatial Catalogue at:

http://qspatial.information.qld.gov.au/geoportal/

The following table identifies the extent and proportion of the user specified AOI which is mapped as being of "State", "Regional" or "Local" significance via application of the BAMM.

Table 9: Summary table, biodiversity significance

Biodiversity significance	Area (Ha)	% of AOI
State Habitat for EVNT taxa	0.0	0.0
State	1.37	0.96
Regional	18.31	12.79
Local or Other Values	0.0	0.0

Refer to **Map 2** for further information.

Diagnostic Criteria

Diagnostic criteria are based on existing data which is reliable and uniformly available across a bioregion. These criteria are diagnostic in that they are used to filter the available data and provide a "first-cut" or initial determination of biodiversity significance. This initial assessment is then combined through a second group of other essential criteria.

A description of the individual diagnostic criteria is provided in the following sections.

Criteria A. Habitat for EVNT taxa: Classifies areas according to their significance based on the presence of endangered, vulnerable and/or rare (EVNT) taxa. EVNT taxa are those scheduled under the *Nature Conservation Act 1992* and/or the

Environment Protection and Biodiversity Conservation Act 1999. It excludes highly mobile fauna taxa which are instead considered in Criterion H and brings together information on EVNT taxa using buffering of recorded sites or habitat suitability models (HSM) where available.

Criteria B. Ecosystem value: Classifies on the basis of biodiversity status of regional ecosystems, their extent in protected areas (presence of poorly conserved regional ecosystems), the presence of significant wetlands; and areas of national importance such as the presence of Threatened Ecological Communities, World Heritage areas and Ramsar sites. Ecosystem value is applied at a bioregional (**B1**) and regional (**B2**) scale.

Criteria C. Tract size: Measures the relative size of tracts of vegetation in the landscape. The size of any tract is a major indicator of ecological significance, and is also strongly correlated with the long-term viability of biodiversity values. Larger tracts are less susceptible to ecological edge effects and are more likely to sustain viable populations of native flora and fauna than smaller tracts.

Criteria D. Relative size of regional ecosystems: Classifies the relative size of each regional ecosystem unit within its bioregion (**D1**) and its subregion (**D2**). Remnant units are compared with all other occurrences with the same regional ecosystem. Large examples of a regional ecosystem are more significant than smaller examples of the same regional ecosystem because they are more representative of the biodiversity values particular to the regional ecosystem, are more resilient to the effects of disturbance, and constitute a significant proportion of the total area of the regional ecosystem.

Criteria F. Ecosystem diversity: Is an indicator of the number of regional ecosystems occurring within an area. An area with high ecosystem diversity will have many regional ecosystems and ecotones relative to other areas within the bioregion.

Criteria G. Context and connection: Represents the extent to which a remnant unit incorporates, borders or buffers areas such as significant wetlands, endangered ecosystems; and the degree to which it is connected to other vegetation.

A summary of the biodiversity status based upon the diagnostic criteria is provided in the following table.

Table 10: Summary of biodiversity significance based upon diagnostic criteria with respect to the AOI

Biodiversity significance	Description	Area (Ha)	% of AOI
Regional	Remnant contains at least 1 Vulnerable or Near Threatened species (A)	19.67	13.74

Assessment of diagnostic criteria with respect to the AOI

The following table reflects an assessment of the individual diagnostic criteria noted above in regards to the AOI.

Table 11: Assessment of individual diagnostic criteria with respect to the AOI

Diagnostic Criteria	Very High Rating - Area (Ha)	Very High Rating - % of AOI	High Rating - Area (Ha)	High Rating - % of AOI	Medium Rating - Area (Ha)	Medium Rating - % of AOI	Low Rating - Area (Ha)	Low Rating - % of AOI
A: Habitat for EVNT Taxa			19.68	13.7				
B1: Ecosystem Value (Bioregion)					19.68	13.7		
B2: Ecosystem Value (Subregion)					19.68	13.7		
C: Tract Size					9.79	6.8	9.89	6.9
D1: Relative RE Size (Bioregion)							19.68	13.7
D2: Relative RE Size (Subregion)							19.68	13.7
F: Ecosystem Diversity			19.68	13.7				
G: Context and Connection					9.79	6.8	9.89	6.9

Other Essential Criteria

Other essential criteria (also known as expert panel criteria) are based on non-uniform information sources and which may rely more upon expert opinion than on quantitative data. These criteria are used to provide a "second-cut" determination of biodiversity significance, which is then combined with the diagnostic criteria for an overall assessment of relative biodiversity significance. A summary of the biodiversity status based upon the other essential criteria is provided in the following table.

Table 12: Summary of biodiversity significance based upon other essential criteria with respect to the AOI

Biodiversity significance	Description	Area (Ha)	% of AOI
State	Remnant contains Core Habitat for Priority Taxa (H) & Remnant forms part of a bioregional corridor (J)	1.37	0.96
Regional	Remnant forms part of a bioregional corridor (J)	18.31	12.79

A description of each of the other essential criteria and associated assessment in regards to the AOI is provided in the following sections.

Criteria H. Essential and general habitat for priority taxa: Priority taxa are those which are at risk or of management concern, taxa of scientific interest as relictual (ancient or primitive), endemic taxa or locally significant populations (such as a flying fox camp or heronry), highly specialised taxa whose habitat requirements are complex and distributions are not well correlated with any particular regional ecosystem, taxa important for maintaining genetic diversity (such as complex spatial patterns of genetic variation, geographic range limits, highly disjunct populations), taxa critical for management or monitoring of biodiversity (functionally important or ecological indicators), or economic and culturally important taxa.

Criteria I. Special biodiversity values: areas with special biodiversity values are important because they contain multiple taxa in a unique ecological and often highly biodiverse environment. Areas with special biodiversity values can include the following:

- Ia - centres of endemism - areas where concentrations of taxa are endemic to a bioregion or subregion are found.
- Ib - wildlife refugia (Morton *et al*. 1995), for example, islands, mound springs, caves, wetlands, gorges, mountain ranges and topographic isolates, ecological refuges, refuges from exotic animals, and refuges from clearing. The latter may include large areas that are not suitable for clearing because of land suitability/capability.
- Ic - areas with concentrations of disjunct populations.
- Id - areas with concentrations of taxa at the limits of their geographic ranges.
- Ie - areas with high species richness.
- If - areas with concentrations of relictual populations (ancient and primitive taxa).
- Ig - areas containing REs with distinct variation in species composition associated with geomorphology and other environmental variables.
- Ih - an artificial waterbody or managed/manipulated wetland considered by the panel/s to be of ecological significance.
- Ii - areas with a high density of hollow-bearing trees that provide habitat for animals.
- Ij - breeding or roosting sites used by a significant number of individuals.
- Ik - climate change refuge.

The following table identifies the value and extent area of the Other Essential Criteria H and I within the AOI.

Table 13: Relative importance of expert panel criteria (H and I) used to access overall biodiversity significance with respect to the AOI

Expert Panel	Very High Rating - Area (Ha)	Very High Rating - % of AOI	High Rating - Area (Ha)	High Rating - % of AOI	Medium Rating - Area (Ha)	Medium Rating - % of AOI	Low Rating - Area (Ha)	Low Rating - % of AOI
H: Core Habitat Priority Taxa	1.37	1.0			0.32	0.2	17.99	12.6
Ia: Centres of Endemism								
Ib: Wildlife Refugia								
Ic: Disjunct Populations								
Id: Limits of Geographic Ranges								
Ie: High Species Richness								
If: Relictual Populations								
Ig: Variation in Species Composition								

Expert Panel	Very High Rating - Area (Ha)	Very High Rating - % of AOI	High Rating - Area (Ha)	High Rating - % of AOI	Medium Rating - Area (Ha)	Medium Rating - % of AOI	Low Rating - Area (Ha)	Low Rating - % of AOI
Ih: Artificial Wetland								
Ii: Hollow Bearing Trees								
Ij: Breeding or Roosting Site								
Ik: Climate Refugia								

NB. Whilst biodiversity values associated with Criteria I may be present within the site (refer to tables 12 and 15), for the New England Tableland and Central Queensland Coast BPAs, area and % area figures associated with Criteria Ia through to Ij cannot be listed in the table above (due to slight variations in data formats between BPAs).

Criteria J. Corridors: areas identified under this criterion qualify either because they are existing vegetated corridors important for contiguity, or cleared areas that could serve this purpose if revegetated. Some examples of corridors include riparian habitats, transport corridors and "stepping stones".

Bioregional and subregional conservation corridors have been identified in the more developed bioregions of Queensland through the BPAs, using an intensive process involving expert panels. Map 3 displays the location of corridors as identified under the Statewide Corridor network. The Statewide Corridor network incorporates BPA derived corridors and for bioregions where no BPA has been assessed yet, corridors derived under other planning processes. *Note: as a result of updating and developing a statewide network, the alignment of corridors may differ slightly in some instances when compared to those used in individual BPAs.*

The functions of these corridors are:

- **Terrestrial** Bioregional corridors, in conjunction with large tracts of remnant vegetation, maintain ecological and evolutionary processes at a landscape scale, by:

  • Maintaining long term evolutionary/genetic processes that allow the natural change in distributions of species and connectivity between populations of species over long periods of time;

  • Maintaining landscape/ecosystems processes associated with geological, altitudinal and climatic gradients, to allow for ecological responses to climate change;

  • Maintaining large scale seasonal/migratory species processes and movement of fauna;

  • Maximising connectivity between large tracts/patches of remnant vegetation;

  • Identifying key areas for rehabilitation and offsets; and

- **Riparian** Bioregional Corridors also maintain and encourage connectivity of riparian and associated ecosystems.

The location of the corridors is determined by the following principles:

- Terrestrial

  • Complement riparian landscape corridors (i.e. minimise overlap and maximise connectivity);

  • Follow major watershed/catchment and/or coastal boundaries;

  • Incorporate major altitudinal/geological/climatic gradients;

  • Include and maximise connectivity between large tracts/patches of remnant vegetation;

  • Include and maximise connectivity between remnant vegetation in good condition; and

- Riparian

  • Located on the major river or creek systems within the bioregion in question.

The total extent of remnant vegetation triggered as being of "State", "Regional" or "Local" significance due to the presence of an overlying BPA derived terrestrial or riparian corridor within the AOI, is provided in the following table. For further information on how remnant vegetation is triggered due to the presence of an overlying BPA derived corridor, refer to the relevant landscape BPA expert panel report(s).

Table 14: Extent of triggered remnant vegetation due to the presence of BPA derived corridors with respect to the AOI

Biodiversity Significance	Area (Ha)	% of AOI
State	0.0	0.0
Regional	19.67	13.74
Local	0.0	0.0

NB: area figures associated with the extent of corridor triggered remnant vegetation are only available for those bioregions where a BPA has been undertaken.

Refer to **Map 3** for further information.

Threatening process/condition (Criteria K) - areas identified by experts under this criterion may be used to amend (upgrade or downgrade) biodiversity significance arising from the "first-cut" analysis. The condition of remnant vegetation is affected by threatening processes such as weeds, ferals, grazing and burning regime, selective timber harvesting/removal, salinity, soil erosion, and climate change.

Assessment of Criteria K with respect to the AOI is not currently included in the "Biodiversity and Conservation Values" report, as it has not been applied to the majority of Queensland due to data/information limitations and availability.

Special Area Decisions

Expert panel derived "Special Area Decisions" are used to assign values to Other Essential Criteria. The specific decisions which relate to the AOI in question are listed in the table below.

Table 15: Expert panel decisions for assigning levels of biodiversity significance with respect to the AOI

Decision Number	Description	Panel Recommended Significance	Criteria Values
seqs_l_22	Terrestrial bioregional corridors	State or Regional	Criterion J

Expert panel decision descriptions:

seqs_l_22

The expert panel reviewed the existing bioregional corridors for southern SEQ. Corridors were assigned as being of State or Regional significance.

For further information, refer to section 2.3.2 and 3.2 of this report.

Aquatic Conservation Assessments

Introduction

The Aquatic Biodiversity Assessment and Mapping Method or AquaBAMM (Clayton *et al.* 2006), was developed to assess conservation values of wetlands in queensland, and may also have application in broader geographical contexts. It is a comprehensive method that uses available data, including data resulting from expert opinion, to identify relative wetland conservation/ecological values within a specified study area (usually a catchment). The product of applying this method is an Aquatic Conservation Assessment (ACA) for the study area.

An ACA using AquaBAMM is non-social, non-economic and identifies the conservation/ecological values of wetlands at a user-defined scale. It provides a robust and objective conservation assessment using criteria, indicators and measures that are founded upon a large body of national and international literature. The criteria, each of which may have variable numbers of indicators and measures, are naturalness (aquatic), naturalness (catchment), diversity and richness, threatened species and ecosystems, priority species and ecosystems, special features, connectivity and representativeness. An ACA using AquaBAMM is a powerful decision support tool that is easily updated and simply interrogated through a geographic information system (GIS).

Where they have been conducted, ACAs can provide a source of baseline wetland conservation/ecological information to support natural resource management and planning processes. They are useful as an independent product or as an important foundation upon which a variety of additional environmental and socio-economic elements can be added and considered (i.e. an early input to broader 'triple-bottom-line' decision-making processes). An ACA can have application in:

- determining priorities for protection, regulation or rehabilitation of wetlands and other aquatic ecosystems
- on-ground investment in wetlands and other aquatic ecosystems
- contributing to impact assessment of large-scale development (e.g. dams)
- water resource and strategic regional planning prcesses

For a detailed explanation of the methodology please refer to the summary and expert panel reports relevant to the ACA utilised in this assessment. These reports can be accessed at Wetland *Info*:

http://wetlandinfo.des.qld.gov.au/wetlands/assessment/assessment-methods/aca

The GIS results can be downloaded from the Queensland Spatial Catalogue at:

http://qspatial.information.qld.gov.au/geoportal/

Explanation of Criteria

Under the AquaBAMM, eight criteria are assessed to derive an overall conservation value. Similar to the Biodiversity Assessment and Mapping Methodology, the criteria may be primarily diagnostic (quantitative) or primarily expert opinion (qualitative) in nature. The following sections provide a brief description of each of the 8 criteria.

Criteria 1. Naturalness - Aquatic: This attribute reflects the extent to which a wetland's (riverine, non-riverine, estuarine) aquatic state of naturalness is affected through relevant influencing indicators which include: presence of exotic flora and fauna; presence of aquatic communities; degree of habitat modification and degree of hydrological modification.

Criteria 2. Naturalness - Catchment: The naturalness of the terrestrial systems of a catchment can have an influence on many wetland characteristics including: natural ecological processes e.g. nutrient cycling, riparian vegetation, water chemistry, and flow. The indicators utilised to assess this criterion include: presence of exotic flora and/or fauna; riparian, catchment and flow modification.

Criteria 3. Naturalness - Diversity and Richness: This criterion is common to many ecological assessment methods and can include both physical and biological features. It includes such indicators as species richness, riparian ecosystem richness and geomorphological diversity.

Criteria 4. Threatened Species and Ecosystems: This criterion evaluates ecological rarity characteristics of a wetland. This includes both species rarity and rarity of communities / assemblages. The communities and assemblages are best represented by regional ecosystems. Species rarity is determined by NCA and EPBC status with Endangered, Vulnerable or Near-threatened species being included in the evaluation. Ecosystem rarity is determined by regional ecosystem biodiversity status i.e. Endangered, Of Concern, or Not of Concern.

Criteria 5. Priority Species and Ecosystems: Priority flora and fauna species lists are expert panel derived. These are aquatic, semi-aquatic and riparian species which exhibit at least 1 particular trait in order to be eligible for consideration. For

flora species the traits included:

- It forms significant macrophyte beds (in shallow or deep water).
- It is an important food source.
- It is important/critical habitat.
- It is implicated in spawning or reproduction for other fauna and/or flora species.
- It is at its distributional limit or is a disjunct population.
- It provides stream bank or bed stabilisation or has soil binding properties.
- It is a small population and subject to threatening processes.

Fauna species are included if they meet at least one of the following traits:

- It is endemic to the study area (>75 per cent of its distribution is in the study area/catchment).
- It has experienced, or is suspected of experiencing, a serious population decline.
- It has experienced a significant reduction in its distribution and has a naturally restricted distribution in the study area/catchment.
- It is currently a small population and threatened by loss of habitat.
- It is a significant disjunct population.
- It is a migratory species (other than birds).
- A significant proportion of the breeding population (>one per cent for waterbirds, >75 per cent other species) occurs in the waterbody (see Ramsar criterion 6 for waterbirds).
- Limit of species range.

See the individual expert panel reports for the priority species traits specific to an ACA.

Criteria 6. Special Features: Special features are areas identified by flora, fauna and ecology expert panels which exhibit characteristics beyond those identified in other criteria and which the expert panels consider to be of the highest ecological importance. Special feature traits can relate to, but are not solely restricted to geomorphic features, unique ecological processes, presence of unique or distinct habitat, presence of unique or special hydrological regimes e.g. spring-fed streams. Special features are rated on a 1 - 4 scale (4 being the highest).

Criteria 7. Connectivity: This criterion is based on the concept that appropriately connected aquatic ecosystems are healthy and resilient, with maximum potential biodiversity and delivery of ecosystem services.

Criteria 8. Representativeness: This criterion applies primarily to non-riverine assessments, evaluates the rarity and uniqueness of a wetland type in relation to specific geographic areas. Rarity is determined by the degree of wetland protection within "protected Areas" estate or within an area subject to the *Fisheries Act 1994*, *Coastal Protection and Management Act 1995*, or *Marine Parks Act 2004*. Wetland uniqueness evaluates the relative abundance and size of a wetland or wetland management group within geographic areas such as catchment and subcatchment.

Riverine Wetlands

Riverine wetlands are all wetlands and deepwater habitats within a channel. The channels are naturally or artificially created, periodically or continuously contain moving water, or connecting two bodies of standing water. AquaBAMM, when applied to riverine wetlands uses a discrete spatial unit termed subsections. A subsection can be considered as an area which encompasses discrete homogeneous stream sections in terms of their natural attributes (i.e. physical, chemical, biological and utilitarian values) and natural resources. Thus in an ACA, an aquatic conservation significance score is calculated for each subsection and applies to all streams within a subsection, rather than individual streams as such.

Please note, the area figures provided in Tables 16 and 17, are derived using the extent of riverine subsections within the AOI. Refer to **Map 5** for further information. A summary of the conservation significance of riverine wetlands within the AOI is provided in the following table.

Table 16: Overall level/s of riverine aquatic conservation significance

Aquatic conservation significance (riverine wetlands)	Area (Ha)	% of AOI
Very High	0.0	0.0

Aquatic conservation significance (riverine wetlands)	Area (Ha)	% of AOI
High	143.21	100.0
Medium	0.0	0.0
Low	0.0	0.0
Very Low	0.0	0.0

The individual aquatic conservation criteria ratings for riverine wetlands within the AOI are listed below.

Table 17: Level/s of riverine aquatic conservation significance based on selected criteria

Criteria	Very High Rating - Area (Ha)	Very High Rating - % of AOI	High Rating - Area (Ha)	High Rating - % of AOI	Medium Rating - Area (Ha)	Medium Rating - % of AOI	Low Rating - Area (Ha)	Low Rating - % of AOI
1. Naturalness aquatic					143.21	100.0		
2. Naturalness catchment							143.21	100.0
3. Diversity and richness	143.21	100.0						
4. Threatened species and ecosystems	143.21	100.0						
5. Priority species and ecosystems	143.21	100.0						
6. Special features								
7. Connectivity							143.21	100.0
8. Representative-ness								

The table below lists and describes the relevant expert panel decisions used to assign conservation significance values to riverine wetlands within the AOI.

Table 18: Expert panel decisions for assigning overall levels of riverine aquatic conservation significance

Decision number	Special feature	Catchment	Criteria/Indicator/Measure	Conservation rating (1-4)
(No Records)				

4 is the highest rating/value

Expert panel decision descriptions:

(No Records)

Non-riverine Wetlands

Non-riverine wetlands include both lacustrine and palustrine wetlands, however, do not currently incorporate estuarine, marine or subterranean wetland types. A summary of the conservation significance of non-riverine wetlands within the AOI is provided in the following table. Refer to **Map 6** for further information.

Table 19: Overall level/s of non-riverine aquatic conservation significance

Aquatic conservation significance (non-riverine wetlands)	Area (Ha)	% of AOI
Very High	0.0	0.0
High	0.0	0.0
Medium	14.21	9.92
Low	0.0	0.0
Very Low	0.0	0.0

The following table provides an assessment of non-riverine wetlands within the AOI and associated aquatic conservation criteria values.

Table 20: Level/s of non-riverine aquatic conservation significance based on selected criteria

Criteria	Very High Rating - Area (Ha)	Very High Rating - % of AOI	High Rating - Area (Ha)	High Rating - % of AOI	Medium Rating - Area (Ha)	Medium Rating - % of AOI	Low Rating - Area (Ha)	Low Rating - % of AOI
1. Naturalness aquatic							14.22	9.9
2. Naturalness catchment					5.18	3.6	9.04	6.3
3. Diversity and richness					14.22	9.9		
4. Threatened species and ecosystems	9.04	6.3	2.99	2.1	2.19	1.5		
5. Priority species and ecosystems	14.22	9.9						
6. Special features								
7. Connectivity								
8. Representative-ness								

The table below lists and describes the relevant expert panel decisions used to assign conservation significance values to non-riverine wetlands within the AOI.

Table 21: Expert panel decisions for assigning overall levels of non-riverine aquatic conservation significance.

Decision number	Special feature	Catchment	Criteria/Indicator/Measure	Conservation rating (1-4)
(No Records)				

4 is the highest rating/value

Expert panel decision descriptions:

(No Records)

Threatened and Priority Species

Introduction

This chapter contains a list of threatened and priority flora and/or fauna species that have been recorded on, or within 4km of the Assessment Area.

The information presented in this chapter with respect to species presence is derived from compiled databases developed primarily for the purpose of BPAs and ACAs. Data is collated from a number of sources and is updated periodically.

It is important to note that the list of species provided in this report, may differ when compared to other reports generated from other sources such as the State government's WildNet, Herbrecs or the federal government's EPBC database for a number of reasons.

Records for threatened and priority species are filtered and checked based on a number of rules including:

- Taxonomic nomenclature - current scientific names and status,
- Location - cross-check co-ordinates with location description,
- Taxon by location - requires good knowledge of the taxon and history of the record,
- Duplicate records - identify and remove,
- Expert panels - check records and provide new records,
- Flora cultivated records excluded,
- Use precise records less than or equal to 2000m,
- Use recent records greater than or equal to 1975 animals, greater than or equal to 1950 plants.

Threatened Species

Threatened species are those species classified as "Endangered" or "Vulnerable" under the *Environment Protection and Biodiversity Conservation Act 1999* or "Endangered", "Vulnerable" or "Near threatened" under the *Nature Conservation Act 1992*.

The following threatened species have been recorded on, or within approximately 4km of the AOI.

Table 22: Threatened species recorded on, or within 4km of the AOI

Species	Common name	NCA status	EPBC status	Back on Track rank	Migratory species*	Wetland species**	Identified flora/fauna
Adelotus brevis	Tusked Frog	V		Medium		Y	FA
Eucalyptus curtisii	Plunkett mallee	NT		Low			FL
Lathamus discolor	Swift Parrot	E	CE	Medium	Y		FA
Marsdenia coronata	slender milkvine	V		Low			FL
Melaleuca irbyana		E		Medium			FL
Ninox strenua	Powerful Owl	V		Medium			FA
Petauroides volans	Greater Glider	V	V	Low			FA
Phascolarctos cinereus	Koala	V	V	Low			FA
Plectranthus habrophyllus		E	E	Low			FL
Rostratula australis	Australian Painted Snipe	V	E	Medium		Y	FA

NB. Please note that the threatened species listed in this section are based upon the most recently compiled DES internal state-wide threatened species dataset. This dataset may contain additional records that were not originally available for inclusion in the relevant individual BPAs and ACAs.

**JAMBA - Japan-Australia Migratory Bird Agreement; CAMBA - China-Australia Migratory Bird Agreement; ROKAMBA - Republic of Korea-Australia Migratory Bird Agreement; CMS - Convention on the Conservation of Migratory Species.*

***Y - wetland indicator species.*

BPA Priority Species

A list of BPA priority species that have been recorded on, or within approximately 4km of the AOI is contained in the following table.

Table 23: Priority species recorded on, or within 4km of the AOI

Species	Common name	Back on Track rank	Identified flora/fauna
Cheramoeca leucosterna	White-backed Swallow	Low	FA
Delma plebeia	Common Delma	Medium	FA
Ephippiorhynchus asiaticus	Black-necked Stork	Low	FA
Erythrina numerosa			FL
Gyrocochlea raveni	Raven's Pinwheel Snail		FA
Litoria dentata	Bleating Treefrog	Low	FA
Lophoictinia isura	Square-tailed Kite	Low	FA
Melaleuca quinquenervia	swamp paperbark		FL
Melithreptus gularis	Black-chinned Honeyeater	Low	FA
Moretonistes mansueta	Moreton Bay Woodland Snail		FA
Pomatostomus temporalis	Grey-crowned Babbler		FA
Pseudechis guttatus	Spotted Black Snake	Medium	FA
Pseudophryne coriacea	Red Backed Broodfrog	Low	FA
Scoteanax rueppellii	Greater Broad-nosed Bat	Medium	FA

NB. Please note that the list of priority species is based on those species identified in the BPAs, however records for these species may be more recent than the originals used. furthermore, the BPA priority species databases are updated from time to time. At each update, the taxonomic details for all species are amended as necessary to reflect current taxonomic name and/or status changes.

ACA Priority Species

A list of ACA priority species used in riverine and non-riverine ACAs that have been recorded on, or within approximately 4km of the AOI are contained in the following tables.

Table 24: Priority species recorded on, or within 4 km of the AOI - riverine

Species	Common name	Back on Track rank	Identified flora/fauna
Acrocephalus australis	Australian Reed-Warbler	L	FA
Actitis hypoleucos	Common Sandpiper	L	FA
Ardea ibis	Cattle Egret	Low	FA
Ardea modesta	Eastern Great Egret	Low	FA
Eucalyptus tereticornis			FL
Ficus coronata	creek sandpaper fig		FL
Gallinago hardwickii	Latham's Snipe	L	FA
Haliaeetus leucogaster	White-bellied Sea-Eagle	L	FA
Melaleuca quinquenervia	swamp paperbark		FL

Species	Common name	Back on Track rank	Identified flora/fauna
Melaleuca viminalis		L	FL
Rostratula australis	Australian Painted Snipe	M	FA

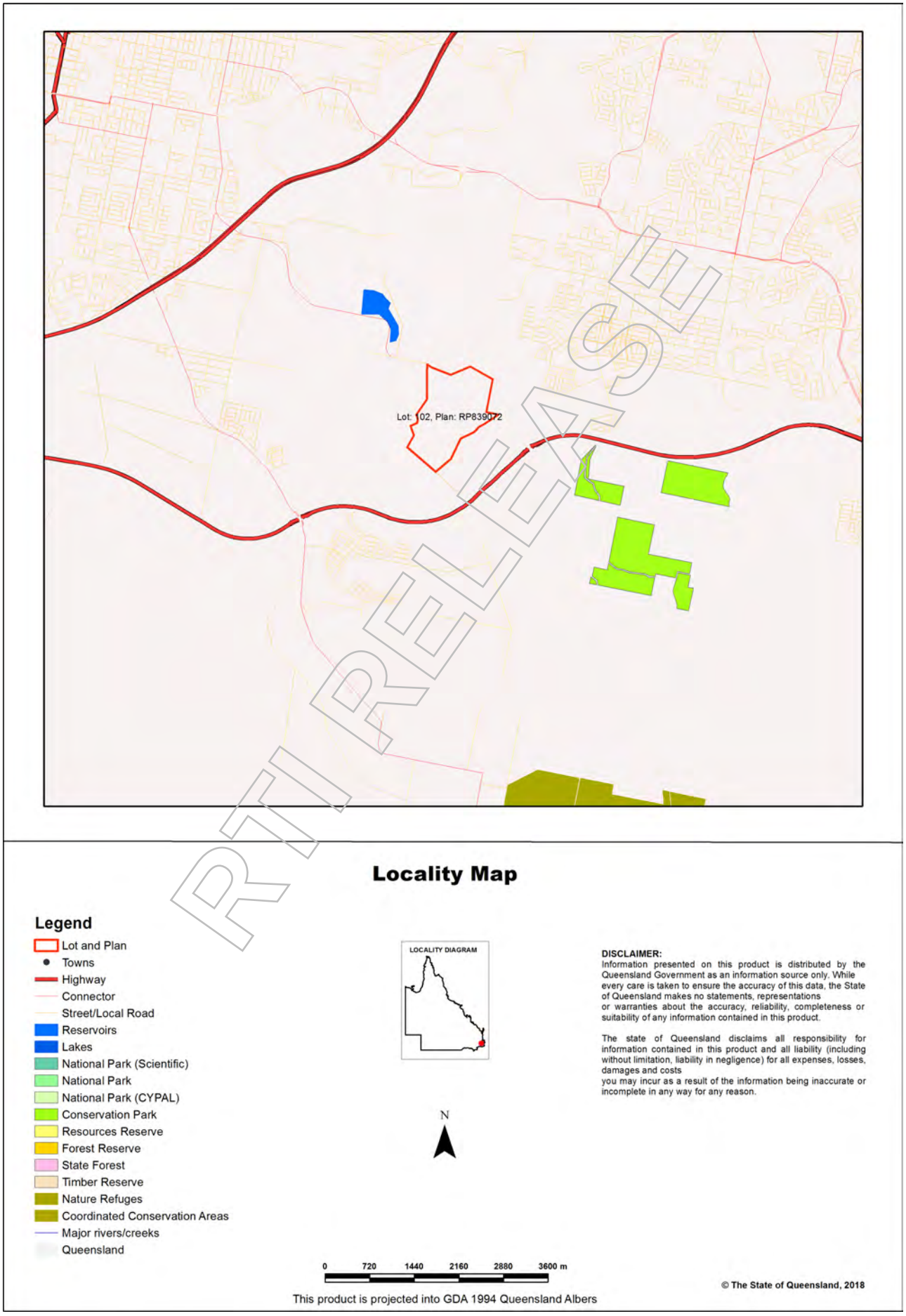
Table 25: Priority species recorded on, or within 4 km of the AOI - non-riverine

Species	Common name	Back on Track rank	Identified flora/fauna
Acrocephalus australis	Australian Reed-Warbler	L	FA
Ardea ibis	Cattle Egret	Low	FA
Ardea modesta	Eastern Great Egret	Low	FA
Calidris acuminata	Sharp-tailed Sandpiper	L	FA
Eucalyptus tereticornis			FL
Gallinago hardwickii	Latham's Snipe	L	FA
Haliaeetus leucogaster	White-bellied Sea-Eagle	L	FA
Limosa limosa	Black-tailed Godwit	L	FA
Melaleuca quinquenervia	swamp paperbark		FL
Plegadis falcinellus	Glossy Ibis	L	FA
Rostratula australis	Australian Painted Snipe	M	FA
Tringa stagnatilis	Marsh Sandpiper	L	FA

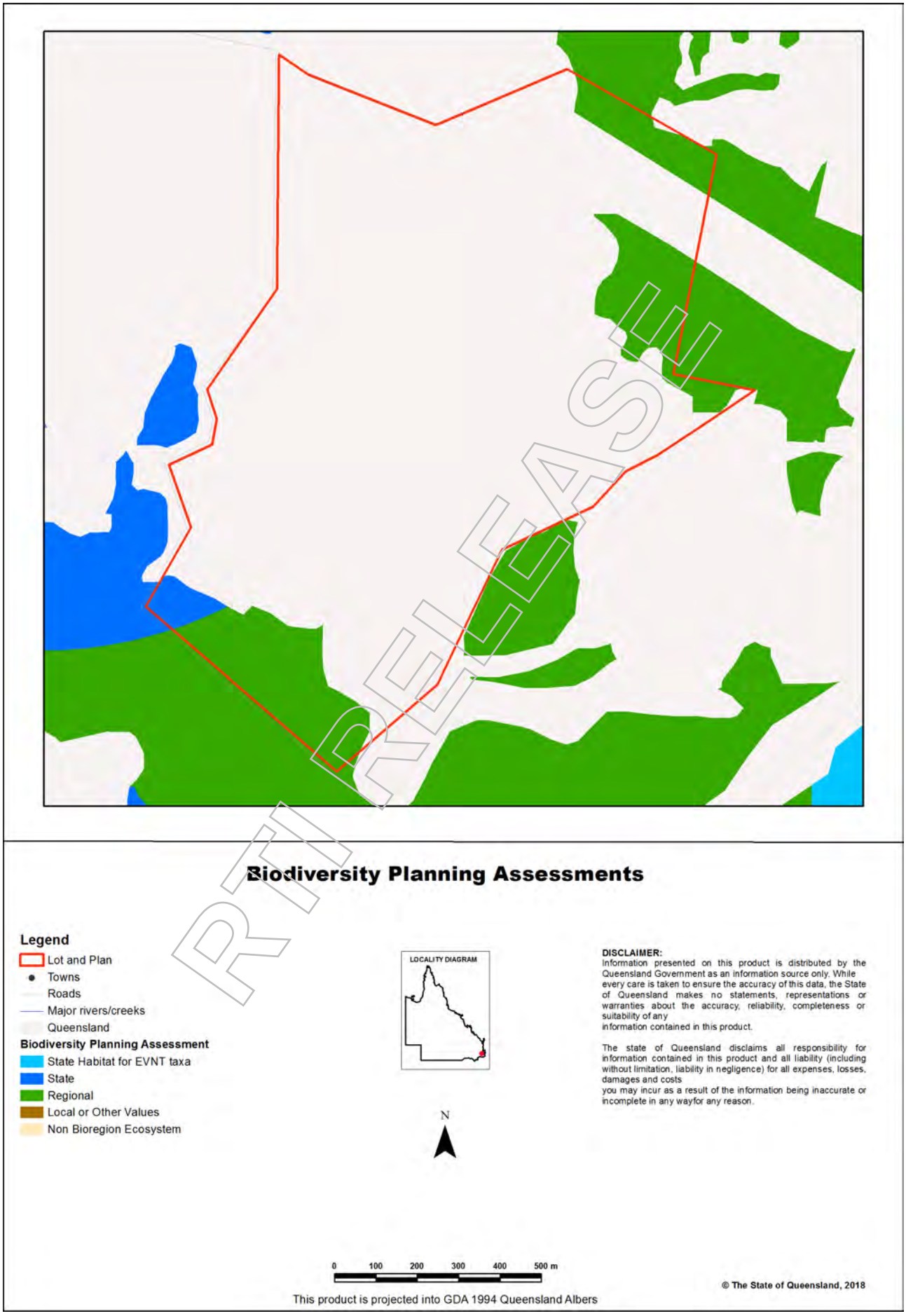
NB. Please note that the priority species records used in the above two tables are comprised of those adopted for the released individual ACAs. The ACA riverine and non-riverine priority species databases are updated from time to time to reflect new release of ACAs. At each update, the taxonomic details for all ACAs records are amended as necessary to reflect current taxonomic name and/or status changes.

Maps

Map 1 - Locality Map



Map 2 - Biodiversity Planning Assessment (BPA)



Map 3 - Corridors

Corridors

Legend

- Lot and Plan
- Towns
- Roads
- Major rivers/creeks
- Queensland

Corridors

- State
- Regional

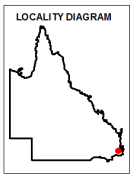
Corridor Triggered Vegetation

- State
- Regional
- Local

Core Area Vegetation

- Brigalow Belt only

LOCALITY DIAGRAM



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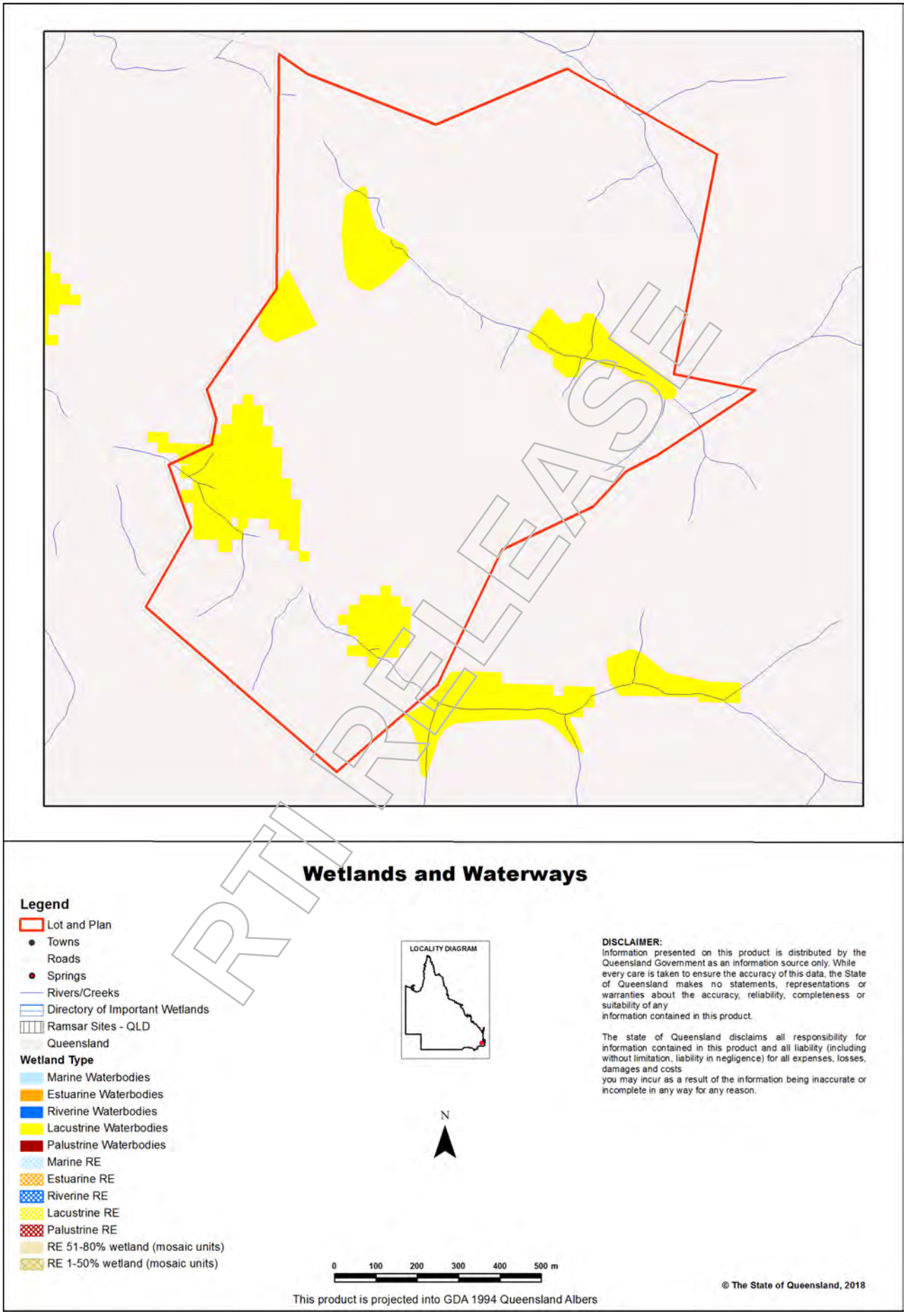
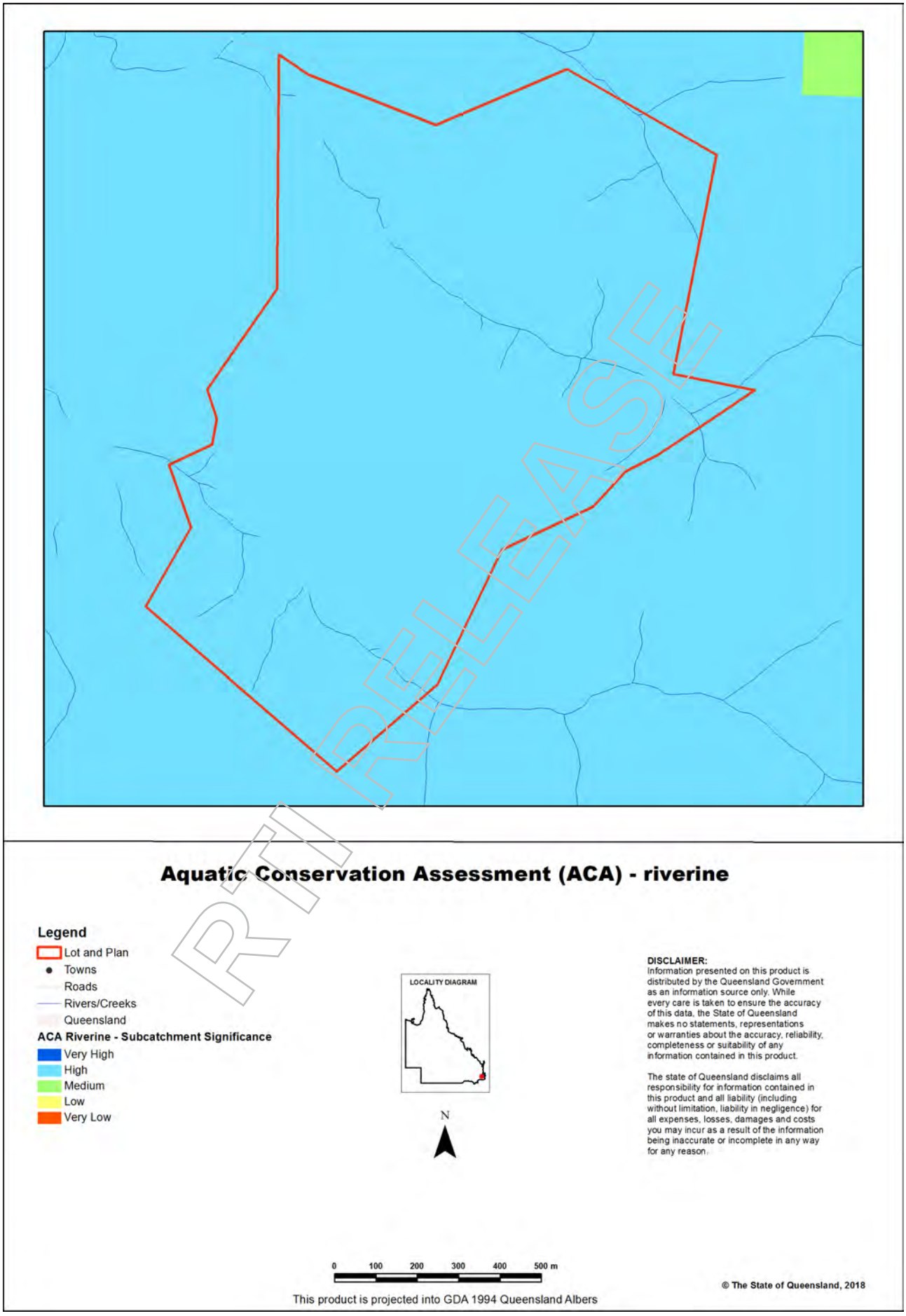
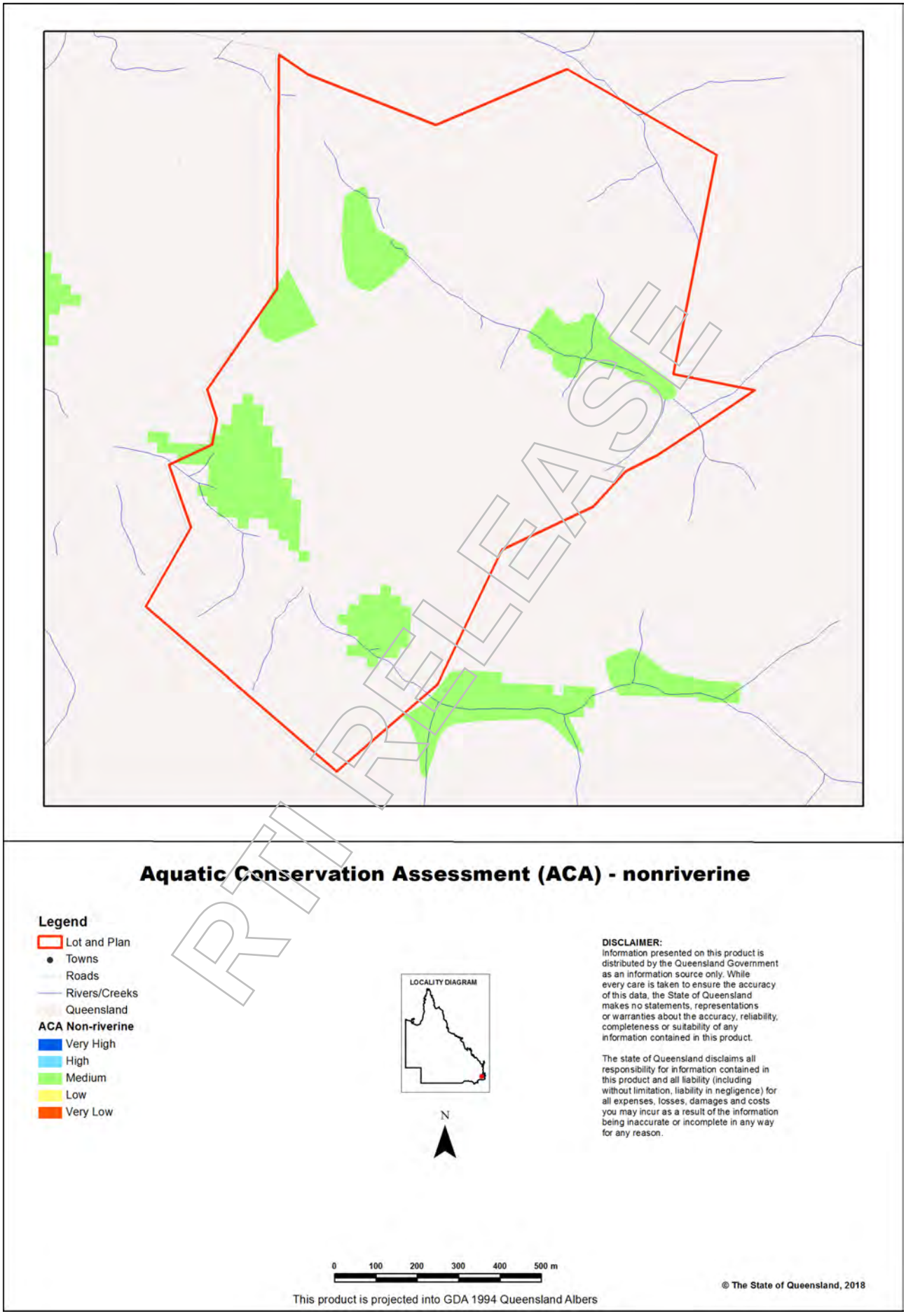
Map 4 - Wetlands and waterways



Map 5 - Aquatic Conservation Assessment (ACA) - riverine



Map 6 - Aquatic Conservation Assessment (ACA) - non-riverine



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Morton, S. R., Short, J. and Barker, R. D. with an Appendix by G.F. Griffin and G. Pearce (1995). *Refugia for Biological Diversity in Arid and Semi-arid Australia. Biodiversity Series* , Paper No. 4, Biodiversity Unit, Environment Australia.

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Appendices

Appendix 1 - Source Data

Theme	Datasets
Aquatic Conservation Assessments Non-riverine*	Combination of the following datasets: Cape York Peninsula Non-riverine v1.1 Eastern Gulf of Carpentaria v1.1 Great Barrier Reef Catchment Non-riverine v1.3 Lake Eyre and Bulloo Basins v1.1 QMDB Non-riverine ACA v1.4 Southeast Queensland ACA v1.1 WBB Non-riverine ACA v1.1
Aquatic Conservation Assessments Riverine*	Combination of the following datasets: Cape York Peninsula Riverine v1.1 Eastern Gulf of Carpentaria v1.1 Great Barrier Reef Catchment Riverine v1.1 Lake Eyre and Bulloo Basins v1.1 QMDB Riverine ACA v1.4 Southeast Queensland ACA v1.1 WBB Riverine ACA v1.1
Biodiversity Planning Assessments*	Combination of the following datasets: Brigalow Belt BPA v2.1 Cape York Peninsula BPA v1.1 Central Queensland Coast BPA v1.3 Channel Country BPA v1.1 Desert Uplands BPA v1.3 Einasleigh Uplands BPA v1.1 Gulf Plains BPA v1.1 Mitchell Grass Downs BPA v1.1 Mulga Lands BPA v1.4 New England Tableland v2.3 Southeast Queensland v4.1
Statewide BPA Corridors*	Statewide corridors v1.4
Threatened Species	An internal DES database compiled from Wildnet, Herbrecs, Corveg, the QLD Museum, as well as other incidental sources.
BPA Priority Species	An internal DES database compiled from Wildnet, Herbrecs, Corveg, the QLD Museum, as well as other incidental sources.
ACA Priority Species	An internal DES database compiled from Wildnet, Herbrecs, Corveg, the QLD Museum, as well as other incidental sources.

***These datasets are available at:**

http://dds.information.qld.gov.au/DDS

Appendix 2 - Acronyms and Abbreviations

AOI	- Area of Interest
ACA	- Aquatic Conservation Assessment
AQUABAMM	- Aquatic Biodiversity Assessment and Mapping Methodology
BAMM	- Biodiversity Assessment and Mapping Methodology
BoT	- Back on Track
BPA	- Biodiversity Planning Assessment
CAMBA	- China-Australia Migratory Bird Agreement
DES	- Department of Environment and Science
EPBC	- *Environment Protection and Biodiversity Conservation Act 1999*
EVNT	- Endangered, Vulnerable, Near Threatened
GDA94	- Geocentric Datum of Australia 1994
GIS	- Geographic Information System
JAMBA	- Japan-Australia Migratory Bird Agreement
NCA	- *Nature Conservation Act 1992*
RE	- Regional Ecosystem
REDD	- Regional Ecosystem Description Database
ROKAMBA	- Republic of Korea-Australia Migratory Bird Agreement

Queensland Government

Department of Environment and Science

Environmental Reports

Biodiversity and Conservation Values

Biodiversity Planning Assessments and Aquatic Conservation Assessments

For the selected area of interest
Lot: 103 Plan: SP189609

Environmental Reports - General Information

The Environmental Reports portal provides for the assessment of selected matters of interest relevant to a user specified location, or Area of Interest (AOI). All area and derivative figures are relevant to the extent of matters of interest contained within the AOI unless otherwise stated. Please note, if a user selects an AOI via the "Central co-ordinates" option, the resulting assessment area encompasses an area extending from 2km radius from the point of interest.

All area and area derived figures included in this report have been calculated via reprojecting relevant spatial features to Albers equal-area conic projection (central meridian = 146, datum Geocentric Datum of Australia 1994). As a result, area figures may differ slightly if calculated for the same features using a different co-ordinate system.

Figures in tables may be affected by rounding.

The matters of interest reported on in this document are based upon available state mapped datasets. Where the report indicates that a matter of interest is not present within the AOI (e.g. where area related calculations are equal to zero, or no values are listed), this may be due either to the fact that state mapping has not been undertaken for the AOI, that state mapping is incomplete for the AOI, or that no values have been identified within the site.

The information presented in this report should be considered as a guide only and field survey may be required to validate values on the ground.

Please direct queries about these reports to: biodiversity.planning@des.qld.gov.au

Disclaimer

Whilst every care is taken to ensure the accuracy of the information provided in this report, the Queensland Government makes no representations or warranties about its accuracy, reliability, completeness, or suitability, for any particular purpose and disclaims all responsibility and all liability (including without limitation, liability in negligence) for all expenses, losses, damages (including indirect or consequential damage) and costs which the user may incur as a consequence of the information being inaccurate or incomplete in any way and for any reason.

Table of Contents

Summary Information

Tables 1 to 8 provide an overview of the AOI with respect to selected topographic and environmental values.

Table 1: Area of interest details: Lot: 103 Plan: SP189609

Size (ha)	35.84
Local Government(s)	Ipswich City
Bioregion(s)	Southeast Queensland
Subregion(s)	Moreton Basin
Catchment(s)	Brisbane

The following table identifies available Biodiversity Planning Assessments (BPAs) and Aquatic Conservation Assessments (ACAs) with respect to the AOI.

Table 2: Available Biodiversity Planning and Aquatic Conservation Assessments

Assessment Type	Assessment Area and Version
Biodiversity Planning Assessment(s)	Southeast Queensland v4.1
Aquatic Conservation Assessment(s) (riverine)	South East Queensland Catchments v1.1
Aquatic Conservation Assessment(s) (non-riverine)	South East Queensland Catchments v1.1

Table 3: Remnant regional ecosystems within the AOI as per the Qld Herbarium's 'biodiversity status'

Biodiversity Status	Area (Ha)	% of AOI
Endangered	0.0	0.0
Of concern	0.53	1.47
No concern at present	2.11	5.87

The following table identifies the extent and proportion of the user specified area of interest (AOI) which is mapped as being of "State", "Regional" or "Local" significance via application of the Queensland Department of Environment and Science's *Biodiversity Assessment and Mapping Methodology* (BAMM).

Table 4: Summary table, biodiversity significance

Biodiversity significance	Area (Ha)	% of AOI
State Habitat for EVNT taxa	0.0	0.0
State	0.0	0.0
Regional	2.63	7.34
Local or Other Values	0.0	0.0

Table 5: Non-riverine wetlands intersecting the AOI

Non-riverine wetland types intersecting the area of interest	#
(No Records)	

NB. The figures presented in the table above are derived from the relevant non-riverine Aquatic Conservation Assessment(s). Later releases of wetland mapping produced via the Queensland Wetland Mapping Program may provide more recent

information in regards to wetland extent.

Table 6: Named waterways intersecting the AOI

(no results)

Refer to **Map 1** for general locality information.

The following two tables identify the extent and proportion of the user specified AOI which is mapped as being of "Very High", "High", "Medium", "Low", or "Very Low" aquatic conservation value for riverine and non-riverine wetlands via application of the Queensland Department of Environment and Science's *Aquatic Biodiversity Assessment and Mapping Method* (AquaBAMM).

Table 7: Summary table, aquatic conservation significance (riverine)

Aquatic conservation significance (riverine wetlands)	Area (Ha)	% of AOI
Very High	0.0	0.0
High	35.84	100.0
Medium	0.0	0.0
Low	0.0	0.0
Very Low	0.0	0.0

Table 8: Summary table, aquatic conservation significance (non-riverine)

Aquatic conservation significance (non-riverine wetlands)	Area (Ha)	% of AOI
(No Records)		

Biodiversity Planning Assessments

Introduction

The Department of Environment and Science (DES) attributes biodiversity significance on a bioregional scale through a Biodiversity Planning Assessment (BPA). A BPA involves the integration of ecological criteria using the *Biodiversity assessment and Mapping Methodology* (BAMM) and is developed in two stages: 1) **diagnostic criteria**, and 2) **expert panel criteria**. The diagnostic criteria are based on existing data which is reliable and uniformly available across a bioregion, while the expert panel criteria allows for the refinement of the mapped information from the diagnostic output by incorporating local knowledge and expert opinion.

The BAMM methodology has application for identifying areas with various levels of significance solely for biodiversity reasons. These include threatened ecosystems or taxa, large tracts of habitat in good condition, ecosystem diversity, landscape context and connection, and buffers to wetlands or other types of habitat important for the maintenance of biodiversity or ecological processes. While natural resource values such as dryland salinity, soil erosion potential or land capability are not dealt with explicitly, they are included to some extent within the biodiversity status of regional ecosystems recognised by the DES.

Biodiversity Planning Assessments (BPAs) assign three levels of overall biodiversity significance.

- **State significance** - areas assessed as being significant for biodiversity at the bioregional or state scales. They also include areas assessed by other studies/processes as being significant at national or international scales. In addition, areas flagged as being of State significance due to the presence of endangered, vulnerable and/or near threatened taxa, are identified as "State Habitat for EVNT taxa".
- **Regional significance** - areas assessed as being significant for biodiversity at the subregional scale. These areas have lower significance for biodiversity than areas assessed as being of State significance.
- **Local significance and/or other values** - areas assessed as not being significant for biodiversity at state or regional scales. Local values are of significance at the local government scale.

For further information on released BPAs and a copy of the underlying methodology, go to:

http://www.qld.gov.au/environment/plants-animals/biodiversity/planning/

The GIS results can be downloaded from the Queensland Spatial Catalogue at:

http://qspatial.information.qld.gov.au/geoportal/

The following table identifies the extent and proportion of the user specified AOI which is mapped as being of "State", "Regional" or "Local" significance via application of the BAMM.

Table 9: Summary table, biodiversity significance

Biodiversity significance	Area (Ha)	% of AOI
State Habitat for EVNT taxa	0.0	0.0
State	0.0	0.0
Regional	2.63	7.34
Local or Other Values	0.0	0.0

Refer to **Map 2** for further information.

Diagnostic Criteria

Diagnostic criteria are based on existing data which is reliable and uniformly available across a bioregion. These criteria are diagnostic in that they are used to filter the available data and provide a "first-cut" or initial determination of biodiversity significance. This initial assessment is then combined through a second group of other essential criteria.

A description of the individual diagnostic criteria is provided in the following sections.

Criteria A. Habitat for EVNT taxa: Classifies areas according to their significance based on the presence of endangered, vulnerable and/or rare (EVNT) taxa. EVNT taxa are those scheduled under the *Nature Conservation Act 1992* and/or the

Environment Protection and Biodiversity Conservation Act 1999. It excludes highly mobile fauna taxa which are instead considered in Criterion H and brings together information on EVNT taxa using buffering of recorded sites or habitat suitability models (HSM) where available.

Criteria B. Ecosystem value: Classifies on the basis of biodiversity status of regional ecosystems, their extent in protected areas (presence of poorly conserved regional ecosystems), the presence of significant wetlands; and areas of national importance such as the presence of Threatened Ecological Communities, World Heritage areas and Ramsar sites. Ecosystem value is applied at a bioregional (**B1**) and regional (**B2**) scale.

Criteria C. Tract size: Measures the relative size of tracts of vegetation in the landscape. The size of any tract is a major indicator of ecological significance, and is also strongly correlated with the long-term viability of biodiversity values. Larger tracts are less susceptible to ecological edge effects and are more likely to sustain viable populations of native flora and fauna than smaller tracts.

Criteria D. Relative size of regional ecosystems: Classifies the relative size of each regional ecosystem unit within its bioregion (**D1**) and its subregion (**D2**). Remnant units are compared with all other occurrences with the same regional ecosystem. Large examples of a regional ecosystem are more significant than smaller examples of the same regional ecosystem because they are more representative of the biodiversity values particular to the regional ecosystem, are more resilient to the effects of disturbance, and constitute a significant proportion of the total area of the regional ecosystem.

Criteria F. Ecosystem diversity: Is an indicator of the number of regional ecosystems occurring within an area. An area with high ecosystem diversity will have many regional ecosystems and ecotones relative to other areas within the bioregion.

Criteria G. Context and connection: Represents the extent to which a remnant unit incorporates, borders or buffers areas such as significant wetlands, endangered ecosystems; and the degree to which it is connected to other vegetation.

A summary of the biodiversity status based upon the diagnostic criteria is provided in the following table.

Table 10: Summary of biodiversity significance based upon diagnostic criteria with respect to the AOI

Biodiversity significance	Description	Area (Ha)	% of AOI
Regional	Remnant contains at least 1 Vulnerable or Near Threatened species (A)	2.63	7.34

Assessment of diagnostic criteria with respect to the AOI

The following table reflects an assessment of the individual diagnostic criteria noted above in regards to the AOI.

Table 11: Assessment of individual diagnostic criteria with respect to the AOI

Diagnostic Criteria	Very High Rating - Area (Ha)	Very High Rating - % of AOI	High Rating - Area (Ha)	High Rating - % of AOI	Medium Rating - Area (Ha)	Medium Rating - % of AOI	Low Rating - Area (Ha)	Low Rating - % of AOI
A: Habitat for EVNT Taxa			2.63	7.3				
B1: Ecosystem Value (Bioregion)					2.63	7.3		
B2: Ecosystem Value (Subregion)					2.63	7.3		
C: Tract Size							2.63	7.3
D1: Relative RE Size (Bioregion)							2.63	7.3
D2: Relative RE Size (Subregion)							2.63	7.3
F: Ecosystem Diversity			2.63	7.3				
G: Context and Connection							2.63	7.3

Other Essential Criteria

Other essential criteria (also known as expert panel criteria) are based on non-uniform information sources and which may rely more upon expert opinion than on quantitative data. These criteria are used to provide a "second-cut" determination of biodiversity significance, which is then combined with the diagnostic criteria for an overall assessment of relative biodiversity significance. A summary of the biodiversity status based upon the other essential criteria is provided in the following table.

Table 12: Summary of biodiversity significance based upon other essential criteria with respect to the AOI

Biodiversity significance	Description	Area (Ha)	% of AOI
Regional	Remnant forms part of a bioregional corridor (J)	2.63	7.34

A description of each of the other essential criteria and associated assessment in regards to the AOI is provided in the following sections.

Criteria H. Essential and general habitat for priority taxa: Priority taxa are those which are at risk or of management concern, taxa of scientific interest as relictual (ancient or primitive), endemic taxa or locally significant populations (such as a flying fox camp or heronry), highly specialised taxa whose habitat requirements are complex and distributions are not well correlated with any particular regional ecosystem, taxa important for maintaining genetic diversity (such as complex spatial patterns of genetic variation, geographic range limits, highly disjunct populations), taxa critical for management or monitoring of biodiversity (functionally important or ecological indicators), or economic and culturally important taxa.

Criteria I. Special biodiversity values: areas with special biodiversity values are important because they contain multiple taxa in a unique ecological and often highly biodiverse environment. Areas with special biodiversity values can include the following:

- Ia - centres of endemism - areas where concentrations of taxa are endemic to a bioregion or subregion are found.
- Ib - wildlife refugia (Morton *et al*. 1995), for example, islands, mound springs, caves, wetlands, gorges, mountain ranges and topographic isolates, ecological refuges, refuges from exotic animals, and refuges from clearing. The latter may include large areas that are not suitable for clearing because of land suitability/capability.
- Ic - areas with concentrations of disjunct populations.
- Id - areas with concentrations of taxa at the limits of their geographic ranges.
- Ie - areas with high species richness.
- If - areas with concentrations of relictual populations (ancient and primitive taxa).
- Ig - areas containing REs with distinct variation in species composition associated with geomorphology and other environmental variables.
- Ih - an artificial waterbody or managed/manipulated wetland considered by the panel/s to be of ecological significance.
- Ii - areas with a high density of hollow-bearing trees that provide habitat for animals.
- Ij - breeding or roosting sites used by a significant number of individuals.
- Ik - climate change refuge.

The following table identifies the value and extent area of the Other Essential Criteria H and I within the AOI.

Table 13: Relative importance of expert panel criteria (H and I) used to access overall biodiversity significance with respect to the AOI

Expert Panel	Very High Rating - Area (Ha)	Very High Rating - % of AOI	High Rating - Area (Ha)	High Rating - % of AOI	Medium Rating - Area (Ha)	Medium Rating - % of AOI	Low Rating - Area (Ha)	Low Rating - % of AOI
H: Core Habitat Priority Taxa					2.63	7.3		
Ia: Centres of Endemism								
Ib: Wildlife Refugia								
Ic: Disjunct Populations								
Id: Limits of Geographic Ranges								
Ie: High Species Richness								
If: Relictual Populations								
Ig: Variation in Species Composition								
Ih: Artificial Wetland								

Expert Panel	Very High Rating - Area (Ha)	Very High Rating - % of AOI	High Rating - Area (Ha)	High Rating - % of AOI	Medium Rating - Area (Ha)	Medium Rating - % of AOI	Low Rating - Area (Ha)	Low Rating - % of AOI
Ii: Hollow Bearing Trees								
Ij: Breeding or Roosting Site								
Ik: Climate Refugia								

NB. Whilst biodiversity values associated with Criteria I may be present within the site (refer to tables 12 and 15), for the New England Tableland and Central Queensland Coast BPAs, area and % area figures associated with Criteria Ia through to Ij cannot be listed in the table above (due to slight variations in data formats between BPAs).

Criteria J. Corridors: areas identified under this criterion qualify either because they are existing vegetated corridors important for contiguity, or cleared areas that could serve this purpose if revegetated. Some examples of corridors include riparian habitats, transport corridors and "stepping stones".

Bioregional and subregional conservation corridors have been identified in the more developed bioregions of Queensland through the BPAs, using an intensive process involving expert panels. Map 3 displays the location of corridors as identified under the Statewide Corridor network. The Statewide Corridor network incorporates BPA derived corridors and for bioregions where no BPA has been assessed yet, corridors derived under other planning processes. *Note: as a result of updating and developing a statewide network, the alignment of corridors may differ slightly in some instances when compared to those used in individual BPAs.*

The functions of these corridors are:

- **Terrestrial** Bioregional corridors, in conjunction with large tracts of remnant vegetation, maintain ecological and evolutionary processes at a landscape scale, by:

  • Maintaining long term evolutionary/genetic processes that allow the natural change in distributions of species and connectivity between populations of species over long periods of time;

  • Maintaining landscape/ecosystems processes associated with geological, altitudinal and climatic gradients, to allow for ecological responses to climate change;

  • Maintaining large scale seasonal/migratory species processes and movement of fauna;

  • Maximising connectivity between large tracts/patches of remnant vegetation;

  • Identifying key areas for rehabilitation and offsets; and

- **Riparian** Bioregional Corridors also maintain and encourage connectivity of riparian and associated ecosystems.

The location of the corridors is determined by the following principles:

- Terrestrial

  • Complement riparian landscape corridors (i.e. minimise overlap and maximise connectivity);

  • Follow major watershed/catchment and/or coastal boundaries;

  • Incorporate major altitudinal/geological/climatic gradients;

  • Include and maximise connectivity between large tracts/patches of remnant vegetation;

  • Include and maximise connectivity between remnant vegetation in good condition; and

- Riparian

  • Located on the major river or creek systems within the bioregion in question.

The total extent of remnant vegetation triggered as being of "State", "Regional" or "Local" significance due to the presence of an overlying BPA derived terrestrial or riparian corridor within the AOI, is provided in the following table. For further information on how remnant vegetation is triggered due to the presence of an overlying BPA derived corridor, refer to the relevant landscape BPA expert panel report(s).

Table 14: Extent of triggered remnant vegetation due to the presence of BPA derived corridors with respect to the AOI

Biodiversity Significance	Area (Ha)	% of AOI
State	0.0	0.0
Regional	2.63	7.34
Local	0.0	0.0

NB: area figures associated with the extent of corridor triggered remnant vegetation are only available for those bioregions where a BPA has been undertaken.

Refer to **Map 3** for further information.

Threatening process/condition (Criteria K) - areas identified by experts under this criterion may be used to amend (upgrade or downgrade) biodiversity significance arising from the "first-cut" analysis. The condition of remnant vegetation is affected by threatening processes such as weeds, ferals, grazing and burning regime, selective timber harvesting/removal, salinity, soil erosion, and climate change.

Assessment of Criteria K with respect to the AOI is not currently included in the "Biodiversity and Conservation Values" report, as it has not been applied to the majority of Queensland due to data/information limitations and availability.

Special Area Decisions

Expert panel derived "Special Area Decisions" are used to assign values to Other Essential Criteria. The specific decisions which relate to the AOI in question are listed in the table below.

Table 15: Expert panel decisions for assigning levels of biodiversity significance with respect to the AOI

Decision Number	Description	Panel Recommended Significance	Criteria Values
seqs_l_22	Terrestrial bioregional corridors	State or Regional	Criterion J

Expert panel decision descriptions:

seqs_l_22

The expert panel reviewed the existing bioregional corridors for southern SEQ. Corridors were assigned as being of State or Regional significance.

For further information, refer to section 2.3.2 and 3.2 of this report.

Aquatic Conservation Assessments

Introduction

The Aquatic Biodiversity Assessment and Mapping Method or AquaBAMM (Clayton *et al.* 2006), was developed to assess conservation values of wetlands in queensland, and may also have application in broader geographical contexts. It is a comprehensive method that uses available data, including data resulting from expert opinion, to identify relative wetland conservation/ecological values within a specified study area (usually a catchment). The product of applying this method is an Aquatic Conservation Assessment (ACA) for the study area.

An ACA using AquaBAMM is non-social, non-economic and identifies the conservation/ecological values of wetlands at a user-defined scale. It provides a robust and objective conservation assessment using criteria, indicators and measures that are founded upon a large body of national and international literature. The criteria, each of which may have variable numbers of indicators and measures, are naturalness (aquatic), naturalness (catchment), diversity and richness, threatened species and ecosystems, priority species and ecosystems, special features, connectivity and representativeness. An ACA using AquaBAMM is a powerful decision support tool that is easily updated and simply interrogated through a geographic information system (GIS).

Where they have been conducted, ACAs can provide a source of baseline wetland conservation/ecological information to support natural resource management and planning processes. They are useful as an independent product or as an important foundation upon which a variety of additional environmental and socio-economic elements can be added and considered (i.e. an early input to broader 'triple-bottom-line' decision-making processes). An ACA can have application in:

- determining priorities for protection, regulation or rehabilitation of wetlands and other aquatic ecosystems
- on-ground investment in wetlands and other aquatic ecosystems
- contributing to impact assessment of large-scale development (e.g. dams)
- water resource and strategic regional planning prcesses

For a detailed explanation of the methodology please refer to the summary and expert panel reports relevant to the ACA utilised in this assessment. These reports can be accessed at Wetland *Info*:

http://wetlandinfo.des.qld.gov.au/wetlands/assessment/assessment-methods/aca

The GIS results can be downloaded from the Queensland Spatial Catalogue at:

http://qspatial.information.qld.gov.au/geoportal/

Explanation of Criteria

Under the AquaBAMM, eight criteria are assessed to derive an overall conservation value. Similar to the Biodiversity Assessment and Mapping Methodology, the criteria may be primarily diagnostic (quantitative) or primarily expert opinion (qualitative) in nature. The following sections provide a brief description of each of the 8 criteria.

Criteria 1. Naturalness - Aquatic: This attribute reflects the extent to which a wetland's (riverine, non-riverine, estuarine) aquatic state of naturalness is affected through relevant influencing indicators which include: presence of exotic flora and fauna; presence of aquatic communities; degree of habitat modification and degree of hydrological modification.

Criteria 2. Naturalness - Catchment: The naturalness of the terrestrial systems of a catchment can have an influence on many wetland characteristics including: natural ecological processes e.g. nutrient cycling, riparian vegetation, water chemistry, and flow. The indicators utilised to assess this criterion include: presence of exotic flora and/or fauna; riparian, catchment and flow modification.

Criteria 3. Naturalness - Diversity and Richness: This criterion is common to many ecological assessment methods and can include both physical and biological features. It includes such indicators as species richness, riparian ecosystem richness and geomorphological diversity.

Criteria 4. Threatened Species and Ecosystems: This criterion evaluates ecological rarity characteristics of a wetland. This includes both species rarity and rarity of communities / assemblages. The communities and assemblages are best represented by regional ecosystems. Species rarity is determined by NCA and EPBC status with Endangered, Vulnerable or Near-threatened species being included in the evaluation. Ecosystem rarity is determined by regional ecosystem biodiversity status i.e. Endangered, Of Concern, or Not of Concern.

Criteria 5. Priority Species and Ecosystems: Priority flora and fauna species lists are expert panel derived. These are aquatic, semi-aquatic and riparian species which exhibit at least 1 particular trait in order to be eligible for consideration. For

flora species the traits included:

- It forms significant macrophyte beds (in shallow or deep water).
- It is an important food source.
- It is important/critical habitat.
- It is implicated in spawning or reproduction for other fauna and/or flora species.
- It is at its distributional limit or is a disjunct population.
- It provides stream bank or bed stabilisation or has soil binding properties.
- It is a small population and subject to threatening processes.

Fauna species are included if they meet at least one of the following traits:

- It is endemic to the study area (>75 per cent of its distribution is in the study area/catchment).
- It has experienced, or is suspected of experiencing, a serious population decline.
- It has experienced a significant reduction in its distribution and has a naturally restricted distribution in the study area/catchment.
- It is currently a small population and threatened by loss of habitat.
- It is a significant disjunct population.
- It is a migratory species (other than birds).
- A significant proportion of the breeding population (>one per cent for waterbirds, >75 per cent other species) occurs in the waterbody (see Ramsar criterion 6 for waterbirds).
- Limit of species range.

See the individual expert panel reports for the priority species traits specific to an ACA.

Criteria 6. Special Features: Special features are areas identified by flora, fauna and ecology expert panels which exhibit characteristics beyond those identified in other criteria and which the expert panels consider to be of the highest ecological importance. Special feature traits can relate to, but are not solely restricted to geomorphic features, unique ecological processes, presence of unique or distinct habitat, presence of unique or special hydrological regimes e.g. spring-fed streams. Special features are rated on a 1 - 4 scale (4 being the highest).

Criteria 7. Connectivity: This criterion is based on the concept that appropriately connected aquatic ecosystems are healthy and resilient, with maximum potential biodiversity and delivery of ecosystem services.

Criteria 8. Representativeness: This criterion applies primarily to non-riverine assessments, evaluates the rarity and uniqueness of a wetland type in relation to specific geographic areas. Rarity is determined by the degree of wetland protection within "protected Areas" estate or within an area subject to the *Fisheries Act 1994*, *Coastal Protection and Management Act 1995*, or *Marine Parks Act 2004*. Wetland uniqueness evaluates the relative abundance and size of a wetland or wetland management group within geographic areas such as catchment and subcatchment.

Riverine Wetlands

Riverine wetlands are all wetlands and deepwater habitats within a channel. The channels are naturally or artificially created, periodically or continuously contain moving water, or connecting two bodies of standing water. AquaBAMM, when applied to riverine wetlands uses a discrete spatial unit termed subsections. A subsection can be considered as an area which encompasses discrete homogeneous stream sections in terms of their natural attributes (i.e. physical, chemical, biological and utilitarian values) and natural resources. Thus in an ACA, an aquatic conservation significance score is calculated for each subsection and applies to all streams within a subsection, rather than individual streams as such.

Please note, the area figures provided in Tables 16 and 17, are derived using the extent of riverine subsections within the AOI. Refer to **Map 5** for further information. A summary of the conservation significance of riverine wetlands within the AOI is provided in the following table.

Table 16: Overall level/s of riverine aquatic conservation significance

Aquatic conservation significance (riverine wetlands)	Area (Ha)	% of AOI
Very High	0.0	0.0

Aquatic conservation significance (riverine wetlands)	Area (Ha)	% of AOI
High	35.84	100.0
Medium	0.0	0.0
Low	0.0	0.0
Very Low	0.0	0.0

The individual aquatic conservation criteria ratings for riverine wetlands within the AOI are listed below.

Table 17: Level/s of riverine aquatic conservation significance based on selected criteria

Criteria	Very High Rating - Area (Ha)	Very High Rating - % of AOI	High Rating - Area (Ha)	High Rating - % of AOI	Medium Rating - Area (Ha)	Medium Rating - % of AOI	Low Rating - Area (Ha)	Low Rating - % of AOI
1. Naturalness aquatic					35.84	100.0		
2. Naturalness catchment							35.84	100.0
3. Diversity and richness	35.84	100.0						
4. Threatened species and ecosystems	35.84	100.0						
5. Priority species and ecosystems	35.84	100.0						
6. Special features								
7. Connectivity							35.84	100.0
8. Representative-ness								

The table below lists and describes the relevant expert panel decisions used to assign conservation significance values to riverine wetlands within the AOI.

Table 18: Expert panel decisions for assigning overall levels of riverine aquatic conservation significance

Decision number	Special feature	Catchment	Criteria/Indicator/Measure	Conservation rating (1-4)
(No Records)				

4 is the highest rating/value

Expert panel decision descriptions:

(No Records)

Non-riverine Wetlands

Non-riverine wetlands include both lacustrine and palustrine wetlands, however, do not currently incorporate estuarine, marine or subterranean wetland types. A summary of the conservation significance of non-riverine wetlands within the AOI is provided in the following table. Refer to **Map 6** for further information.

Table 19: Overall level/s of non-riverine aquatic conservation significance

Aquatic conservation significance (non-riverine wetlands)	Area (Ha)	% of AOI
(No Records)		

The following table provides an assessment of non-riverine wetlands within the AOI and associated aquatic conservation criteria values.

Table 20: Level/s of non-riverine aquatic conservation significance based on selected criteria

Criteria	Very High Rating - Area (Ha)	Very High Rating - % of AOI	High Rating - Area (Ha)	High Rating - % of AOI	Medium Rating - Area (Ha)	Medium Rating - % of AOI	Low Rating - Area (Ha)	Low Rating - % of AOI
(No Records)								

The table below lists and describes the relevant expert panel decisions used to assign conservation significance values to non-riverine wetlands within the AOI.

Table 21: Expert panel decisions for assigning overall levels of non-riverine aquatic conservation significance.

Decision number	Special feature	Catchment	Criteria/Indicator/Measure	Conservation rating (1-4)
(No Records)				

4 is the highest rating/value

Expert panel decision descriptions:

(No Records)

Threatened and Priority Species

Introduction

This chapter contains a list of threatened and priority flora and/or fauna species that have been recorded on, or within 4km of the Assessment Area.

The information presented in this chapter with respect to species presence is derived from compiled databases developed primarily for the purpose of BPAs and ACAs. Data is collated from a number of sources and is updated periodically.

It is important to note that the list of species provided in this report, may differ when compared to other reports generated from other sources such as the State government's WildNet, Herbrecs or the federal government's EPBC database for a number of reasons.

Records for threatened and priority species are filtered and checked based on a number of rules including:

- Taxonomic nomenclature - current scientific names and status,
- Location - cross-check co-ordinates with location description,
- Taxon by location - requires good knowledge of the taxon and history of the record,
- Duplicate records - identify and remove,
- Expert panels - check records and provide new records,
- Flora cultivated records excluded,
- Use precise records less than or equal to 2000m,
- Use recent records greater than or equal to 1975 animals, greater than or equal to 1950 plants.

Threatened Species

Threatened species are those species classified as "Endangered" or "Vulnerable" under the *Environment Protection and Biodiversity Conservation Act 1999* or "Endangered", "Vulnerable" or "Near threatened" under the *Nature Conservation Act 1992*.

The following threatened species have been recorded on, or within approximately 4km of the AOI.

Table 22: Threatened species recorded on, or within 4km of the AOI

Species	Common name	NCA status	EPBC status	Back on Track rank	Migratory species*	Wetland species**	Identified flora/fauna
Adelotus brevis	Tusked Frog	V		Medium		Y	FA
Eucalyptus curtisii	Plunkett mallee	NT		Low			FL
Lathamus discolor	Swift Parrot	E	CE	Medium	Y		FA
Marsdenia coronata	slender milkvine	V		Low			FL
Melaleuca irbyana		E		Medium			FL
Ninox strenua	Powerful Owl	V		Medium			FA
Petauroides volans	Greater Glider	V	V	Low			FA
Phascolarctos cinereus	Koala	V	V	Low			FA
Plectranthus habrophyllus		E	E	Low			FL
Rostratula australis	Australian Painted Snipe	V	E	Medium		Y	FA

NB. Please note that the threatened species listed in this section are based upon the most recently compiled DES internal state-wide threatened species dataset. This dataset may contain additional records that were not originally available for inclusion in the relevant individual BPAs and ACAs.

**JAMBA - Japan-Australia Migratory Bird Agreement; CAMBA - China-Australia Migratory Bird Agreement; ROKAMBA - Republic of Korea-Australia Migratory Bird Agreement; CMS - Convention on the Conservation of Migratory Species.*

***Y - wetland indicator species.*

BPA Priority Species

A list of BPA priority species that have been recorded on, or within approximately 4km of the AOI is contained in the following table.

Table 23: Priority species recorded on, or within 4km of the AOI

Species	Common name	Back on Track rank	Identified flora/fauna
Cheramoeca leucosterna	White-backed Swallow	Low	FA
Delma plebeia	Common Delma	Medium	FA
Ephippiorhynchus asiaticus	Black-necked Stork	Low	FA
Gyrocochlea raveni	Raven's Pinwheel Snail		FA
Litoria dentata	Bleating Treefrog	Low	FA
Lophoictinia isura	Square-tailed Kite	Low	FA
Melaleuca quinquenervia	swamp paperbark		FL
Melithreptus gularis	Black-chinned Honeyeater	Low	FA
Moretonistes mansueta	Moreton Bay Woodland Snail		FA
Pomatostomus temporalis	Grey-crowned Babbler		FA
Pseudophryne coriacea	Red Backed Broodfrog	Low	FA
Scoteanax rueppellii	Greater Broad-nosed Bat	Medium	FA

NB. Please note that the list of priority species is based on those species identified in the BPAs, however records for these species may be more recent than the originals used. furthermore, the BPA priority species databases are updated from time to time. At each update, the taxonomic details for all species are amended as necessary to reflect current taxonomic name and/or status changes.

ACA Priority Species

A list of ACA priority species used in riverine and non-riverine ACAs that have been recorded on, or within approximately 4km of the AOI are contained in the following tables.

Table 24: Priority species recorded on, or within 4 km of the AOI - riverine

Species	Common name	Back on Track rank	Identified flora/fauna
Acrocephalus australis	Australian Reed-Warbler	L	FA
Actitis hypoleucos	Common Sandpiper	L	FA
Ardea ibis	Cattle Egret	Low	FA
Ardea modesta	Eastern Great Egret	Low	FA
Eucalyptus tereticornis			FL
Ficus coronata	creek sandpaper fig		FL
Gallinago hardwickii	Latham's Snipe	L	FA
Haliaeetus leucogaster	White-bellied Sea-Eagle	L	FA
Melaleuca quinquenervia	swamp paperbark		FL
Melaleuca viminalis		L	FL
Rostratula australis	Australian Painted Snipe	M	FA

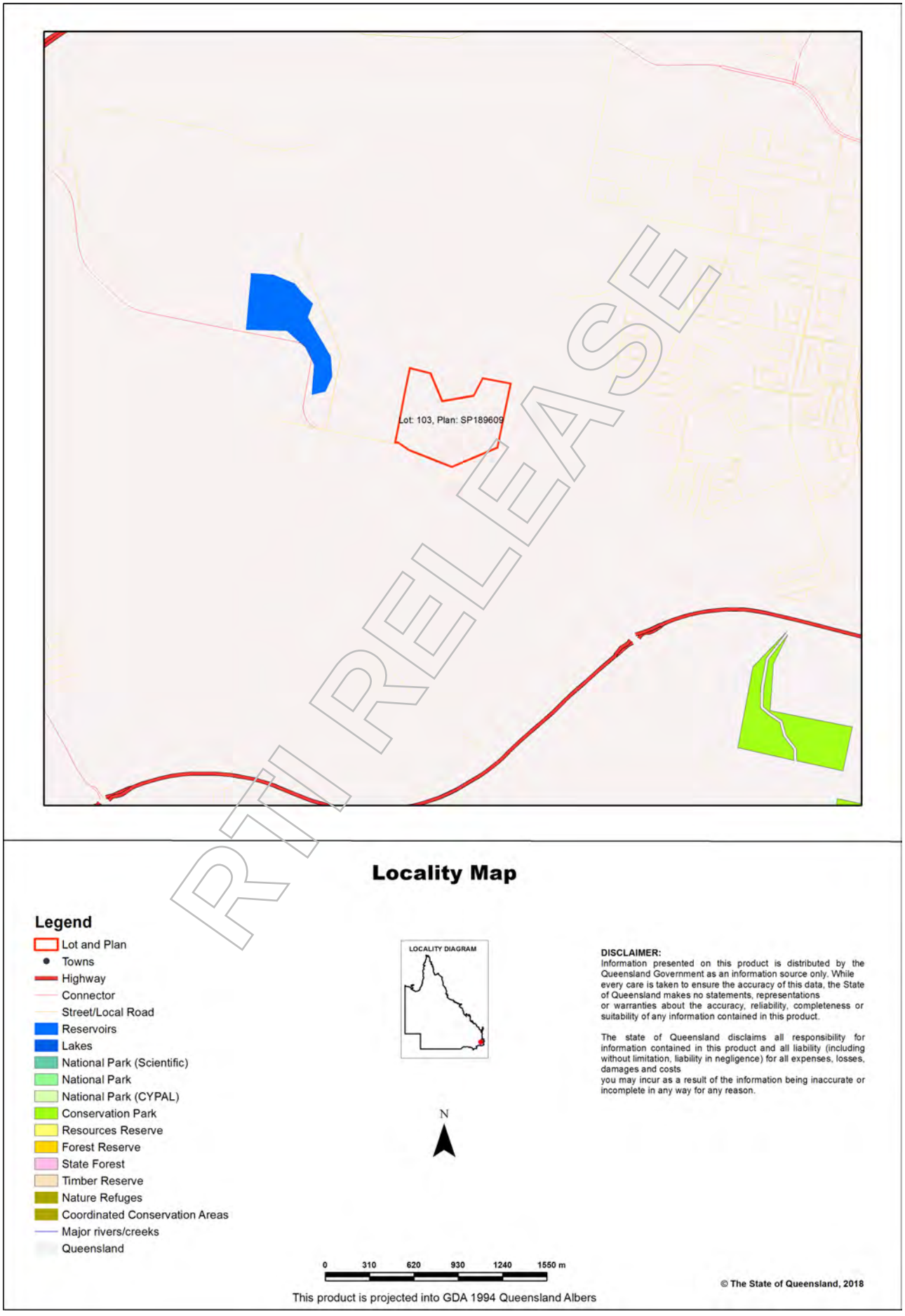
Table 25: Priority species recorded on, or within 4 km of the AOI - non-riverine

Species	Common name	Back on Track rank	Identified flora/fauna
Acrocephalus australis	Australian Reed-Warbler	L	FA
Ardea ibis	Cattle Egret	Low	FA
Ardea modesta	Eastern Great Egret	Low	FA
Calidris acuminata	Sharp-tailed Sandpiper	L	FA
Eucalyptus tereticornis			FL
Gallinago hardwickii	Latham's Snipe	L	FA
Haliaeetus leucogaster	White-bellied Sea-Eagle	L	FA
Limosa limosa	Black-tailed Godwit	L	FA
Melaleuca quinquenervia	swamp paperbark		FL
Plegadis falcinellus	Glossy Ibis	L	FA
Rostratula australis	Australian Painted Snipe	M	FA
Tringa stagnatilis	Marsh Sandpiper	L	FA

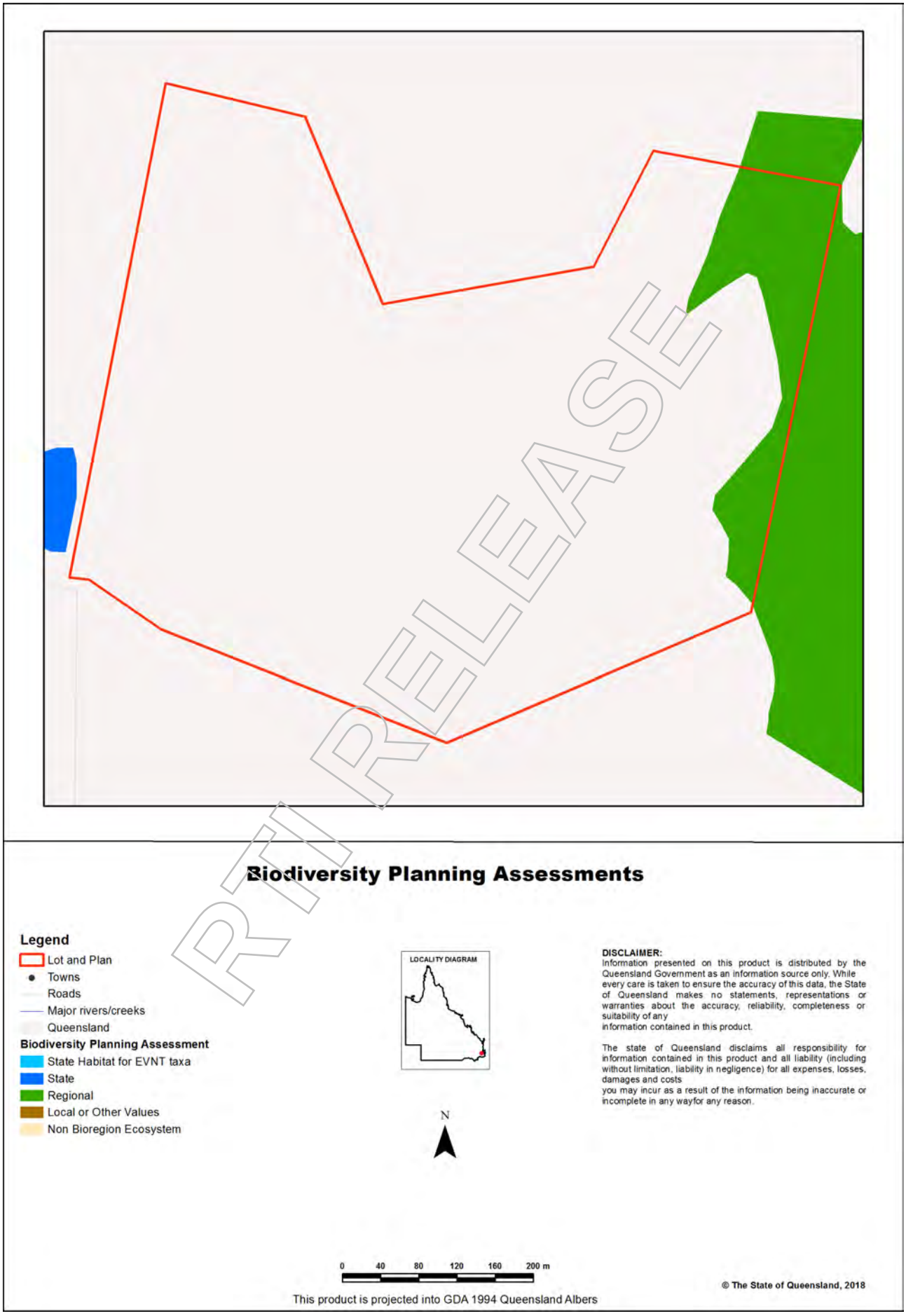
NB. Please note that the priority species records used in the above two tables are comprised of those adopted for the released individual ACAs. The ACA riverine and non-riverine priority species databases are updated from time to time to reflect new release of ACAs. At each update, the taxonomic details for all ACAs records are amended as necessary to reflect current taxonomic name and/or status changes.

Maps

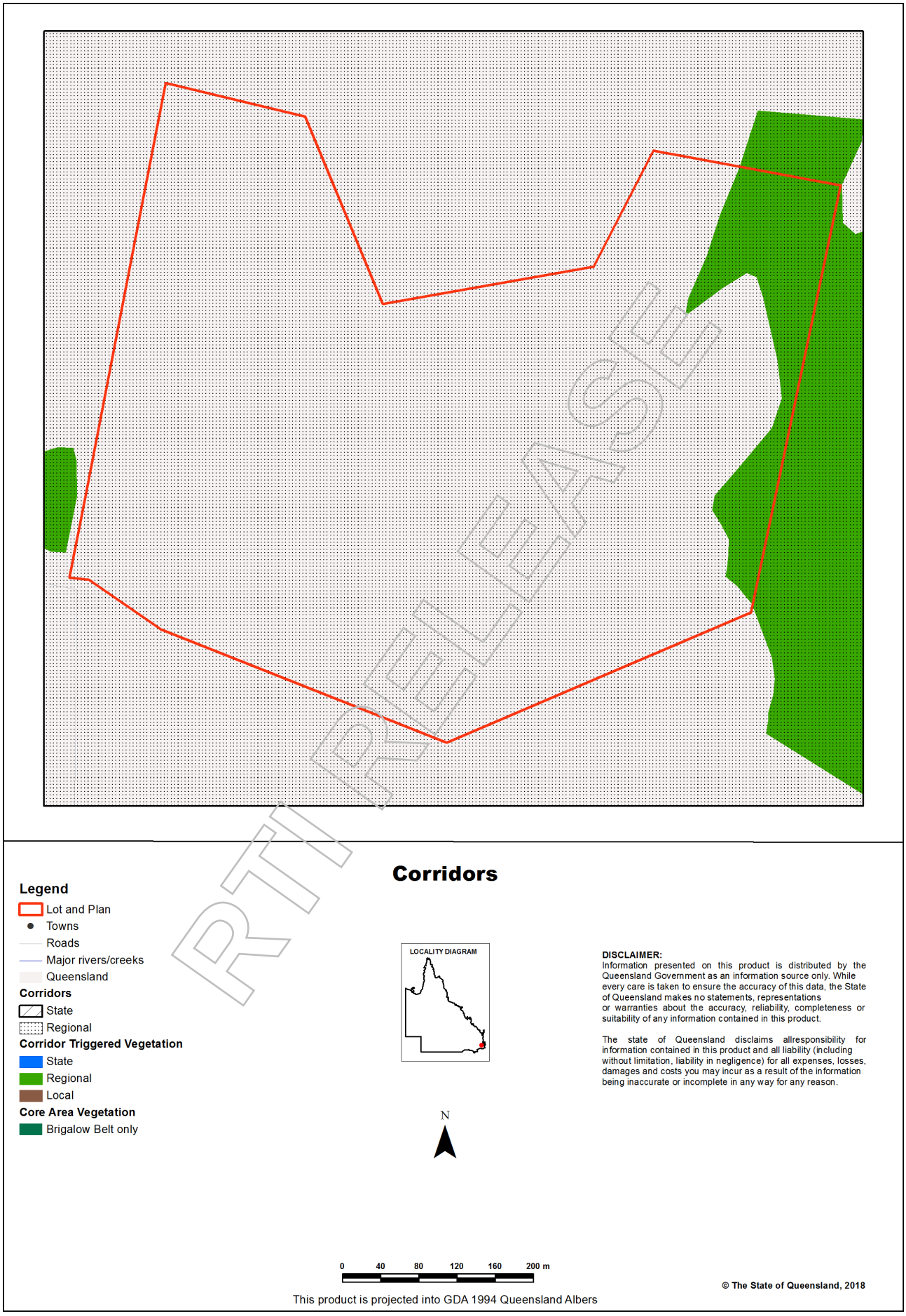
Map 1 - Locality Map



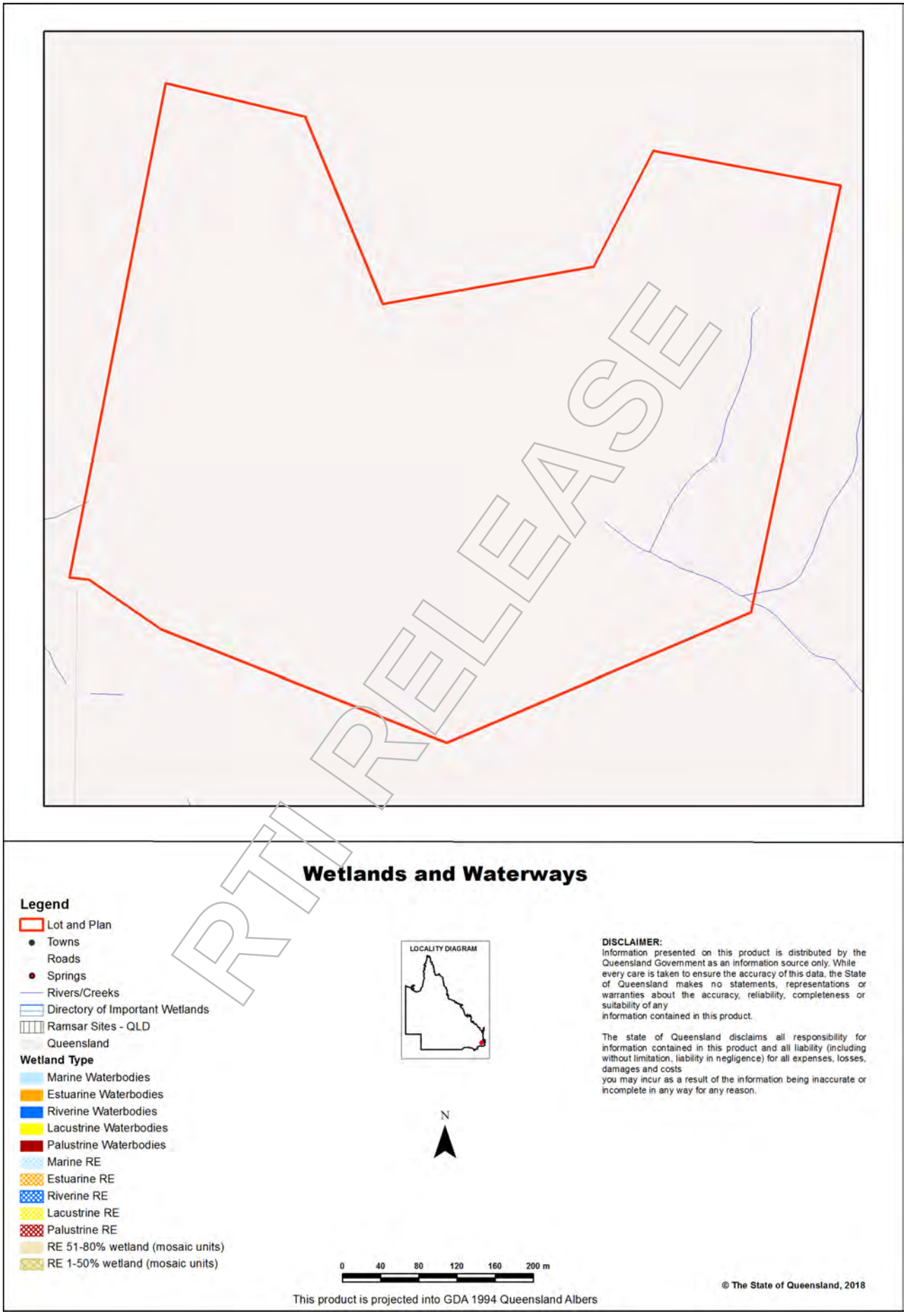
Map 2 - Biodiversity Planning Assessment (BPA)



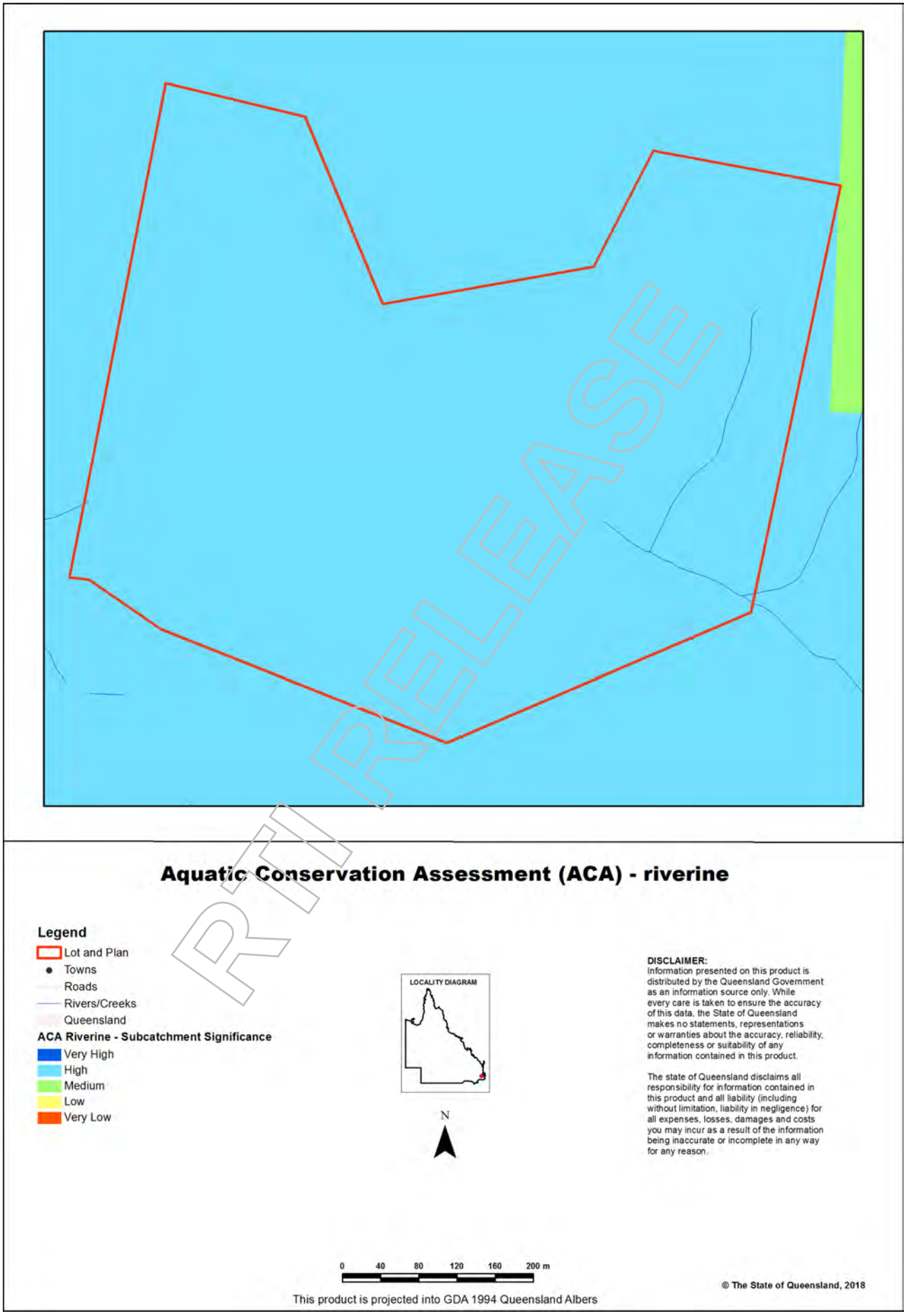
Map 3 - Corridors



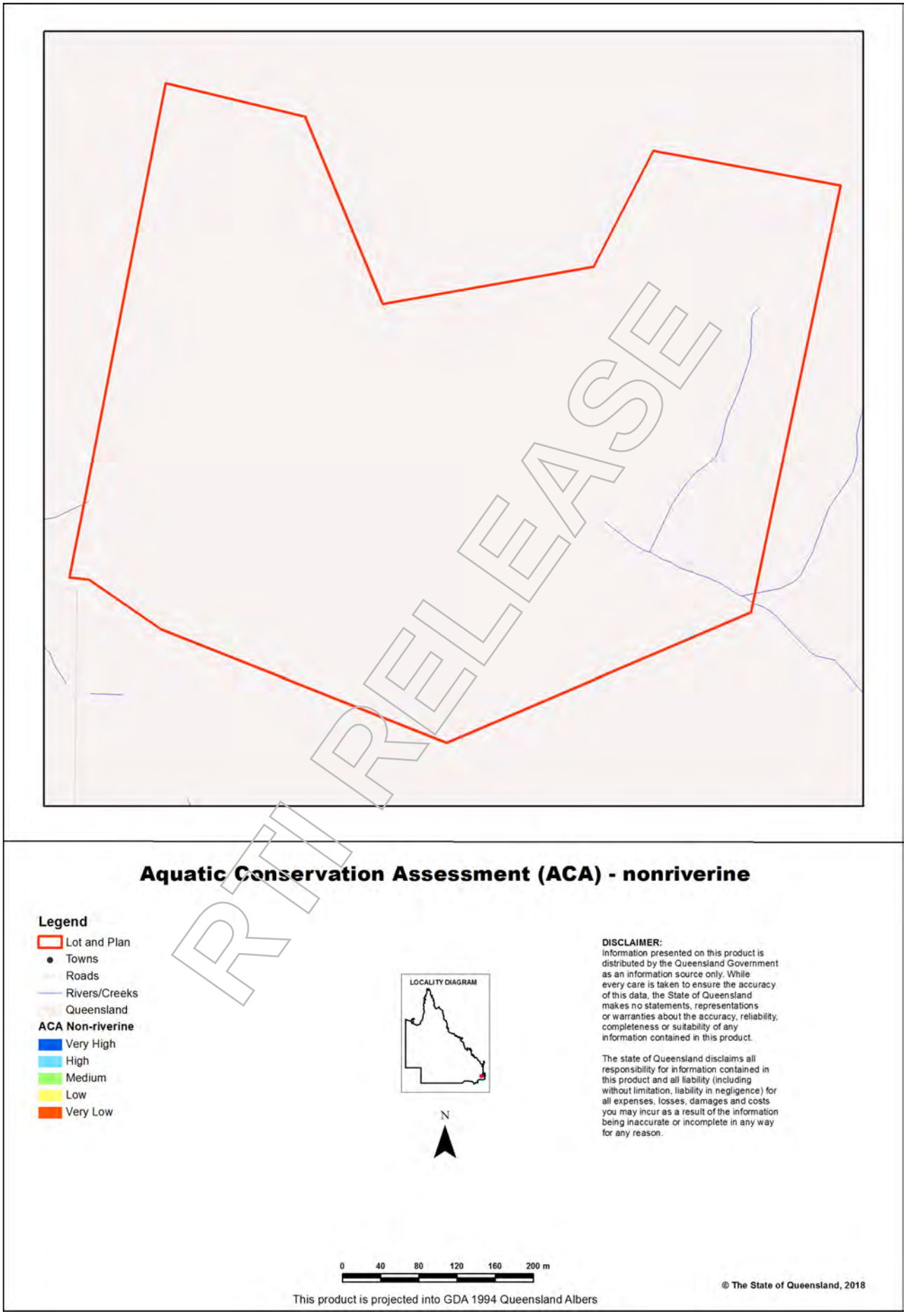
Map 4 - Wetlands and waterways



Map 5 - Aquatic Conservation Assessment (ACA) - riverine



Map 6 - Aquatic Conservation Assessment (ACA) - non-riverine



References

Clayton, P.D., Fielder, D.F., Howell, S. and Hill, C.J. (2006) *Aquatic biodiversity assessment and mapping method (AquaBAMM): a conservation values assessment tool for wetlands with trial application in the Burnett River catchment.* Published by the Environmental Protection Agency, Brisbane. ISBN 1-90928-07-3. Available at

http://wetlandinfo.des.qld.gov.au/wetlands/assessment/assessment-methods/aca/

Environmental Protection Agency (2002) *Biodiversity Assessment and Mapping Methodology. Version 2.1, July 2002.* (Environmental Protection Agency, Brisbane).

Morton, S. R., Short, J. and Barker, R. D. with an Appendix by G.F. Griffin and G. Pearce (1995). *Refugia for Biological Diversity in Arid and Semi-arid Australia. Biodiversity Series* , Paper No. 4, Biodiversity Unit, Environment Australia.

Sattler, P.S. and Williams, R.D. (eds) (1999). *The Conservation Status of Queensland's Bioregional Ecosystems*. Environmental Protection Agency, Brisbane.

Appendices

Appendix 1 - Source Data

Theme	Datasets
Aquatic Conservation Assessments Non-riverine*	Combination of the following datasets: Cape York Peninsula Non-riverine v1.1 Eastern Gulf of Carpentaria v1.1 Great Barrier Reef Catchment Non-riverine v1.3 Lake Eyre and Bulloo Basins v1.1 QMDB Non-riverine ACA v1.4 Southeast Queensland ACA v1.1 WBB Non-riverine ACA v1.1
Aquatic Conservation Assessments Riverine*	Combination of the following datasets: Cape York Peninsula Riverine v1.1 Eastern Gulf of Carpentaria v1.1 Great Barrier Reef Catchment Riverine v1.1 Lake Eyre and Bulloo Basins v1.1 QMDB Riverine ACA v1.4 Southeast Queensland ACA v1.1 WBB Riverine ACA v1.1
Biodiversity Planning Assessments*	Combination of the following datasets: Brigalow Belt BPA v2.1 Cape York Peninsula BPA v1.1 Central Queensland Coast BPA v1.3 Channel Country BPA v1.1 Desert Uplands BPA v1.3 Einasleigh Uplands BPA v1.1 Gulf Plains BPA v1.1 Mitchell Grass Downs BPA v1.1 Mulga Lands BPA v1.4 New England Tableland v2.3 Southeast Queensland v4.1
Statewide BPA Corridors*	Statewide corridors v1.4
Threatened Species	An internal DES database compiled from Wildnet, Herbrecs, Corveg, the QLD Museum, as well as other incidental sources.
BPA Priority Species	An internal DES database compiled from Wildnet, Herbrecs, Corveg, the QLD Museum, as well as other incidental sources.
ACA Priority Species	An internal DES database compiled from Wildnet, Herbrecs, Corveg, the QLD Museum, as well as other incidental sources.

***These datasets are available at:**

http://dds.information.qld.gov.au/DDS

Appendix 2 - Acronyms and Abbreviations

AOI	- Area of Interest
ACA	- Aquatic Conservation Assessment
AQUABAMM	- Aquatic Biodiversity Assessment and Mapping Methodology
BAMM	- Biodiversity Assessment and Mapping Methodology
BoT	- Back on Track
BPA	- Biodiversity Planning Assessment
CAMBA	- China-Australia Migratory Bird Agreement
DES	- Department of Environment and Science
EPBC	- *Environment Protection and Biodiversity Conservation Act 1999*
EVNT	- Endangered, Vulnerable, Near Threatened
GDA94	- Geocentric Datum of Australia 1994
GIS	- Geographic Information System
JAMBA	- Japan-Australia Migratory Bird Agreement
NCA	- *Nature Conservation Act 1992*
RE	- Regional Ecosystem
REDD	- Regional Ecosystem Description Database
ROKAMBA	- Republic of Korea-Australia Migratory Bird Agreement

Queensland Government

Department of Environment and Science

Environmental Reports

Biodiversity and Conservation Values

Biodiversity Planning Assessments and Aquatic Conservation Assessments

For the selected area of interest
Lot: 104 Plan: RP839073

Environmental Reports - General Information

The Environmental Reports portal provides for the assessment of selected matters of interest relevant to a user specified location, or Area of Interest (AOI). All area and derivative figures are relevant to the extent of matters of interest contained within the AOI unless otherwise stated. Please note, if a user selects an AOI via the "Central co-ordinates" option, the resulting assessment area encompasses an area extending from 2km radius from the point of interest.

All area and area derived figures included in this report have been calculated via reprojecting relevant spatial features to Albers equal-area conic projection (central meridian = 146, datum Geocentric Datum of Australia 1994). As a result, area figures may differ slightly if calculated for the same features using a different co-ordinate system.

Figures in tables may be affected by rounding.

The matters of interest reported on in this document are based upon available state mapped datasets. Where the report indicates that a matter of interest is not present within the AOI (e.g. where area related calculations are equal to zero, or no values are listed), this may be due either to the fact that state mapping has not been undertaken for the AOI, that state mapping is incomplete for the AOI, or that no values have been identified within the site.

The information presented in this report should be considered as a guide only and field survey may be required to validate values on the ground.

Please direct queries about these reports to: biodiversity.planning@des.qld.gov.au

Disclaimer

Whilst every care is taken to ensure the accuracy of the information provided in this report, the Queensland Government makes no representations or warranties about its accuracy, reliability, completeness, or suitability, for any particular purpose and disclaims all responsibility and all liability (including without limitation, liability in negligence) for all expenses, losses, damages (including indirect or consequential damage) and costs which the user may incur as a consequence of the information being inaccurate or incomplete in any way and for any reason.

Table of Contents

Summary Information

Tables 1 to 8 provide an overview of the AOI with respect to selected topographic and environmental values.

Table 1: Area of interest details: Lot: 104 Plan: RP839073

Size (ha)	53.59
Local Government(s)	Ipswich City
Bioregion(s)	Southeast Queensland
Subregion(s)	Moreton Basin
Catchment(s)	Brisbane

The following table identifies available Biodiversity Planning Assessments (BPAs) and Aquatic Conservation Assessments (ACAs) with respect to the AOI.

Table 2: Available Biodiversity Planning and Aquatic Conservation Assessments

Assessment Type	Assessment Area and Version
Biodiversity Planning Assessment(s)	Southeast Queensland v4.1
Aquatic Conservation Assessment(s) (riverine)	South East Queensland Catchments v1.1
Aquatic Conservation Assessment(s) (non-riverine)	South East Queensland Catchments v1.1

Table 3: Remnant regional ecosystems within the AOI as per the Qld Herbarium's 'biodiversity status'

Biodiversity Status	Area (Ha)	% of AOI
Endangered	0.0	0.0
Of concern	0.0	0.0
No concern at present	0.0	0.0

The following table identifies the extent and proportion of the user specified area of interest (AOI) which is mapped as being of "State", "Regional" or "Local" significance via application of the Queensland Department of Environment and Science's *Biodiversity Assessment and Mapping Methodology* (BAMM).

Table 4: Summary table, biodiversity significance

Biodiversity significance	Area (Ha)	% of AOI
(No Records)		

Table 5: Non-riverine wetlands intersecting the AOI

Non-riverine wetland types intersecting the area of interest	#
(No Records)	

NB. The figures presented in the table above are derived from the relevant non-riverine Aquatic Conservation Assessment(s). Later releases of wetland mapping produced via the Queensland Wetland Mapping Program may provide more recent information in regards to wetland extent.

Table 6: Named waterways intersecting the AOI

(no results)

Refer to **Map 1** for general locality information.

The following two tables identify the extent and proportion of the user specified AOI which is mapped as being of "Very High", "High", "Medium", "Low", or "Very Low" aquatic conservation value for riverine and non-riverine wetlands via application of the Queensland Department of Environment and Science's *Aquatic Biodiversity Assessment and Mapping Method* (AquaBAMM).

Table 7: Summary table, aquatic conservation significance (riverine)

Aquatic conservation significance (riverine wetlands)	Area (Ha)	% of AOI
Very High	0.0	0.0
High	49.72	92.78
Medium	3.87	7.22
Low	0.0	0.0
Very Low	0.0	0.0

Table 8: Summary table, aquatic conservation significance (non-riverine)

Aquatic conservation significance (non-riverine wetlands)	Area (Ha)	% of AOI
(No Records)		

Biodiversity Planning Assessments

Introduction

The Department of Environment and Science (DES) attributes biodiversity significance on a bioregional scale through a Biodiversity Planning Assessment (BPA). A BPA involves the integration of ecological criteria using the *Biodiversity assessment and Mapping Methodology* (BAMM) and is developed in two stages: 1) **diagnostic criteria**, and 2) **expert panel criteria**. The diagnostic criteria are based on existing data which is reliable and uniformly available across a bioregion, while the expert panel criteria allows for the refinement of the mapped information from the diagnostic output by incorporating local knowledge and expert opinion.

The BAMM methodology has application for identifying areas with various levels of significance solely for biodiversity reasons. These include threatened ecosystems or taxa, large tracts of habitat in good condition, ecosystem diversity, landscape context and connection, and buffers to wetlands or other types of habitat important for the maintenance of biodiversity or ecological processes. While natural resource values such as dryland salinity, soil erosion potential or land capability are not dealt with explicitly, they are included to some extent within the biodiversity status of regional ecosystems recognised by the DES.

Biodiversity Planning Assessments (BPAs) assign three levels of overall biodiversity significance.

- **State significance** - areas assessed as being significant for biodiversity at the bioregional or state scales. They also include areas assessed by other studies/processes as being significant at national or international scales. In addition, areas flagged as being of State significance due to the presence of endangered, vulnerable and/or near threatened taxa, are identified as "State Habitat for EVNT taxa".
- **Regional significance** - areas assessed as being significant for biodiversity at the subregional scale. These areas have lower significance for biodiversity than areas assessed as being of State significance.
- **Local significance and/or other values** - areas assessed as not being significant for biodiversity at state or regional scales. Local values are of significance at the local government scale.

For further information on released BPAs and a copy of the underlying methodology, go to:

http://www.qld.gov.au/environment/plants-animals/biodiversity/planning/

The GIS results can be downloaded from the Queensland Spatial Catalogue at:

http://qspatial.information.qld.gov.au/geoportal/

The following table identifies the extent and proportion of the user specified AOI which is mapped as being of "State", "Regional" or "Local" significance via application of the BAMM.

Table 9: Summary table, biodiversity significance

Biodiversity significance	Area (Ha)	% of AOI
(No Records)		

Refer to **Map 2** for further information.

Diagnostic Criteria

Diagnostic criteria are based on existing data which is reliable and uniformly available across a bioregion. These criteria are diagnostic in that they are used to filter the available data and provide a "first-cut" or initial determination of biodiversity significance. This initial assessment is then combined through a second group of other essential criteria.

A description of the individual diagnostic criteria is provided in the following sections.

Criteria A. Habitat for EVNT taxa: Classifies areas according to their significance based on the presence of endangered, vulnerable and/or rare (EVNT) taxa. EVNT taxa are those scheduled under the *Nature Conservation Act 1992* and/or the *Environment Protection and Biodiversity Conservation Act 1999*. It excludes highly mobile fauna taxa which are instead considered in Criterion H and brings together information on EVNT taxa using buffering of recorded sites or habitat suitability models (HSM) where available.

Criteria B. Ecosystem value: Classifies on the basis of biodiversity status of regional ecosystems, their extent in protected areas (presence of poorly conserved regional ecosystems), the presence of significant wetlands; and areas of national importance such as the presence of Threatened Ecological Communities, World Heritage areas and Ramsar sites. Ecosystem value is applied at a bioregional (**B1**) and regional (**B2**) scale.

Criteria C. Tract size: Measures the relative size of tracts of vegetation in the landscape. The size of any tract is a major indicator of ecological significance, and is also strongly correlated with the long-term viability of biodiversity values. Larger tracts are less susceptible to ecological edge effects and are more likely to sustain viable populations of native flora and fauna than smaller tracts.

Criteria D. Relative size of regional ecosystems: Classifies the relative size of each regional ecosystem unit within its bioregion (**D1**) and its subregion (**D2**). Remnant units are compared with all other occurrences with the same regional ecosystem. Large examples of a regional ecosystem are more significant than smaller examples of the same regional ecosystem because they are more representative of the biodiversity values particular to the regional ecosystem, are more resilient to the effects of disturbance, and constitute a significant proportion of the total area of the regional ecosystem.

Criteria F. Ecosystem diversity: Is an indicator of the number of regional ecosystems occurring within an area. An area with high ecosystem diversity will have many regional ecosystems and ecotones relative to other areas within the bioregion.

Criteria G. Context and connection: Represents the extent to which a remnant unit incorporates, borders or buffers areas such as significant wetlands, endangered ecosystems; and the degree to which it is connected to other vegetation.

A summary of the biodiversity status based upon the diagnostic criteria is provided in the following table.

Table 10: Summary of biodiversity significance based upon diagnostic criteria with respect to the AOI

Biodiversity significance	Description	Area (Ha)	% of AOI
(No Records)			

Assessment of diagnostic criteria with respect to the AOI

The following table reflects an assessment of the individual diagnostic criteria noted above in regards to the AOI.

Table 11: Assessment of individual diagnostic criteria with respect to the AOI

Diagnostic Criteria	Very High Rating - Area (Ha)	Very High Rating - % of AOI	High Rating - Area (Ha)	High Rating - % of AOI	Medium Rating - Area (Ha)	Medium Rating - % of AOI	Low Rating - Area (Ha)	Low Rating - % of AOI
(No Records)								

Other Essential Criteria

Other essential criteria (also known as expert panel criteria) are based on non-uniform information sources and which may rely more upon expert opinion than on quantitative data. These criteria are used to provide a "second-cut" determination of biodiversity significance, which is then combined with the diagnostic criteria for an overall assessment of relative biodiversity significance. A summary of the biodiversity status based upon the other essential criteria is provided in the following table.

Table 12: Summary of biodiversity significance based upon other essential criteria with respect to the AOI

Biodiversity significance	Description	Area (Ha)	% of AOI
(No Records)			

A description of each of the other essential criteria and associated assessment in regards to the AOI is provided in the following sections.

Criteria H. Essential and general habitat for priority taxa: Priority taxa are those which are at risk or of management concern, taxa of scientific interest as relictual (ancient or primitive), endemic taxa or locally significant populations (such as a flying fox camp or heronry), highly specialised taxa whose habitat requirements are complex and distributions are not well correlated with any particular regional ecosystem, taxa important for maintaining genetic diversity (such as complex spatial patterns of genetic variation, geographic range limits, highly disjunct populations), taxa critical for management or monitoring of biodiversity (functionally important or ecological indicators), or economic and culturally important taxa.

Criteria I. Special biodiversity values: areas with special biodiversity values are important because they contain multiple taxa in a unique ecological and often highly biodiverse environment. Areas with special biodiversity values can include the following:

- Ia - centres of endemism - areas where concentrations of taxa are endemic to a bioregion or subregion are found.
- Ib - wildlife refugia (Morton *et al*. 1995), for example, islands, mound springs, caves, wetlands, gorges, mountain ranges and topographic isolates, ecological refuges, refuges from exotic animals, and refuges from clearing. The latter may include large areas that are not suitable for clearing because of land suitability/capability.
- Ic - areas with concentrations of disjunct populations.
- Id - areas with concentrations of taxa at the limits of their geographic ranges.
- Ie - areas with high species richness.
- If - areas with concentrations of relictual populations (ancient and primitive taxa).
- Ig - areas containing REs with distinct variation in species composition associated with geomorphology and other environmental variables.
- Ih - an artificial waterbody or managed/manipulated wetland considered by the panel/s to be of ecological significance.
- Ii - areas with a high density of hollow-bearing trees that provide habitat for animals.

- Ij - breeding or roosting sites used by a significant number of individuals.
- Ik - climate change refuge.

The following table identifies the value and extent area of the Other Essential Criteria H and I within the AOI.

Table 13: Relative importance of expert panel criteria (H and I) used to access overall biodiversity significance with respect to the AOI

Expert Panel	Very High Rating - Area (Ha)	Very High Rating - % of AOI	High Rating - Area (Ha)	High Rating - % of AOI	Medium Rating - Area (Ha)	Medium Rating - % of AOI	Low Rating - Area (Ha)	Low Rating - % of AOI
(No Records)								

NB. Whilst biodiversity values associated with Criteria I may be present within the site (refer to tables 12 and 15), for the New England Tableland and Central Queensland Coast BPAs, area and % area figures associated with Criteria Ia through to Ij cannot be listed in the table above (due to slight variations in data formats between BPAs).

Criteria J. Corridors: areas identified under this criterion qualify either because they are existing vegetated corridors important for contiguity, or cleared areas that could serve this purpose if revegetated. Some examples of corridors include riparian habitats, transport corridors and "stepping stones".

Bioregional and subregional conservation corridors have been identified in the more developed bioregions of Queensland through the BPAs, using an intensive process involving expert panels. Map 3 displays the location of corridors as identified under the Statewide Corridor network. The Statewide Corridor network incorporates BPA derived corridors and for bioregions where no BPA has been assessed yet, corridors derived under other planning processes. *Note: as a result of updating and developing a statewide network, the alignment of corridors may differ slightly in some instances when compared to those used in individual BPAs.*

The functions of these corridors are:

- **Terrestrial** Bioregional corridors, in conjunction with large tracts of remnant vegetation, maintain ecological and evolutionary processes at a landscape scale, by:
  - Maintaining long term evolutionary/genetic processes that allow the natural change in distributions of species and connectivity between populations of species over long periods of time;
  - Maintaining landscape/ecosystems processes associated with geological, altitudinal and climatic gradients, to allow for ecological responses to climate change;
  - Maintaining large scale seasonal/migratory species processes and movement of fauna;
  - Maximising connectivity between large tracts/patches of remnant vegetation;
  - Identifying key areas for rehabilitation and offsets; and

- **Riparian** Bioregional Corridors also maintain and encourage connectivity of riparian and associated ecosystems.

The location of the corridors is determined by the following principles:

- Terrestrial
  - Complement riparian landscape corridors (i.e. minimise overlap and maximise connectivity);
  - Follow major watershed/catchment and/or coastal boundaries;
  - Incorporate major altitudinal/geological/climatic gradients;
  - Include and maximise connectivity between large tracts/patches of remnant vegetation;
  - Include and maximise connectivity between remnant vegetation in good condition; and

- Riparian
  - Located on the major river or creek systems within the bioregion in question.

The total extent of remnant vegetation triggered as being of "State", "Regional" or "Local" significance due to the presence of an overlying BPA derived terrestrial or riparian corridor within the AOI, is provided in the following table. For further information on how remnant vegetation is triggered due to the presence of an overlying BPA derived corridor, refer to the relevant landscape BPA expert panel report(s).

Table 14: Extent of triggered remnant vegetation due to the presence of BPA derived corridors with respect to the AOI

Biodiversity Significance	Area (Ha)	% of AOI
(No Records)		

NB: area figures associated with the extent of corridor triggered remnant vegetation are only available for those bioregions where a BPA has been undertaken.

Refer to **Map 3** for further information.

Threatening process/condition (Criteria K) - areas identified by experts under this criterion may be used to amend (upgrade or downgrade) biodiversity significance arising from the "first-cut" analysis. The condition of remnant vegetation is affected by threatening processes such as weeds, ferals, grazing and burning regime, selective timber harvesting/removal, salinity, soil erosion, and climate change.

Assessment of Criteria K with respect to the AOI is not currently included in the "Biodiversity and Conservation Values" report, as it has not been applied to the majority of Queensland due to data/information limitations and availability.

Special Area Decisions

Expert panel derived "Special Area Decisions" are used to assign values to Other Essential Criteria. The specific decisions which relate to the AOI in question are listed in the table below.

Table 15: Expert panel decisions for assigning levels of biodiversity significance with respect to the AOI

Decision Number	Description	Panel Recommended Significance	Criteria Values
(No Records)			

Expert panel decision descriptions:

(No Records)

Aquatic Conservation Assessments

Introduction

The Aquatic Biodiversity Assessment and Mapping Method or AquaBAMM (Clayton *et al.* 2006), was developed to assess conservation values of wetlands in queensland, and may also have application in broader geographical contexts. It is a comprehensive method that uses available data, including data resulting from expert opinion, to identify relative wetland conservation/ecological values within a specified study area (usually a catchment). The product of applying this method is an Aquatic Conservation Assessment (ACA) for the study area.

An ACA using AquaBAMM is non-social, non-economic and identifies the conservation/ecological values of wetlands at a user-defined scale. It provides a robust and objective conservation assessment using criteria, indicators and measures that are founded upon a large body of national and international literature. The criteria, each of which may have variable numbers of indicators and measures, are naturalness (aquatic), naturalness (catchment), diversity and richness, threatened species and ecosystems, priority species and ecosystems, special features, connectivity and representativeness. An ACA using AquaBAMM is a powerful decision support tool that is easily updated and simply interrogated through a geographic information system (GIS).

Where they have been conducted, ACAs can provide a source of baseline wetland conservation/ecological information to support natural resource management and planning processes. They are useful as an independent product or as an important foundation upon which a variety of additional environmental and socio-economic elements can be added and considered (i.e. an early input to broader 'triple-bottom-line' decision-making processes). An ACA can have application in:

- determining priorities for protection, regulation or rehabilitation of wetlands and other aquatic ecosystems
- on-ground investment in wetlands and other aquatic ecosystems
- contributing to impact assessment of large-scale development (e.g. dams)
- water resource and strategic regional planning prcesses

For a detailed explanation of the methodology please refer to the summary and expert panel reports relevant to the ACA utilised in this assessment. These reports can be accessed at Wetland *Info*:

http://wetlandinfo.des.qld.gov.au/wetlands/assessment/assessment-methods/aca

The GIS results can be downloaded from the Queensland Spatial Catalogue at:

http://qspatial.information.qld.gov.au/geoportal/

Explanation of Criteria

Under the AquaBAMM, eight criteria are assessed to derive an overall conservation value. Similar to the Biodiversity Assessment and Mapping Methodology, the criteria may be primarily diagnostic (quantitative) or primarily expert opinion (qualitative) in nature. The following sections provide a brief description of each of the 8 criteria.

Criteria 1. Naturalness - Aquatic: This attribute reflects the extent to which a wetland's (riverine, non-riverine, estuarine) aquatic state of naturalness is affected through relevant influencing indicators which include: presence of exotic flora and fauna; presence of aquatic communities; degree of habitat modification and degree of hydrological modification.

Criteria 2. Naturalness - Catchment: The naturalness of the terrestrial systems of a catchment can have an influence on many wetland characteristics including: natural ecological processes e.g. nutrient cycling, riparian vegetation, water chemistry, and flow. The indicators utilised to assess this criterion include: presence of exotic flora and/or fauna; riparian, catchment and flow modification.

Criteria 3. Naturalness - Diversity and Richness: This criterion is common to many ecological assessment methods and can include both physical and biological features. It includes such indicators as species richness, riparian ecosystem richness and geomorphological diversity.

Criteria 4. Threatened Species and Ecosystems: This criterion evaluates ecological rarity characteristics of a wetland. This includes both species rarity and rarity of communities / assemblages. The communities and assemblages are best represented by regional ecosystems. Species rarity is determined by NCA and EPBC status with Endangered, Vulnerable or Near-threatened species being included in the evaluation. Ecosystem rarity is determined by regional ecosystem biodiversity status i.e. Endangered, Of Concern, or Not of Concern.

Criteria 5. Priority Species and Ecosystems: Priority flora and fauna species lists are expert panel derived. These are aquatic, semi-aquatic and riparian species which exhibit at least 1 particular trait in order to be eligible for consideration. For

flora species the traits included:

- It forms significant macrophyte beds (in shallow or deep water).
- It is an important food source.
- It is important/critical habitat.
- It is implicated in spawning or reproduction for other fauna and/or flora species.
- It is at its distributional limit or is a disjunct population.
- It provides stream bank or bed stabilisation or has soil binding properties.
- It is a small population and subject to threatening processes.

Fauna species are included if they meet at least one of the following traits:

- It is endemic to the study area (>75 per cent of its distribution is in the study area/catchment).
- It has experienced, or is suspected of experiencing, a serious population decline.
- It has experienced a significant reduction in its distribution and has a naturally restricted distribution in the study area/catchment.
- It is currently a small population and threatened by loss of habitat.
- It is a significant disjunct population.
- It is a migratory species (other than birds).
- A significant proportion of the breeding population (>one per cent for waterbirds, >75 per cent other species) occurs in the waterbody (see Ramsar criterion 6 for waterbirds).
- Limit of species range.

See the individual expert panel reports for the priority species traits specific to an ACA.

Criteria 6. Special Features: Special features are areas identified by flora, fauna and ecology expert panels which exhibit characteristics beyond those identified in other criteria and which the expert panels consider to be of the highest ecological importance. Special feature traits can relate to, but are not solely restricted to geomorphic features, unique ecological processes, presence of unique or distinct habitat, presence of unique or special hydrological regimes e.g. spring-fed streams. Special features are rated on a 1 - 4 scale (4 being the highest).

Criteria 7. Connectivity: This criterion is based on the concept that appropriately connected aquatic ecosystems are healthy and resilient, with maximum potential biodiversity and delivery of ecosystem services.

Criteria 8. Representativeness: This criterion applies primarily to non-riverine assessments, evaluates the rarity and uniqueness of a wetland type in relation to specific geographic areas. Rarity is determined by the degree of wetland protection within "protected Areas" estate or within an area subject to the *Fisheries Act 1994*, *Coastal Protection and Management Act 1995*, or *Marine Parks Act 2004*. Wetland uniqueness evaluates the relative abundance and size of a wetland or wetland management group within geographic areas such as catchment and subcatchment.

Riverine Wetlands

Riverine wetlands are all wetlands and deepwater habitats within a channel. The channels are naturally or artificially created, periodically or continuously contain moving water, or connecting two bodies of standing water. AquaBAMM, when applied to riverine wetlands uses a discrete spatial unit termed subsections. A subsection can be considered as an area which encompasses discrete homogeneous stream sections in terms of their natural attributes (i.e. physical, chemical, biological and utilitarian values) and natural resources. Thus in an ACA, an aquatic conservation significance score is calculated for each subsection and applies to all streams within a subsection, rather than individual streams as such.

Please note, the area figures provided in Tables 16 and 17, are derived using the extent of riverine subsections within the AOI. Refer to **Map 5** for further information. A summary of the conservation significance of riverine wetlands within the AOI is provided in the following table.

Table 16: Overall level/s of riverine aquatic conservation significance

Aquatic conservation significance (riverine wetlands)	Area (Ha)	% of AOI
Very High	0.0	0.0

Aquatic conservation significance (riverine wetlands)	Area (Ha)	% of AOI
High	49.72	92.78
Medium	3.87	7.22
Low	0.0	0.0
Very Low	0.0	0.0

The individual aquatic conservation criteria ratings for riverine wetlands within the AOI are listed below.

Table 17: Level/s of riverine aquatic conservation significance based on selected criteria

Criteria	Very High Rating - Area (Ha)	Very High Rating - % of AOI	High Rating - Area (Ha)	High Rating - % of AOI	Medium Rating - Area (Ha)	Medium Rating - % of AOI	Low Rating - Area (Ha)	Low Rating - % of AOI
1. Naturalness aquatic					53.59	100.0		
2. Naturalness catchment							53.59	100.0
3. Diversity and richness	49.72	92.8	3.87	7.2				
4. Threatened species and ecosystems	49.72	92.8			3.87	7.2		
5. Priority species and ecosystems	49.72	92.8			3.87	7.2		
6. Special features								
7. Connectivity					3.87	7.2	49.72	92.8
8. Representative-ness								

The table below lists and describes the relevant expert panel decisions used to assign conservation significance values to riverine wetlands within the AOI.

Table 18: Expert panel decisions for assigning overall levels of riverine aquatic conservation significance

Decision number	Special feature	Catchment	Criteria/Indicator/Measure	Conservation rating (1-4)
(No Records)				

4 is the highest rating/value

Expert panel decision descriptions:

(No Records)

Non-riverine Wetlands

Non-riverine wetlands include both lacustrine and palustrine wetlands, however, do not currently incorporate estuarine, marine or subterranean wetland types. A summary of the conservation significance of non-riverine wetlands within the AOI is provided in the following table. Refer to **Map 6** for further information.

Table 19: Overall level/s of non-riverine aquatic conservation significance

Aquatic conservation significance (non-riverine wetlands)	Area (Ha)	% of AOI
(No Records)		

The following table provides an assessment of non-riverine wetlands within the AOI and associated aquatic conservation criteria values.

Table 20: Level/s of non-riverine aquatic conservation significance based on selected criteria

Criteria	Very High Rating - Area (Ha)	Very High Rating - % of AOI	High Rating - Area (Ha)	High Rating - % of AOI	Medium Rating - Area (Ha)	Medium Rating - % of AOI	Low Rating - Area (Ha)	Low Rating - % of AOI
(No Records)								

The table below lists and describes the relevant expert panel decisions used to assign conservation significance values to non-riverine wetlands within the AOI.

Table 21: Expert panel decisions for assigning overall levels of non-riverine aquatic conservation significance.

Decision number	Special feature	Catchment	Criteria/Indicator/Measure	Conservation rating (1-4)
(No Records)				

4 is the highest rating/value

Expert panel decision descriptions:

(No Records)

Threatened and Priority Species

Introduction

This chapter contains a list of threatened and priority flora and/or fauna species that have been recorded on, or within 4km of the Assessment Area.

The information presented in this chapter with respect to species presence is derived from compiled databases developed primarily for the purpose of BPAs and ACAs. Data is collated from a number of sources and is updated periodically.

It is important to note that the list of species provided in this report, may differ when compared to other reports generated from other sources such as the State government's WildNet, Herbrecs or the federal government's EPBC database for a number of reasons.

Records for threatened and priority species are filtered and checked based on a number of rules including:

- Taxonomic nomenclature - current scientific names and status,
- Location - cross-check co-ordinates with location description,
- Taxon by location - requires good knowledge of the taxon and history of the record,
- Duplicate records - identify and remove,
- Expert panels - check records and provide new records,
- Flora cultivated records excluded,
- Use precise records less than or equal to 2000m,
- Use recent records greater than or equal to 1975 animals, greater than or equal to 1950 plants.

Threatened Species

Threatened species are those species classified as "Endangered" or "Vulnerable" under the *Environment Protection and Biodiversity Conservation Act 1999* or "Endangered", "Vulnerable" or "Near threatened" under the *Nature Conservation Act 1992*.

The following threatened species have been recorded on, or within approximately 4km of the AOI.

Table 22: Threatened species recorded on, or within 4km of the AOI

Species	Common name	NCA status	EPBC status	Back on Track rank	Migratory species*	Wetland species**	Identified flora/fauna
Adelotus brevis	Tusked Frog	V		Medium		Y	FA
Eucalyptus curtisii	Plunkett mallee	NT		Low			FL
Lathamus discolor	Swift Parrot	E	CE	Medium	Y		FA
Marsdenia coronata	slender milkvine	V		Low			FL
Ninox strenua	Powerful Owl	V		Medium			FA
Notelaea ipsviciensis		E	CE	Medium			FL
Petauroides volans	Greater Glider	V	V	Low			FA
Phascolarctos cinereus	Koala	V	V	Low			FA
Plectranthus habrophyllus		E	E	Low			FL
Rostratula australis	Australian Painted Snipe	V	E	Medium		Y	FA

NB. Please note that the threatened species listed in this section are based upon the most recently compiled DES internal state-wide threatened species dataset. This dataset may contain additional records that were not originally available for inclusion in the relevant individual BPAs and ACAs.

**JAMBA - Japan-Australia Migratory Bird Agreement; CAMBA - China-Australia Migratory Bird Agreement; ROKAMBA - Republic of Korea-Australia Migratory Bird Agreement; CMS - Convention on the Conservation of Migratory Species.*

***Y - wetland indicator species.*

BPA Priority Species

A list of BPA priority species that have been recorded on, or within approximately 4km of the AOI is contained in the following table.

Table 23: Priority species recorded on, or within 4km of the AOI

Species	Common name	Back on Track rank	Identified flora/fauna
Cheramoeca leucosterna	White-backed Swallow	Low	FA
Delma plebeia	Common Delma	Medium	FA
Ephippiorhynchus asiaticus	Black-necked Stork	Low	FA
Gyrocochlea raveni	Raven's Pinwheel Snail		FA
Litoria dentata	Bleating Treefrog	Low	FA
Lophoictinia isura	Square-tailed Kite	Low	FA
Melaleuca quinquenervia	swamp paperbark		FL
Melithreptus gularis	Black-chinned Honeyeater	Low	FA
Moretonistes mansueta	Moreton Bay Woodland Snail		FA
Pomatostomus temporalis	Grey-crowned Babbler		FA
Pseudophryne coriacea	Red Backed Broodfrog	Low	FA
Scoteanax rueppellii	Greater Broad-nosed Bat	Medium	FA

NB. Please note that the list of priority species is based on those species identified in the BPAs, however records for these species may be more recent than the originals used. furthermore, the BPA priority species databases are updated from time to time. At each update, the taxonomic details for all species are amended as necessary to reflect current taxonomic name and/or status changes.

ACA Priority Species

A list of ACA priority species used in riverine and non-riverine ACAs that have been recorded on, or within approximately 4km of the AOI are contained in the following tables.

Table 24: Priority species recorded on, or within 4 km of the AOI - riverine

Species	Common name	Back on Track rank	Identified flora/fauna
Acrocephalus australis	Australian Reed-Warbler	L	FA
Actitis hypoleucos	Common Sandpiper	L	FA
Ardea ibis	Cattle Egret	Low	FA
Ardea modesta	Eastern Great Egret	Low	FA
Eucalyptus tereticornis			FL
Ficus coronata	creek sandpaper fig		FL
Gallinago hardwickii	Latham's Snipe	L	FA
Haliaeetus leucogaster	White-bellied Sea-Eagle	L	FA
Melaleuca quinquenervia	swamp paperbark		FL
Rostratula australis	Australian Painted Snipe	M	FA

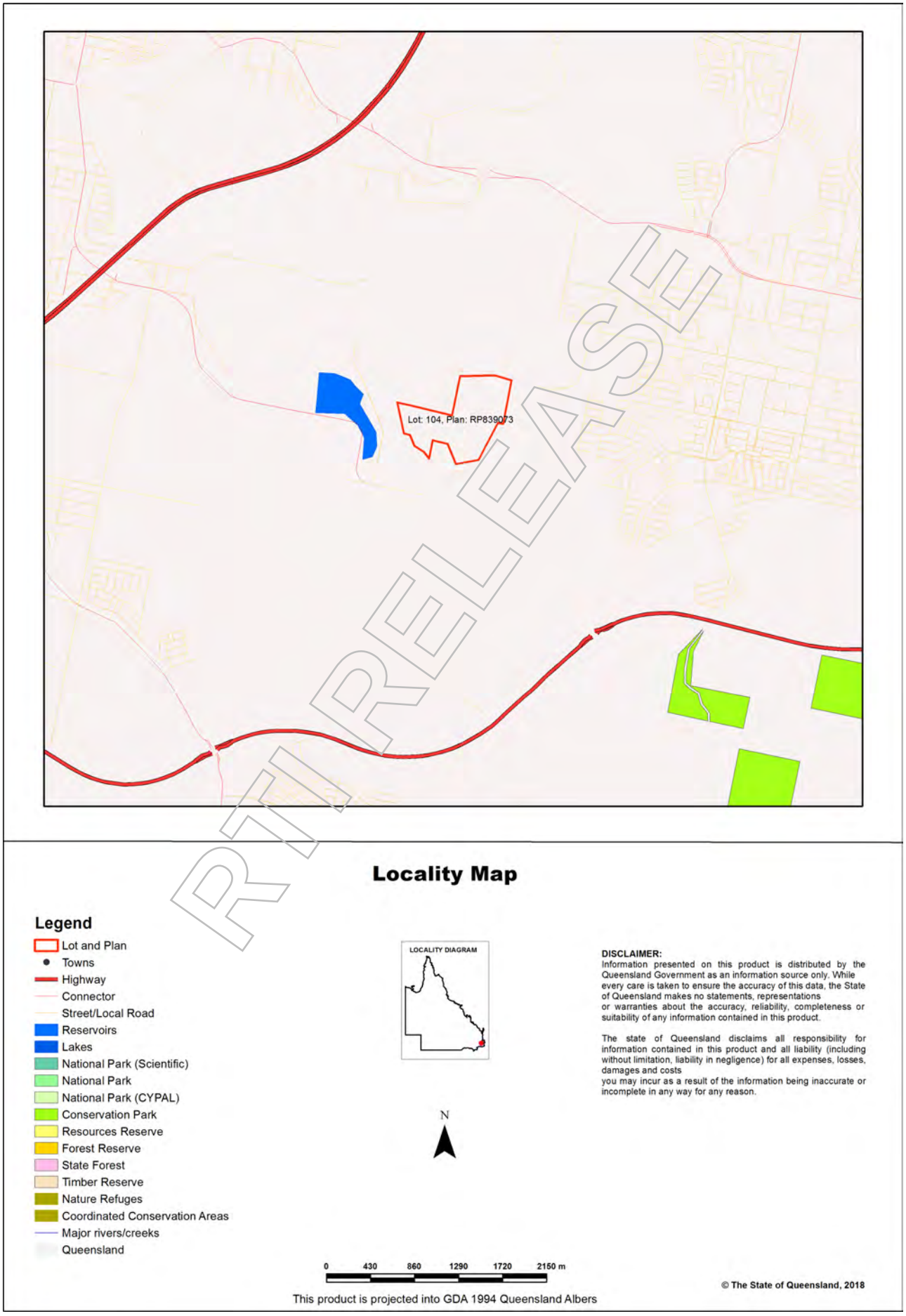
Table 25: Priority species recorded on, or within 4 km of the AOI - non-riverine

Species	Common name	Back on Track rank	Identified flora/fauna
Acrocephalus australis	Australian Reed-Warbler	L	FA
Ardea ibis	Cattle Egret	Low	FA
Ardea modesta	Eastern Great Egret	Low	FA
Calidris acuminata	Sharp-tailed Sandpiper	L	FA
Eucalyptus tereticornis			FL
Gallinago hardwickii	Latham's Snipe	L	FA
Haliaeetus leucogaster	White-bellied Sea-Eagle	L	FA
Limosa limosa	Black-tailed Godwit	L	FA
Melaleuca quinquenervia	swamp paperbark		FL
Plegadis falcinellus	Glossy Ibis	L	FA
Rostratula australis	Australian Painted Snipe	M	FA
Tringa stagnatilis	Marsh Sandpiper	L	FA

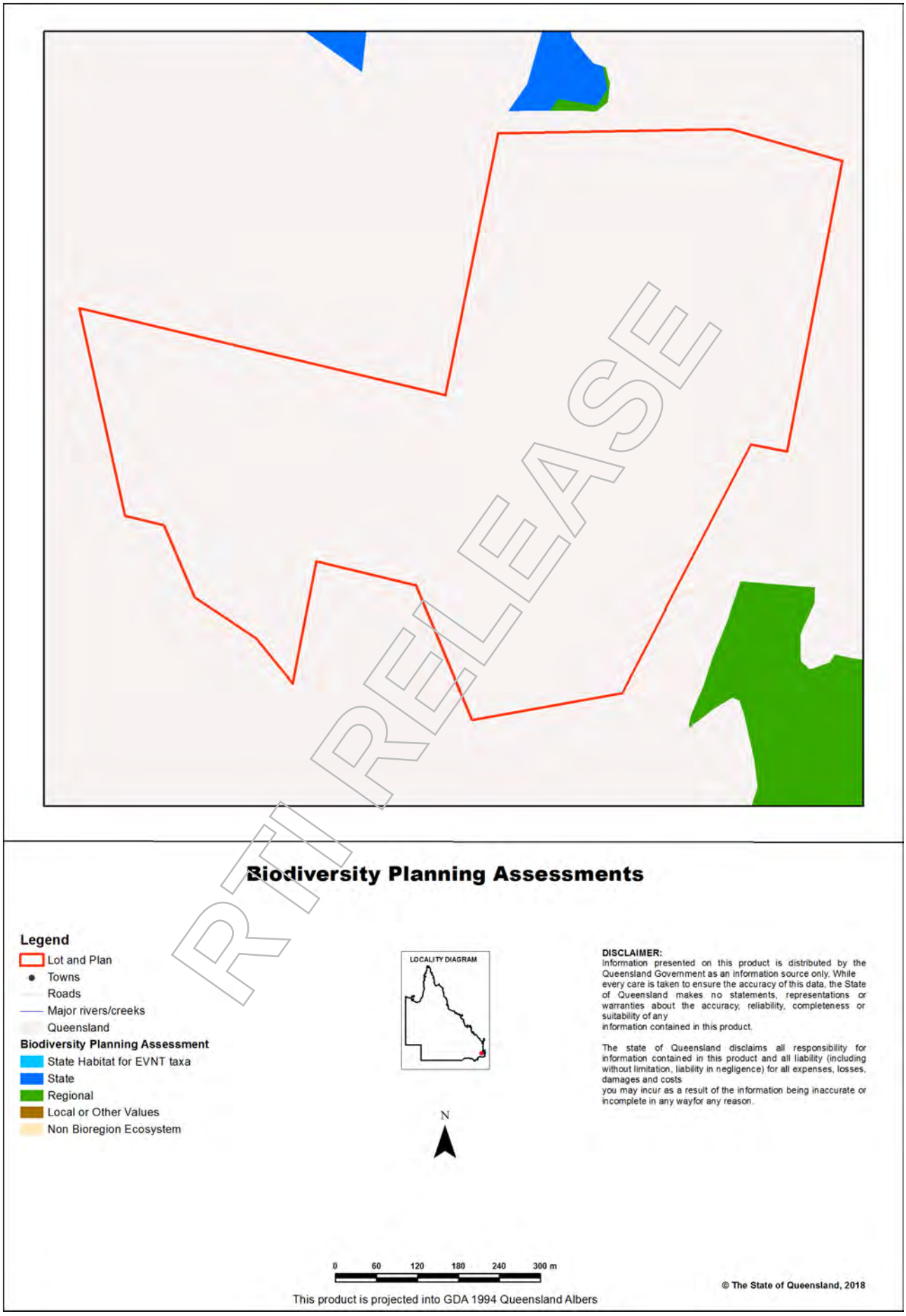
NB. Please note that the priority species records used in the above two tables are comprised of those adopted for the released individual ACAs. The ACA riverine and non-riverine priority species databases are updated from time to time to reflect new release of ACAs. At each update, the taxonomic details for all ACAs records are amended as necessary to reflect current taxonomic name and/or status changes.

Maps

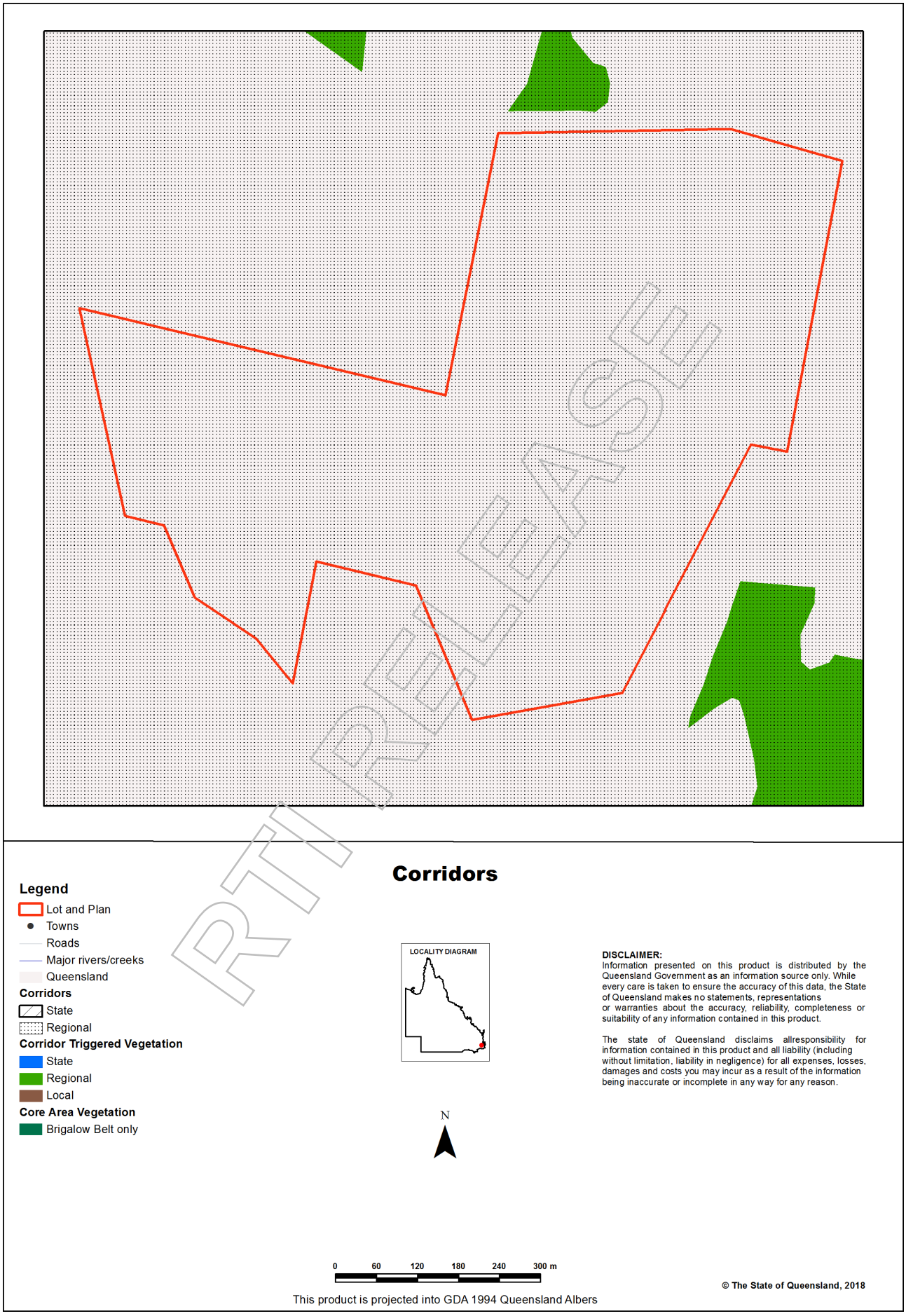
Map 1 - Locality Map



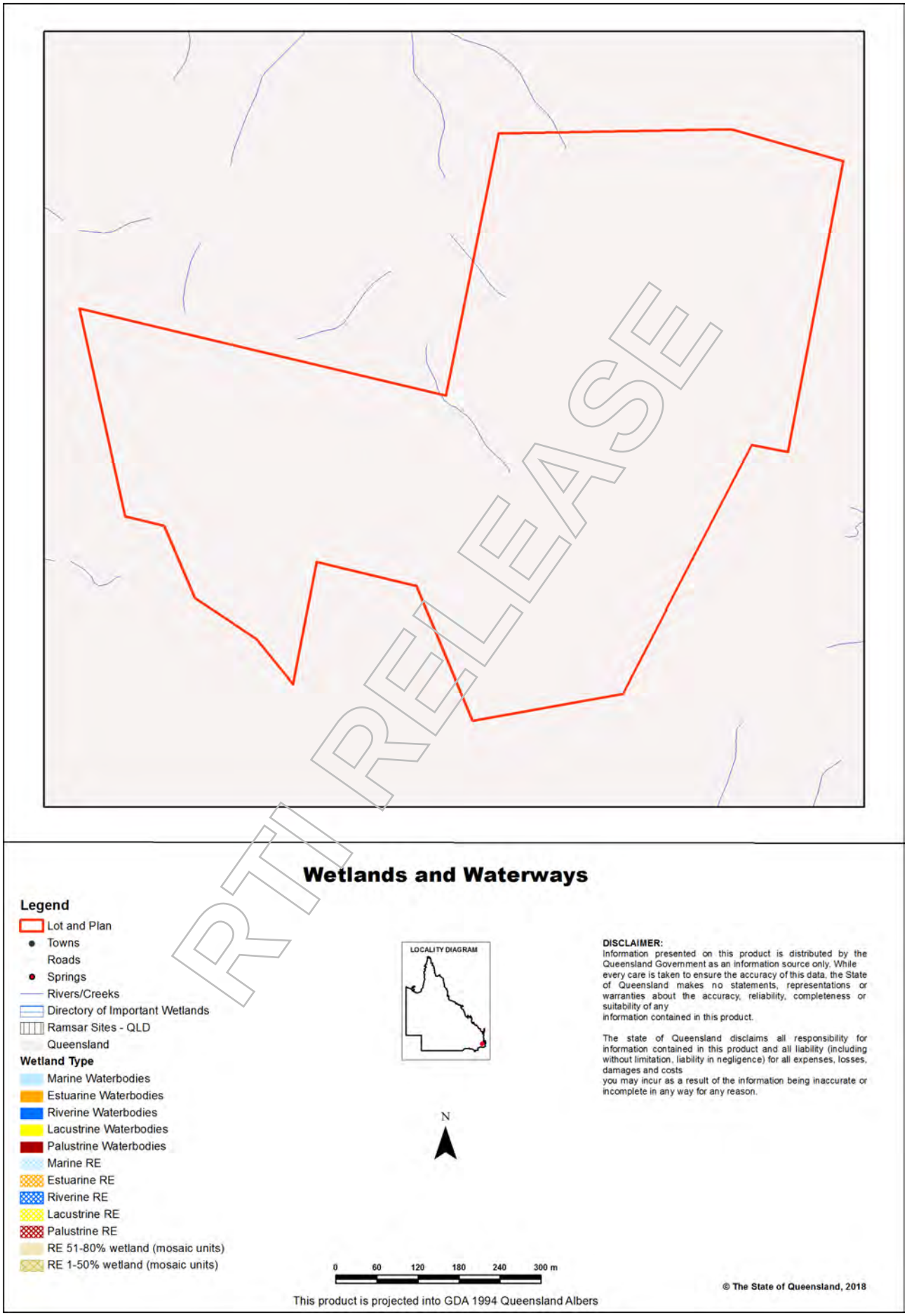
Map 2 - Biodiversity Planning Assessment (BPA)



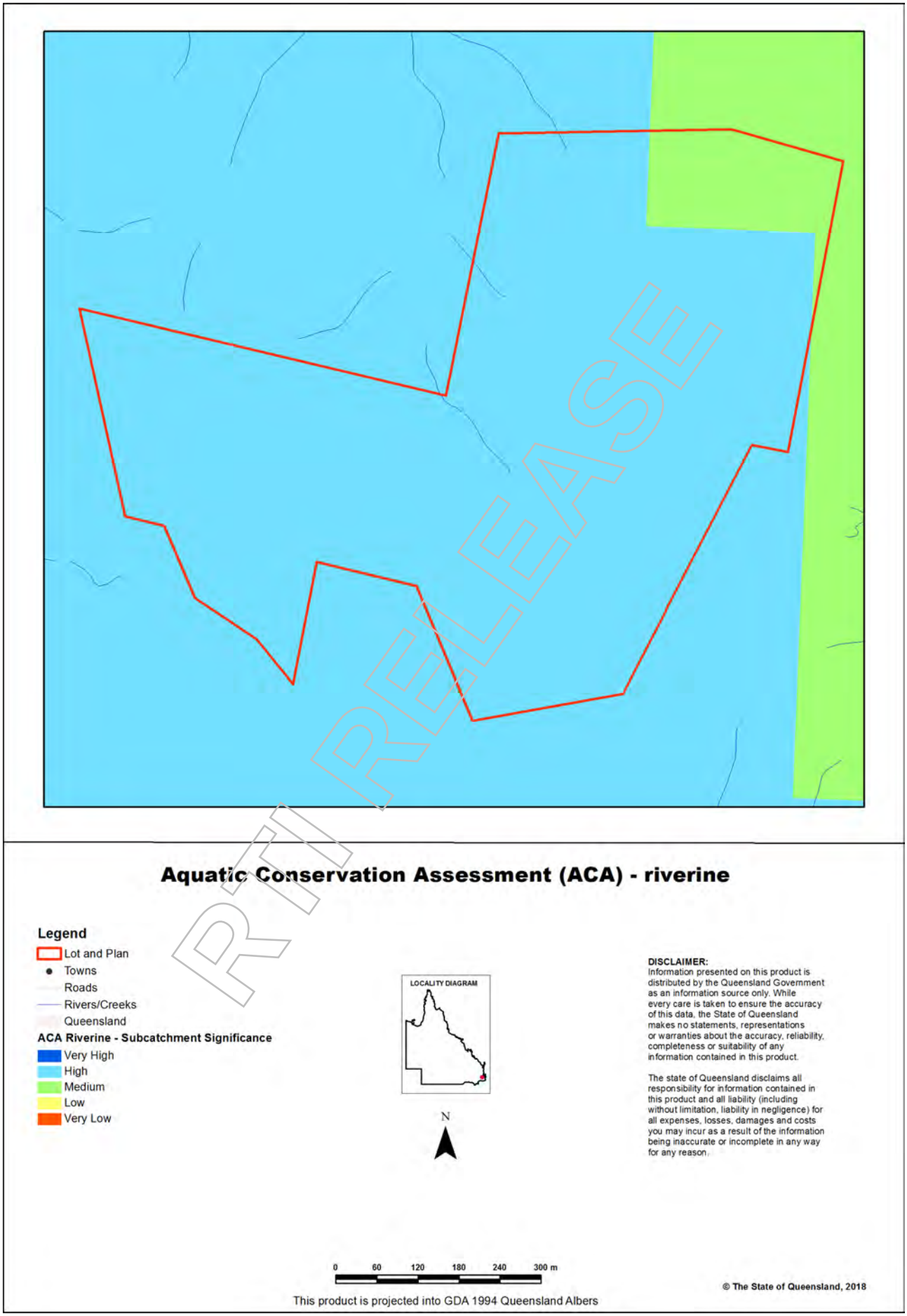
Map 3 - Corridors



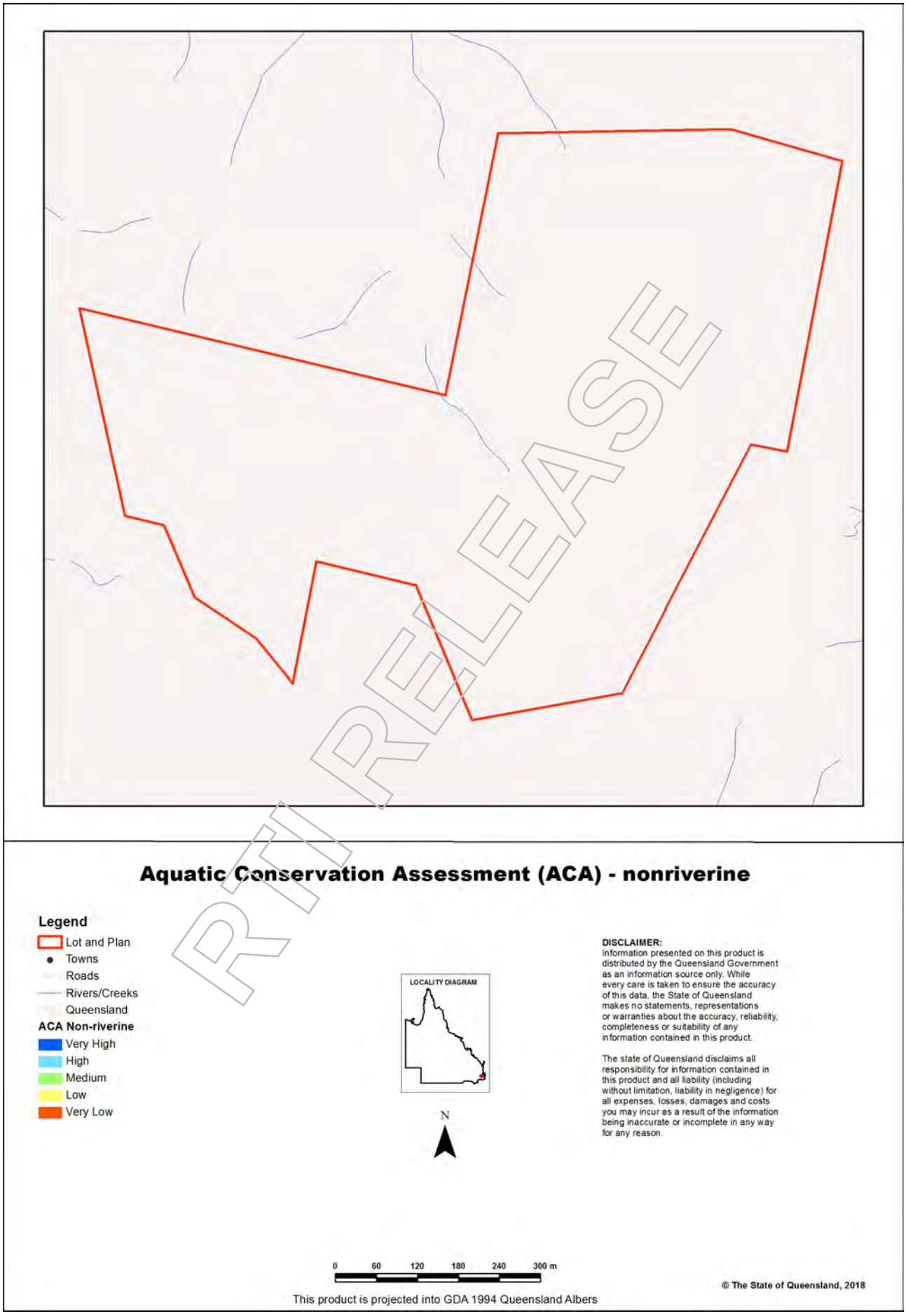
Map 4 - Wetlands and waterways



Map 5 - Aquatic Conservation Assessment (ACA) - riverine



Map 6 - Aquatic Conservation Assessment (ACA) - non-riverine



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Appendices

Appendix 1 - Source Data

Theme	Datasets
Aquatic Conservation Assessments Non-riverine*	Combination of the following datasets: Cape York Peninsula Non-riverine v1.1 Eastern Gulf of Carpentaria v1.1 Great Barrier Reef Catchment Non-riverine v1.3 Lake Eyre and Bulloo Basins v1.1 QMDB Non-riverine ACA v1.4 Southeast Queensland ACA v1.1 WBB Non-riverine ACA v1.1
Aquatic Conservation Assessments Riverine*	Combination of the following datasets: Cape York Peninsula Riverine v1.1 Eastern Gulf of Carpentaria v1.1 Great Barrier Reef Catchment Riverine v1.1 Lake Eyre and Bulloo Basins v1.1 QMDB Riverine ACA v1.4 Southeast Queensland ACA v1.1 WBB Riverine ACA v1.1
Biodiversity Planning Assessments*	Combination of the following datasets: Brigalow Belt BPA v2.1 Cape York Peninsula BPA v1.1 Central Queensland Coast BPA v1.3 Channel Country BPA v1.1 Desert Uplands BPA v1.3 Einasleigh Uplands BPA v1.1 Gulf Plains BPA v1.1 Mitchell Grass Downs BPA v1.1 Mulga Lands BPA v1.4 New England Tableland v2.3 Southeast Queensland v4.1
Statewide BPA Corridors*	Statewide corridors v1.4
Threatened Species	An internal DES database compiled from Wildnet, Herbrecs, Corveg, the QLD Museum, as well as other incidental sources.
BPA Priority Species	An internal DES database compiled from Wildnet, Herbrecs, Corveg, the QLD Museum, as well as other incidental sources.
ACA Priority Species	An internal DES database compiled from Wildnet, Herbrecs, Corveg, the QLD Museum, as well as other incidental sources.

***These datasets are available at:**

http://dds.information.qld.gov.au/DDS

Appendix 2 - Acronyms and Abbreviations

AOI	- Area of Interest
ACA	- Aquatic Conservation Assessment
AQUABAMM	- Aquatic Biodiversity Assessment and Mapping Methodology
BAMM	- Biodiversity Assessment and Mapping Methodology
BoT	- Back on Track
BPA	- Biodiversity Planning Assessment
CAMBA	- China-Australia Migratory Bird Agreement
DES	- Department of Environment and Science
EPBC	- *Environment Protection and Biodiversity Conservation Act 1999*
EVNT	- Endangered, Vulnerable, Near Threatened
GDA94	- Geocentric Datum of Australia 1994
GIS	- Geographic Information System
JAMBA	- Japan-Australia Migratory Bird Agreement
NCA	- *Nature Conservation Act 1992*
RE	- Regional Ecosystem
REDD	- Regional Ecosystem Description Database
ROKAMBA	- Republic of Korea-Australia Migratory Bird Agreement

Australian Government
Department of the Environment and Energy

EPBC Act Protected Matters Report

This report provides general guidance on matters of national environmental significance and other matters protected by the EPBC Act in the area you have selected.

Information on the coverage of this report and qualifications on data supporting this report are contained in the caveat at the end of the report.

Information is available about Environment Assessments and the EPBC Act including significance guidelines, forms and application process details.

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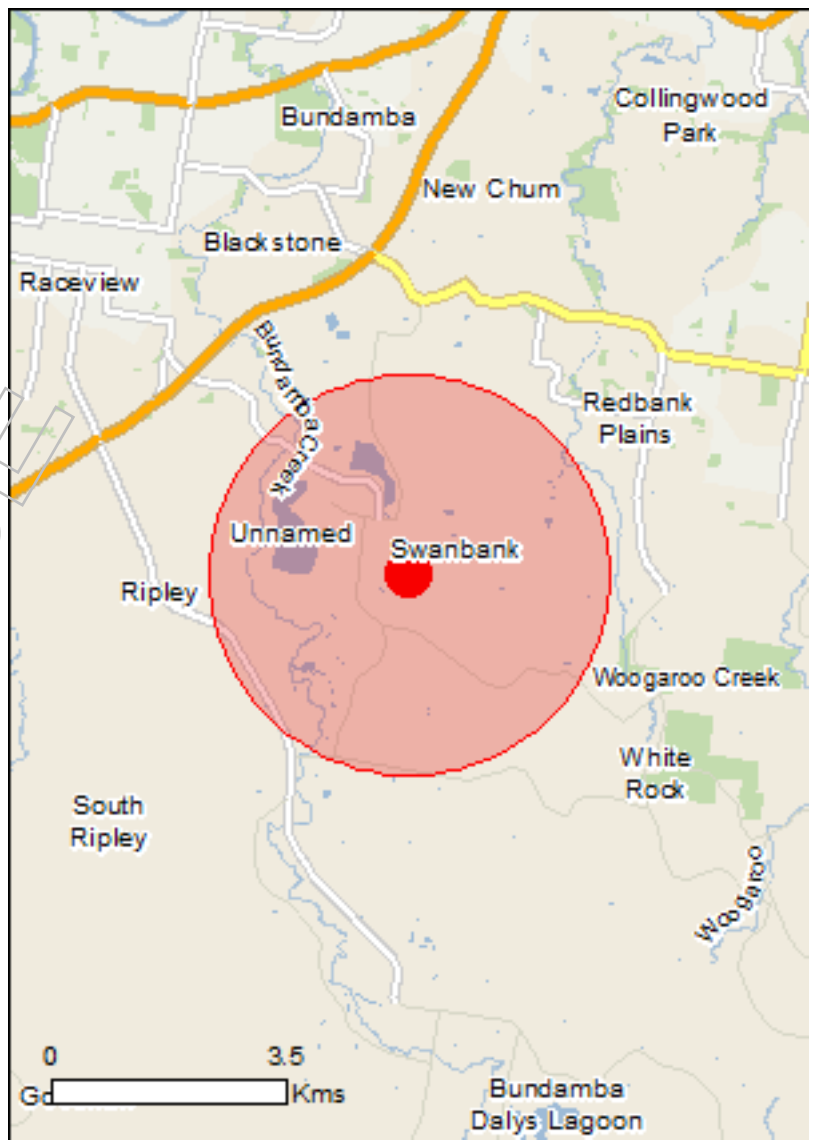
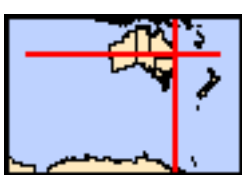


This map may contain data which are ©Commonwealth of Australia (Geoscience Australia), ©PSMA 2010

Coordinates

Buffer: 3.0Km



Summary

Matters of National Environmental Significance

This part of the report summarises the matters of national environmental significance that may occur in, or may relate to, the area you nominated. Further information is available in the detail part of the report, which can be accessed by scrolling or following the links below. If you are proposing to undertake an activity that may have a significant impact on one or more matters of national environmental significance then you should consider the Administrative Guidelines on Significance.

World Heritage Properties:	None
National Heritage Places:	None
Wetlands of International Importance:	None
Great Barrier Reef Marine Park:	None
Commonwealth Marine Area:	None
Listed Threatened Ecological Communities:	3
Listed Threatened Species:	32
Listed Migratory Species:	16

Other Matters Protected by the EPBC Act

This part of the report summarises other matters protected under the Act that may relate to the area you nominated. Approval may be required for a proposed activity that significantly affects the environment on Commonwealth land, when the action is outside the Commonwealth land, or the environment anywhere when the action is taken on Commonwealth land. Approval may also be required for the Commonwealth or Commonwealth agencies proposing to take an action that is likely to have a significant impact on the environment anywhere.

The EPBC Act protects the environment on Commonwealth land, the environment from the actions taken on Commonwealth land, and the environment from actions taken by Commonwealth agencies. As heritage values of a place are part of the 'environment', these aspects of the EPBC Act protect the Commonwealth Heritage values of a Commonwealth Heritage place. Information on the new heritage laws can be found at http://www.environment.gov.au/heritage

A permit may be required for activities in or on a Commonwealth area that may affect a member of a listed threatened species or ecological community, a member of a listed migratory species, whales and other cetaceans, or a member of a listed marine species.

Commonwealth Land:	None
Commonwealth Heritage Places:	None
Listed Marine Species:	22
Whales and Other Cetaceans:	None
Critical Habitats:	None
Commonwealth Reserves Terrestrial:	None
Australian Marine Parks:	None

Extra Information

This part of the report provides information that may also be relevant to the area you have nominated.

State and Territory Reserves:	None
Regional Forest Agreements:	None
Invasive Species:	34
Nationally Important Wetlands:	None
Key Ecological Features (Marine)	None

Details

Matters of National Environmental Significance

Listed Threatened Ecological Communities [Resource Information]

For threatened ecological communities where the distribution is well known, maps are derived from recovery plans, State vegetation maps, remote sensing imagery and other sources. Where threatened ecological community distributions are less well known, existing vegetation maps and point location data are used to produce indicative distribution maps.

Name	Status	Type of Presence
Coastal Swamp Oak (Casuarina glauca) Forest of New South Wales and South East Queensland ecological community	Endangered	Community may occur within area
Lowland Rainforest of Subtropical Australia	Critically Endangered	Community may occur within area
White Box-Yellow Box-Blakely's Red Gum Grassy Woodland and Derived Native Grassland	Critically Endangered	Community may occur within area

Listed Threatened Species [Resource Information]

Name	Status	Type of Presence
Birds		
Anthochaera phrygia Regent Honeyeater [82338]	Critically Endangered	Foraging, feeding or related behaviour may occur within area
Botaurus poiciloptilus Australasian Bittern [1001]	Endangered	Species or species habitat likely to occur within area
Calidris ferruginea Curlew Sandpiper [856]	Critically Endangered	Species or species habitat may occur within area
Dasyornis brachypterus Eastern Bristlebird [533]	Endangered	Species or species habitat may occur within area
Erythrotriorchis radiatus Red Goshawk [942]	Vulnerable	Species or species habitat likely to occur within area
Geophaps scripta scripta Squatter Pigeon (southern) [64440]	Vulnerable	Species or species habitat may occur within area
Grantiella picta Painted Honeyeater [470]	Vulnerable	Species or species habitat may occur within area
Lathamus discolor Swift Parrot [744]	Critically Endangered	Species or species habitat likely to occur within area
Numenius madagascariensis Eastern Curlew, Far Eastern Curlew [847]	Critically Endangered	Species or species habitat may occur within area
Poephila cincta cincta Southern Black-throated Finch [64447]	Endangered	Species or species

Name	Status	Type of Presence
		habitat may occur within area
[Rostratula australis](#) Australian Painted-snipe, Australian Painted Snipe [77037]	Endangered	Species or species habitat likely to occur within area
[Turnix melanogaster](#) Black-breasted Button-quail [923]	Vulnerable	Species or species habitat likely to occur within area
Fish		
[Maccullochella peelii](#) Murray Cod [66633]	Vulnerable	Species or species habitat may occur within area
Insects		
[Argynnis hyperbius inconstans](#) Australian Fritillary [88056]	Critically Endangered	Species or species habitat may occur within area
Mammals		
[Chalinolobus dwyeri](#) Large-eared Pied Bat, Large Pied Bat [183]	Vulnerable	Species or species habitat likely to occur within area
[Dasyurus hallucatus](#) Northern Quoll, Digul [Gogo-Yimidir], Wijingadda [Dambimangari], Wiminji [Martu] [331]	Endangered	Species or species habitat may occur within area
[Dasyurus maculatus maculatus (SE mainland population)](#) Spot-tailed Quoll, Spotted-tail Quoll, Tiger Quoll (southeastern mainland population) [75184]	Endangered	Species or species habitat likely to occur within area
[Petauroides volans](#) Greater Glider [254]	Vulnerable	Species or species habitat known to occur within area
[Petrogale penicillata](#) Brush-tailed Rock-wallaby [225]	Vulnerable	Species or species habitat likely to occur within area
[Phascolarctos cinereus (combined populations of Qld, NSW and the ACT)](#) Koala (combined populations of Queensland, New South Wales and the Australian Capital Territory) [85104]	Vulnerable	Species or species habitat known to occur within area
[Pteropus poliocephalus](#) Grey-headed Flying-fox [186]	Vulnerable	Foraging, feeding or related behaviour known to occur within area
Plants		
[Arthraxon hispidus](#) Hairy-joint Grass [9338]	Vulnerable	Species or species habitat may occur within area
[Bosistoa transversa](#) Three-leaved Bosistoa, Yellow Satinheart [16091]	Vulnerable	Species or species habitat likely to occur within area
[Cycas ophiolitica](#) [55797]	Endangered	Species or species habitat may occur within area
[Dichanthium setosum](#) bluegrass [14159]	Vulnerable	Species or species habitat likely to occur within area
[Notelaea ipsviciensis](#) Cooneana Olive [81858]	Critically Endangered	Species or species habitat may occur within area
[Notelaea lloydii](#) Lloyd's Olive [15002]	Vulnerable	Species or species habitat likely to occur

Name	Status	Type of Presence
		within area
Plectranthus habrophyllus [64589]	Endangered	Species or species habitat likely to occur within area
Samadera bidwillii Quassia [29708]	Vulnerable	Species or species habitat likely to occur within area
Thesium australe Austral Toadflax, Toadflax [15202]	Vulnerable	Species or species habitat likely to occur within area
Reptiles		
Delma torquata Adorned Delma, Collared Delma [1656]	Vulnerable	Species or species habitat may occur within area
Furina dunmalli Dunmall's Snake [59254]	Vulnerable	Species or species habitat may occur within area

Listed Migratory Species [Resource Information]

* Species is listed under a different scientific name on the EPBC Act - Threatened Species list.

Name	Threatened	Type of Presence
Migratory Marine Birds		
Apus pacificus Fork-tailed Swift [678]		Species or species habitat likely to occur within area
Migratory Terrestrial Species		
Cuculus optatus Oriental Cuckoo, Horsfield's Cuckoo [86651]		Species or species habitat may occur within area
Hirundapus caudacutus White-throated Needletail [682]		Species or species habitat known to occur within area
Monarcha melanopsis Black-faced Monarch [609]		Species or species habitat known to occur within area
Monarcha trivirgatus Spectacled Monarch [610]		Species or species habitat may occur within area
Motacilla flava Yellow Wagtail [644]		Species or species habitat may occur within area
Myiagra cyanoleuca Satin Flycatcher [612]		Species or species habitat known to occur within area
Rhipidura rufifrons Rufous Fantail [592]		Species or species habitat known to occur within area
Migratory Wetlands Species		
Actitis hypoleucos Common Sandpiper [59309]		Species or species habitat may occur within area
Calidris acuminata Sharp-tailed Sandpiper [874]		Species or species habitat likely to occur within area
Calidris ferruginea Curlew Sandpiper [856]	Critically Endangered	Species or species habitat may occur within

Name	Threatened	Type of Presence
		area
Calidris melanotos Pectoral Sandpiper [858]		Species or species habitat may occur within area
Gallinago hardwickii Latham's Snipe, Japanese Snipe [863]		Species or species habitat may occur within area
Numenius madagascariensis Eastern Curlew, Far Eastern Curlew [847]	Critically Endangered	Species or species habitat may occur within area
Pandion haliaetus Osprey [952]		Species or species habitat likely to occur within area
Tringa nebularia Common Greenshank, Greenshank [832]		Species or species habitat likely to occur within area

Other Matters Protected by the EPBC Act

Listed Marine Species [Resource Information]

* Species is listed under a different scientific name on the EPBC Act - Threatened Species list.

Name	Threatened	Type of Presence
Birds		
Actitis hypoleucos Common Sandpiper [59309]		Species or species habitat may occur within area
Anseranas semipalmata Magpie Goose [978]		Species or species habitat may occur within area
Apus pacificus Fork-tailed Swift [678]		Species or species habitat likely to occur within area
Ardea alba Great Egret, White Egret [59541]		Species or species habitat known to occur within area
Ardea ibis Cattle Egret [59542]		Species or species habitat may occur within area
Calidris acuminata Sharp-tailed Sandpiper [874]		Species or species habitat likely to occur within area
Calidris ferruginea Curlew Sandpiper [856]	Critically Endangered	Species or species habitat may occur within area
Calidris melanotos Pectoral Sandpiper [858]		Species or species habitat may occur within area
Gallinago hardwickii Latham's Snipe, Japanese Snipe [863]		Species or species habitat may occur within area
Haliaeetus leucogaster White-bellied Sea-Eagle [943]		Species or species habitat known to occur within area

Name	Threatened	Type of Presence
Hirundapus caudacutus White-throated Needletail [682]		Species or species habitat known to occur within area
Lathamus discolor Swift Parrot [744]	Critically Endangered	Species or species habitat likely to occur within area
Merops ornatus Rainbow Bee-eater [670]		Species or species habitat may occur within area
Monarcha melanopsis Black-faced Monarch [609]		Species or species habitat known to occur within area
Monarcha trivirgatus Spectacled Monarch [610]		Species or species habitat may occur within area
Motacilla flava Yellow Wagtail [644]		Species or species habitat may occur within area
Myiagra cyanoleuca Satin Flycatcher [612]		Species or species habitat known to occur within area
Numenius madagascariensis Eastern Curlew, Far Eastern Curlew [847]	Critically Endangered	Species or species habitat may occur within area
Pandion haliaetus Osprey [952]		Species or species habitat likely to occur within area
Rhipidura rufifrons Rufous Fantail [592]		Species or species habitat known to occur within area
Rostratula benghalensis (sensu lato) Painted Snipe [889]	Endangered*	Species or species habitat likely to occur within area
Tringa nebularia Common Greenshank, Greenshank [832]		Species or species habitat likely to occur within area

Extra Information

Invasive Species	[Resource Information]

Weeds reported here are the 20 species of national significance (WoNS), along with other introduced plants that are considered by the States and Territories to pose a particularly significant threat to biodiversity. The following feral animals are reported: Goat, Red Fox, Cat, Rabbit, Pig, Water Buffalo and Cane Toad. Maps from Landscape Health Project, National Land and Water Resouces Audit, 2001.

Name	Status	Type of Presence
Birds		

Name	Status	Type of Presence
Acridotheres tristis Common Myna, Indian Myna [387]		Species or species habitat likely to occur within area
Anas platyrhynchos Mallard [974]		Species or species habitat likely to occur within area
Carduelis carduelis European Goldfinch [403]		Species or species habitat likely to occur within area
Columba livia Rock Pigeon, Rock Dove, Domestic Pigeon [803]		Species or species habitat likely to occur within area
Lonchura punctulata Nutmeg Mannikin [399]		Species or species habitat likely to occur within area
Passer domesticus House Sparrow [405]		Species or species habitat likely to occur within area
Streptopelia chinensis Spotted Turtle-Dove [780]		Species or species habitat likely to occur within area
Sturnus vulgaris Common Starling [389]		Species or species habitat likely to occur within area
Frogs		
Rhinella marina Cane Toad [83218]		Species or species habitat known to occur within area
Mammals		
Bos taurus Domestic Cattle [16]		Species or species habitat likely to occur within area
Canis lupus familiaris Domestic Dog [82654]		Species or species habitat likely to occur within area
Equus caballus Horse [5]		Species or species habitat likely to occur within area
Felis catus Cat, House Cat, Domestic Cat [19]		Species or species habitat likely to occur within area
Lepus capensis Brown Hare [127]		Species or species habitat likely to occur within area
Mus musculus House Mouse [120]		Species or species habitat likely to occur within area
Oryctolagus cuniculus Rabbit, European Rabbit [128]		Species or species habitat likely to occur within area
Rattus norvegicus Brown Rat, Norway Rat [83]		Species or species habitat likely to occur within area
Rattus rattus Black Rat, Ship Rat [84]		Species or species habitat likely to occur

Name	Status	Type of Presence
		within area
Sus scrofa Pig [6]		Species or species habitat likely to occur within area
Vulpes vulpes Red Fox, Fox [18]		Species or species habitat likely to occur within area
Plants		
Cabomba caroliniana Cabomba, Fanwort, Carolina Watershield, Fish Grass, Washington Grass, Watershield, Carolina Fanwort, Common Cabomba [5171]		Species or species habitat likely to occur within area
Chrysanthemoides monilifera Bitou Bush, Boneseed [18983]		Species or species habitat may occur within area
Eichhornia crassipes Water Hyacinth, Water Orchid, Nile Lily [13466]		Species or species habitat likely to occur within area
Genista monspessulana Montpellier Broom, Cape Broom, Canary Broom, Common Broom, French Broom, Soft Broom [20126]		Species or species habitat likely to occur within area
Lantana camara Lantana, Common Lantana, Kamara Lantana, Large-leaf Lantana, Pink Flowered Lantana, Red Flowered Lantana, Red-Flowered Sage, White Sage, Wild Sage [10892]		Species or species habitat likely to occur within area
Opuntia spp. Prickly Pears [82753]		Species or species habitat likely to occur within area
Parkinsonia aculeata Parkinsonia, Jerusalem Thorn, Jelly Bean Tree, Horse Bean [12301]		Species or species habitat likely to occur within area
Parthenium hysterophorus Parthenium Weed, Bitter Weed, Carrot Grass, False Ragweed [19566]		Species or species habitat likely to occur within area
Salix spp. except S.babylonica, S.x calodendron & S.x reichardtii Willows except Weeping Willow, Pussy Willow and Sterile Pussy Willow [68497]		Species or species habitat likely to occur within area
Salvinia molesta Salvinia, Giant Salvinia, Aquarium Watermoss, Kariba Weed [13665]		Species or species habitat likely to occur within area
Senecio madagascariensis Fireweed, Madagascar Ragwort, Madagascar Groundsel [2624]		Species or species habitat likely to occur within area
Solanum elaeagnifolium Silver Nightshade, Silver-leaved Nightshade, White Horse Nettle, Silver-leaf Nightshade, Tomato Weed, White Nightshade, Bull-nettle, Prairie-berry, Satansbos, Silver-leaf Bitter-apple, Silverleaf-nettle, Trompillo [12323]		Species or species habitat likely to occur within area
Reptiles		
Hemidactylus frenatus Asian House Gecko [1708]		Species or species habitat likely to occur within area
Ramphotyphlops braminus Flowerpot Blind Snake, Brahminy Blind Snake, Cacing Besi [1258]		Species or species habitat may occur within area

Caveat

The information presented in this report has been provided by a range of data sources as acknowledged at the end of the report.

This report is designed to assist in identifying the locations of places which may be relevant in determining obligations under the Environment Protection and Biodiversity Conservation Act 1999. It holds mapped locations of World and National Heritage properties, Wetlands of International and National Importance, Commonwealth and State/Territory reserves, listed threatened, migratory and marine species and listed threatened ecological communities. Mapping of Commonwealth land is not complete at this stage. Maps have been collated from a range of sources at various resolutions.

Not all species listed under the EPBC Act have been mapped (see below) and therefore a report is a general guide only. Where available data supports mapping, the type of presence that can be determined from the data is indicated in general terms. People using this information in making a referral may need to consider the qualifications below and may need to seek and consider other information sources.

For threatened ecological communities where the distribution is well known, maps are derived from recovery plans, State vegetation maps, remote sensing imagery and other sources. Where threatened ecological community distributions are less well known, existing vegetation maps and point location data are used to produce indicative distribution maps.

Threatened, migratory and marine species distributions have been derived through a variety of methods. Where distributions are well known and if time permits, maps are derived using either thematic spatial data (i.e. vegetation, soils, geology, elevation, aspect, terrain, etc) together with point locations and described habitat; or environmental modelling (MAXENT or BIOCLIM habitat modelling) using point locations and environmental data layers.

Where very little information is available for species or large number of maps are required in a short time-frame, maps are derived either from 0.04 or 0.02 decimal degree cells; by an automated process using polygon capture techniques (static two kilometre grid cells, alpha-hull and convex hull); or captured manually or by using topographic features (national park boundaries, islands, etc). In the early stages of the distribution mapping process (1999-early 2000s) distributions were defined by degree blocks, 100K or 250K map sheets to rapidly create distribution maps. More reliable distribution mapping methods are used to update these distributions as time permits.

Only selected species covered by the following provisions of the EPBC Act have been mapped:

- migratory and
- marine

The following species and ecological communities have not been mapped and do not appear in reports produced from this database:

- threatened species listed as extinct or considered as vagrants
- some species and ecological communities that have only recently been listed
- some terrestrial species that overfly the Commonwealth marine area
- migratory species that are very widespread, vagrant, or only occur in small numbers

The following groups have been mapped, but may not cover the complete distribution of the species:

- non-threatened seabirds which have only been mapped for recorded breeding sites
- seals which have only been mapped for breeding sites near the Australian continent

Such breeding sites may be important for the protection of the Commonwealth Marine environment.

Coordinates

-27.66985 152.81936

Acknowledgements

This database has been compiled from a range of data sources. The department acknowledges the following custodians who have contributed valuable data and advice:

-Office of Environment and Heritage, New South Wales
-Department of Environment and Primary Industries, Victoria
-Department of Primary Industries, Parks, Water and Environment, Tasmania
-Department of Environment, Water and Natural Resources, South Australia
-Department of Land and Resource Management, Northern Territory
-Department of Environmental and Heritage Protection, Queensland
-Department of Parks and Wildlife, Western Australia
-Environment and Planning Directorate, ACT
-Birdlife Australia
-Australian Bird and Bat Banding Scheme
-Australian National Wildlife Collection
-Natural history museums of Australia
-Museum Victoria
-Australian Museum
-South Australian Museum
-Queensland Museum
-Online Zoological Collections of Australian Museums
-Queensland Herbarium
-National Herbarium of NSW
-Royal Botanic Gardens and National Herbarium of Victoria
-Tasmanian Herbarium
-State Herbarium of South Australia
-Northern Territory Herbarium
-Western Australian Herbarium
-Australian National Herbarium, Canberra
-University of New England
-Ocean Biogeographic Information System
-Australian Government, Department of Defence
Forestry Corporation, NSW
-Geoscience Australia
-CSIRO
-Australian Tropical Herbarium, Cairns
-eBird Australia
-Australian Government – Australian Antarctic Data Centre
-Museum and Art Gallery of the Northern Territory
-Australian Government National Environmental Science Program
-Australian Institute of Marine Science
-Reef Life Survey Australia
-American Museum of Natural History
-Queen Victoria Museum and Art Gallery, Inveresk, Tasmania
-Tasmanian Museum and Art Gallery, Hobart, Tasmania
-Other groups and individuals

The Department is extremely grateful to the many organisations and individuals who provided expert advice and information on numerous draft distributions.

Please feel free to provide feedback via the Contact Us page.

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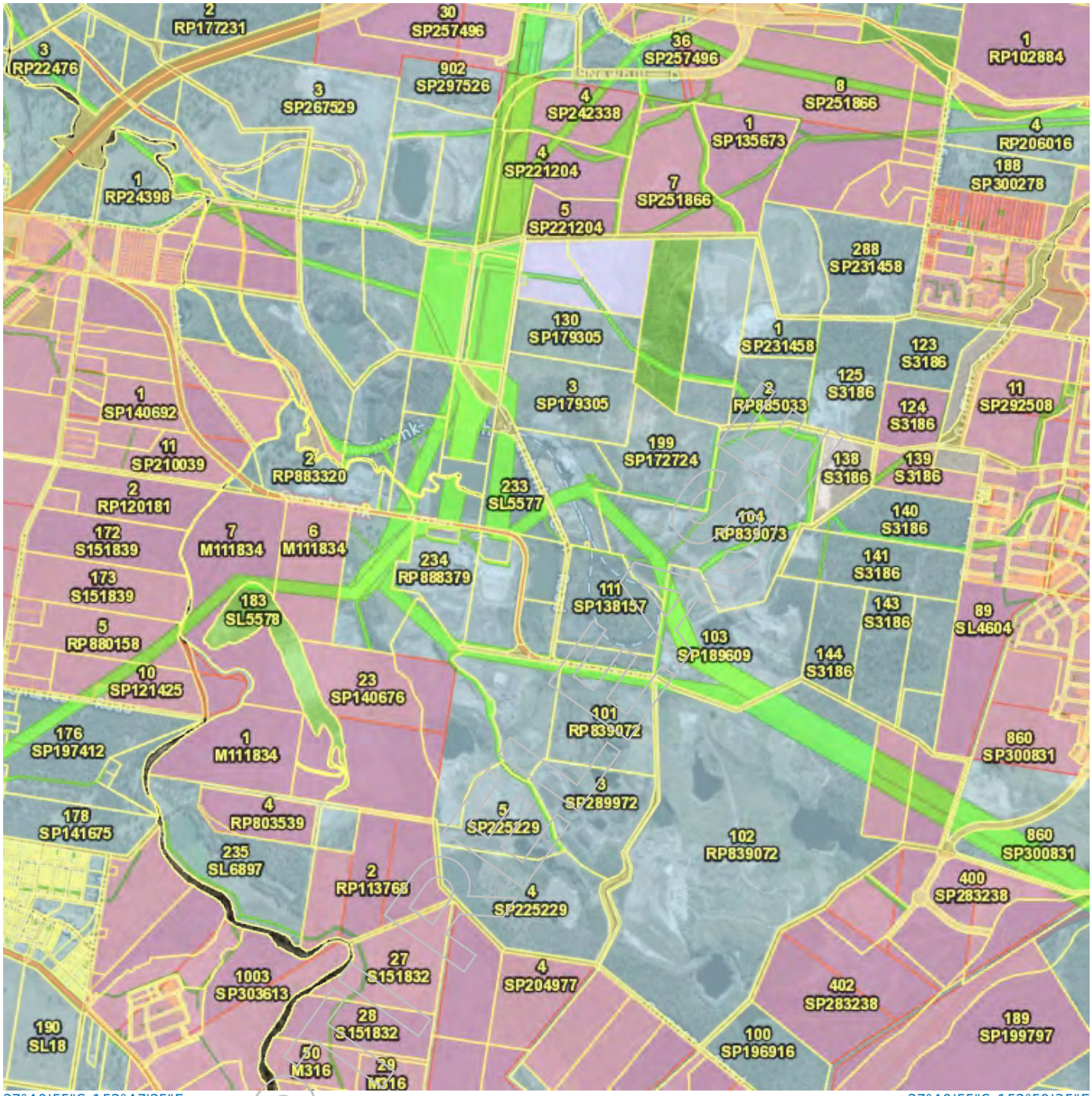

27°40'55"S 152°47'25"E 27°40'55"S 152°50'35"E

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Imagery

Queensland Government

Legend

Road

- Highway
- Main
- Local
- Private

Cities and Towns

Natural parcel boundary

Road parcel

Land parcel - gt 1 ha

- Parcel

Easement parcel

Strata parcel

Volumetric parcel

Land parcel label - gt 1 ha

Tenure

- Below the Depth Plans
- Boat Harbours
- Carbon Abatement Interest
- Commonwealth Acquisition
- Covenant
- Easement
- Forest Reserve
- Freehold
- Housing Land
- Industrial Estates
- Lands Lease
- Main Road
- Mines Tenure
- National Park
- Port and Harbours Boards
- Profit à Prendre
- Railway
- Reserve
- State Forest
- State Land
- Timber Reserve
- Water Resource

Railway

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27°40'39"S 152°48'17"E 27°40'39"S 152°50'11"E

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Queensland Government

Legend

Road

- Highway
- Main
- Local
- Private

Cities and Towns

Railway

Queensland Land Use - Current

- Nature conservation
- Managed resource protection
- Other minimal use
- Grazing native vegetation
- Production forestry
- Plantation forestry
- Grazing modified pastures
- Cropping
- Perennial horticulture
- Seasonal horticulture
- Land in transition
- Irrigated plantation forestry
- Irrigated modified pastures
- Irrigated cropping
- Irrigated perennial horticulture
- Irrigated seasonal horticulture
- Irrigated land in transition
- Intensive horticulture
- Intensive animal husbandry
- Manufacturing and industrial
- Residential
- Services
- Utilities
- Transport and communication
- Mining

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Legend

Queensland Land Use - Current (cont)

- Lake
- Reservoir/dam
- River
- Channel/aqueduct
- Marsh/wetland
- Estuary/coastal waters

Queensland Government

Department of Environment and Science

Environmental Reports

Matters of State Environmental Significance

For the selected area of interest
Lot: 3 Plan: RP214256

Environmental Reports - General Information

The Environmental Reports portal provides for the assessment of selected matters of interest relevant to a user specified location, or area of interest (AOI). All area and derivative figures are relevant to the extent of matters of interest contained within the AOI unless otherwise stated. Please note, if a user selects an AOI via the "central coordinates" option, the resulting assessment area encompasses an area extending for a 2km radius from the point of interest.

All area and area derived figures included in this report have been calculated via reprojecting relevant spatial features to Albers equal-area conic projection (central meridian = 146, datum Geocentric Datum of Australia 1994). As a result, area figures may differ slightly if calculated for the same features using a different co-ordinate system.

Figures in tables may be affected by rounding.

The matters of interest reported on in this document are based upon available state mapped datasets. Where the report indicates that a matter of interest is not present within the AOI (e.g. where area related calculations are equal to zero, or no values are listed), this may be due either to the fact that state mapping has not been undertaken for the AOI, that state mapping is incomplete for the AOI, or that no values have been identified within the site.

The information presented in this report should be considered as a guide only and field survey may be required to validate values on the ground.

Please direct queries about these reports to: Planning.Support@des.qld.gov.au

Disclaimer

Whilst every care is taken to ensure the accuracy of the information provided in this report, the Queensland Government makes no representations or warranties about its accuracy, reliability, completeness, or suitability, for any particular purpose and disclaims all responsibility and all liability (including without limitation, liability in negligence) for all expenses, losses, damages (including indirect or consequential damage) and costs which the user may incur as a consequence of the information being inaccurate or incomplete in any way and for any reason.

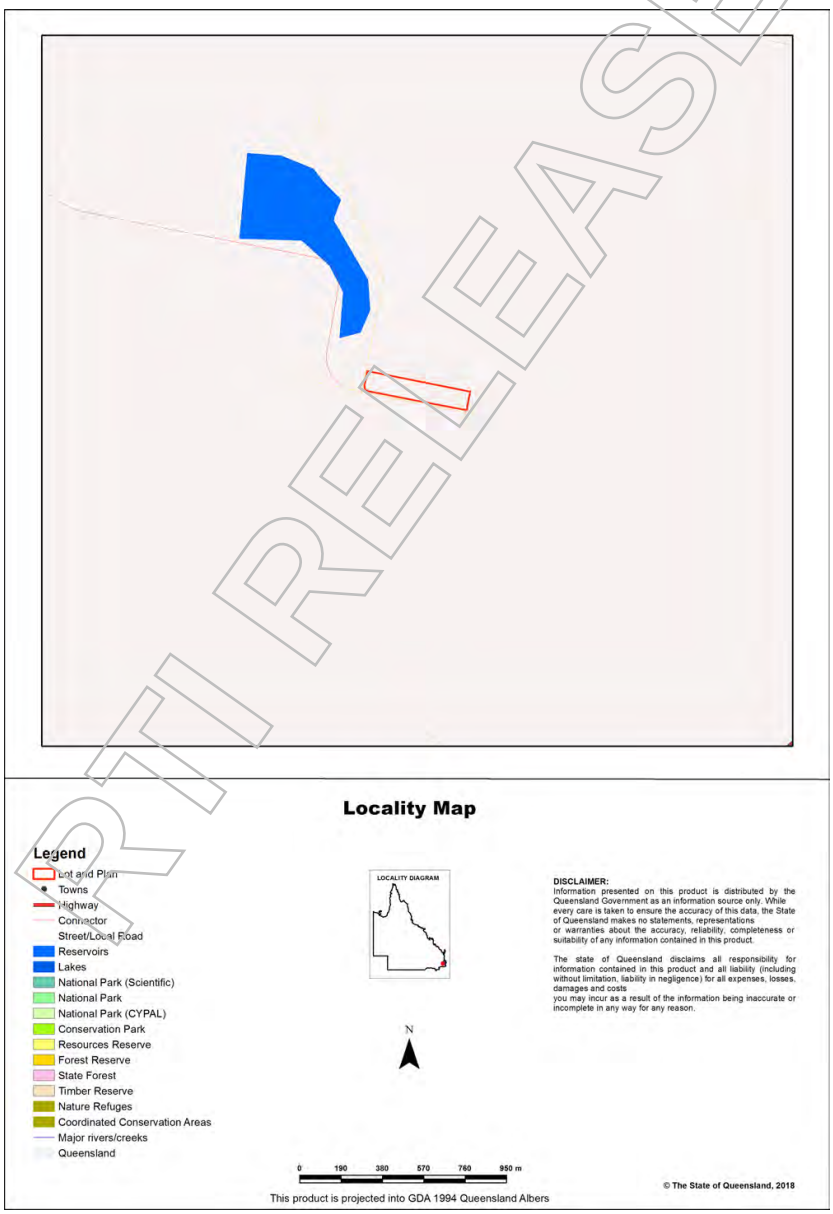
Table of Contents

Assessment Area Details

The following table provides an overview of the area of interest (AOI) with respect to selected topographic and environmental values.

Table 1: Summary table, details for AOI Lot: 3 Plan: RP214256

Size (ha)	4.24
Local Government(s)	Ipswich City
Bioregion(s)	Southeast Queensland
Subregion(s)	Moreton Basin
Catchment(s)	Brisbane



Matters of State Environmental Significance (MSES)

MSES Categories

Queensland's State Planning Policy (SPP) includes a biodiversity State interest that states:

'The sustainable, long-term conservation of biodiversity is supported. Significant impacts on matters of national or state environmental significance are avoided, or where this cannot be reasonably achieved; impacts are minimised and residual impacts offset.'

The MSES mapping product is a guide to assist planning and development assessment decision-making. Its primary purpose is to support implementation of the SPP biodiversity policy. While it supports the SPP, the mapping does not replace the regulatory mapping or environmental values specifically called up under other laws or regulations. Similarly, the SPP biodiversity policy does not override or replace specific requirements of other Acts or regulations.

The SPP defines matters of state environmental significance as:

- Protected areas (including all classes of protected area except coordinated conservation areas) under the *Nature Conservation Act 1992* ;

- Marine parks and land within a 'marine national park', 'conservation park', 'scientific research', 'preservation' or 'buffer' zone under the *Marine Parks Act 2004* ;

- Areas within declared fish habitat areas that are management A areas or management B areas under the Fisheries Regulation 2008;

- Threatened wildlife under the *Nature Conservation Act 1992* and special least concern animals under the Nature Conservation (Wildlife) Regulation 2006;

- Regulated vegetation under the *Vegetation Management Act 1999* that is:

  • Category B areas on the regulated vegetation management map, that are 'endangered' or 'of concern' regional ecosystems;

  • Category C areas on the regulated vegetation management map that are 'endangered' or 'of concern' regional ecosystems;

  • Category R areas on the regulated vegetation management map;

  • Regional ecosystems that intersect with watercourses identified on the vegetation management watercourse and drainage feature map;

  • Regional ecosystems that intersect with wetlands identified on the vegetation management wetlands map;

- Strategic Environmental Areas under the *Regional Planning Interests Act 2014* ;

- Wetlands in a wetland protection area of wetlands of high ecological significance shown on the Map of Referable Wetlands under the Environmental Protection Regulation 2008;

- Wetlands and watercourses in high ecological value waters defined in the Environmental Protection (Water) Policy 2009, schedule 2;

- Legally secured offset areas.

MSES Values Present

The MSES values that are present in the area of interest are summarised in the table below:

Table 2: Summary of MSES present within the AOI

1a Protected Areas- estates	0.0 ha	0.0 %
1b Protected Areas- nature refuges	0.0 ha	0.0 %
2 State Marine Parks- highly protected zones	0.0 ha	0.0 %
3 Fish habitat areas (A and B areas)	0.0 ha	0.0 %
4 Strategic Environmental Areas (SEA)	0.0 ha	0.0 %
5 High Ecological Significance wetlands on the map of Referable Wetlands	0.0 ha	0.0 %
6a High Ecological Value (HEV) wetlands	0.0 ha	0.0 %
6b High Ecological Value (HEV) waterways **	0.0 km	Not applicable
7 Threatened species and Iconic species	3.06 ha	72.2%
8a Regulated Vegetation - Endangered/Of concern in Category B (remnant)	0.0 ha	0.0 %
8b Regulated Vegetation - Endangered/Of concern in Category C (regrowth)	0.0 ha	0.0 %
8c Regulated Vegetation - Category R (GBR riverine regrowth)	0.0 ha	0.0 %
8d Regulated Vegetation - Essential habitat	1.52 ha	35.8%
8e Regulated Vegetation - intersecting a watercourse **	0.2 km	Not applicable
8f Regulated Vegetation - within 100m of a Vegetation Management Wetland	0.0 ha	0.0 %
9a Legally secured offset areas- offset register areas	0.0 ha	0.0 %
9b Legally secured offset areas- vegetation offsets through a Property Map of Assessable Vegetation	0.0 ha	0.0 %

Additional Information with Respect to MSES Values Present

MSES - State Conservation Areas

1a. Protected Areas - estates

(no results)

1b. Protected Areas - nature refuges

(no results)

2. State Marine Parks - highly protected zones

(no results)

3. Fish habitat areas (A and B areas)

(no results)

Refer to **Map 1 - MSES - State Conservation Areas** for an overview of the relevant MSES.

MSES - Wetlands and Waterways

4. Strategic Environmental Areas (SEA)

(no results)

5. High Ecological Significance wetlands on the Map of Referable Wetlands

(no results)

6a. High Ecological Value (HEV) waters - wetlands

(no results)

6b. High Ecological Value (HEV) waters - waterways

(no results)

Refer to **Map 2 - MSES - Wetlands and Waterways** for an overview of the relevant MSES.

MSES - Species

7. Threatened wildlife and special least concern animal

Threatened species and iconic species	Act	Species least concern animal	Koala Bushland Habitat	Dugong Protection	VMA Essential 2014 Habitat
Threat wildlife & Spec LeastC animals	NCA	None	Koala Bushland	None	None

Threatened species and iconic species	Act	Species least concern animal	Koala Bushland Habitat	Dugong Protection	VMA Essential 2014 Habitat
Threat wildlife & Spec LeastC animals	NCA	Echidna	None	None	None
Threat wildlife & Spec LeastC animals	NCA	Echidna	Koala Bushland	None	None

Threatened and special least concern species records

Scientific name	Common name	NCA status	EPBC status
Tachyglossus aculeatus	short-beaked echidna	SL	None

Note: The Threatened and Special Least Concern Animal (7) layer originates from the previous MSES version (4.1, dated at 2014). The layer does not represent all currently listed species and is subject to review.

**Nature Conservation Act 1992 (NCA) Status- Endangered (E), Vulnerable (V) or Special Least Concern Animal (SL). Environment Protection and Biodiversity Conservation Act 1999 (EPBC) status: Critically Endangered (CE) Endangered (E), Vulnerable (V)*

To request a species list for an area, or search for a species profile, access Wildlife Online at:
https://www.qld.gov.au/environment/plants-animals/species-list/

Refer to **Map 3 - MSES - Species** for an overview of the relevant MSES.

MSES - Regulated Vegetation

8a. Regulated Vegetation - Endangered/Of concern in Category B (remnant)

Not applicable

8b. Regulated Vegetation - Endangered/Of concern in Category C (regrowth)

Not applicable

For further information relating to regional ecosystems in general, go to:
https://www.qld.gov.au/environment/plants-animals/plants/ecosystems/
For a more detailed description of a particular regional ecosystem, access the regional ecosystem search page at:
https://environment.ehp.qld.gov.au/regional-ecosystems/

8c. Regulated Vegetation - Category R (GBR riverine regrowth)

Not applicable

8d. Regulated Vegetation - Essential habitat

Values are present

8e. Regulated Vegetation - intersecting a watercourse**

A vegetation management watercourse is mapped as present

8f. Regulated Vegetation - within 100m of a Vegetation Management wetland

Not applicable

Refer to **Map 4 - MSES - Regulated Vegetation** for an overview of the relevant MSES.

MSES - Offsets

9a. Legally secured offset areas - offset register areas

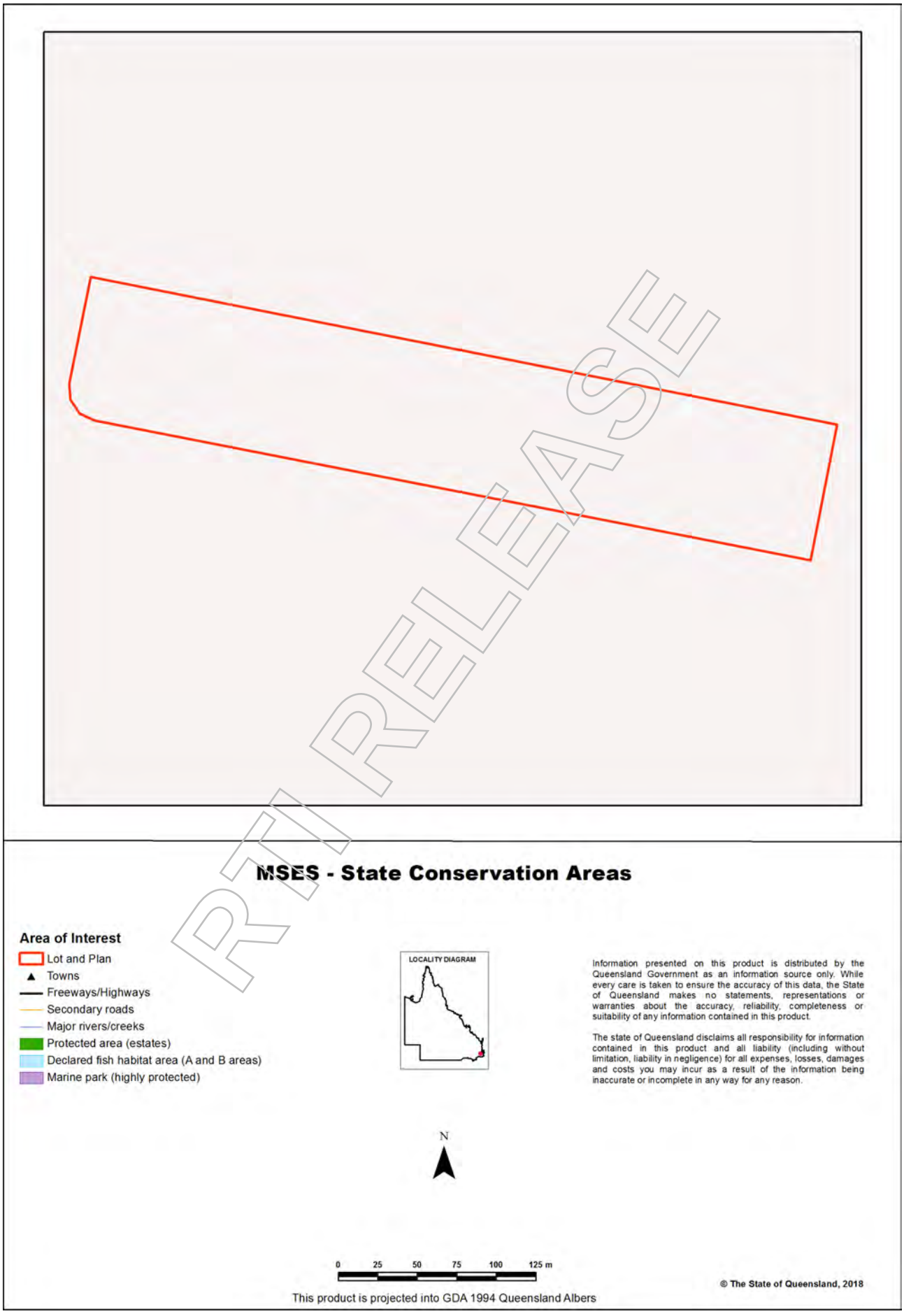
(no results)

9b. Legally secured offset areas - vegetation offsets through a Property Map of Assessable Vegetation

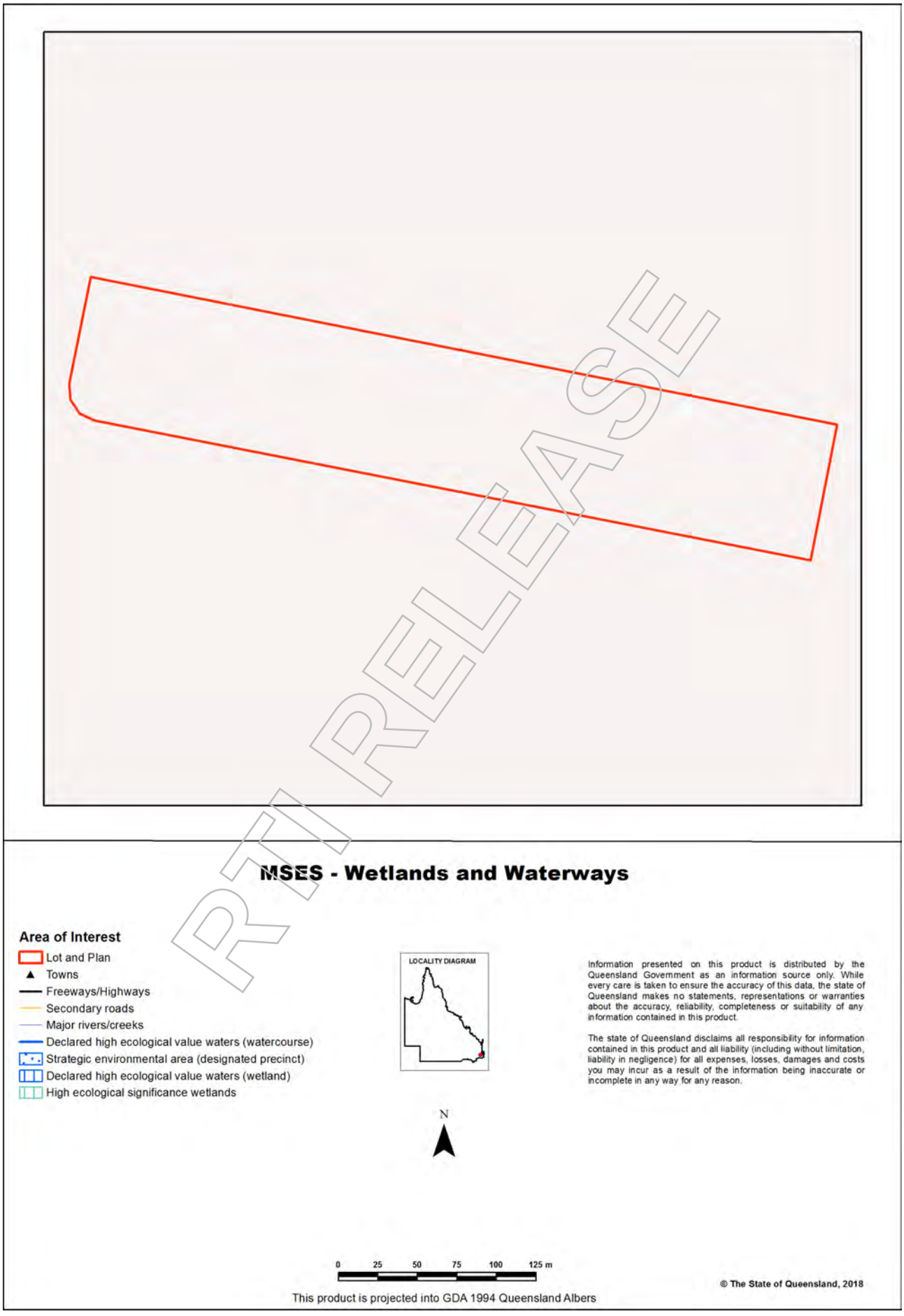
(no results)

Refer to **Map 5 - MSES - Offset Areas** for an overview of the relevant MSES.

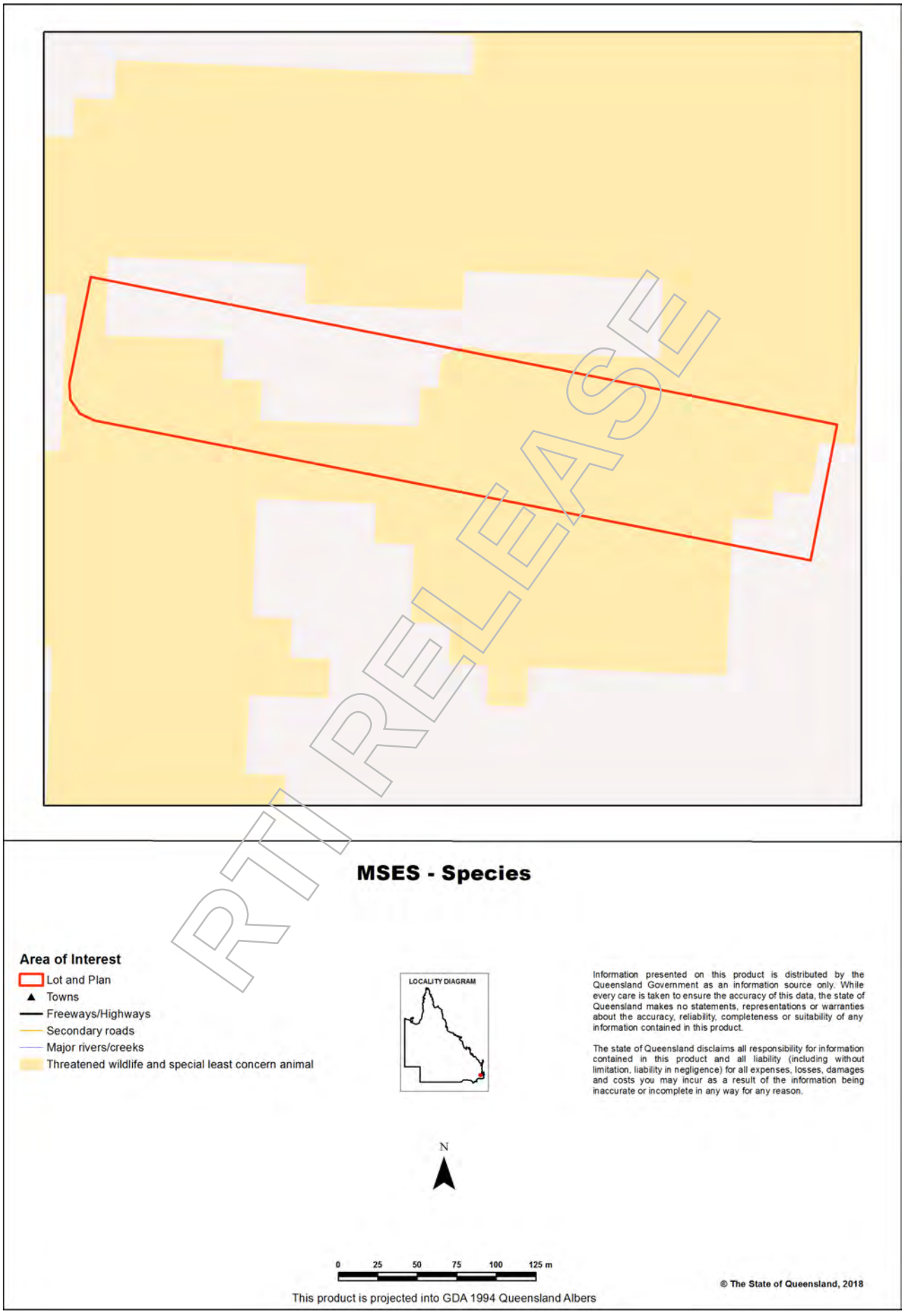
Map 1 - MSES - State Conservation Areas



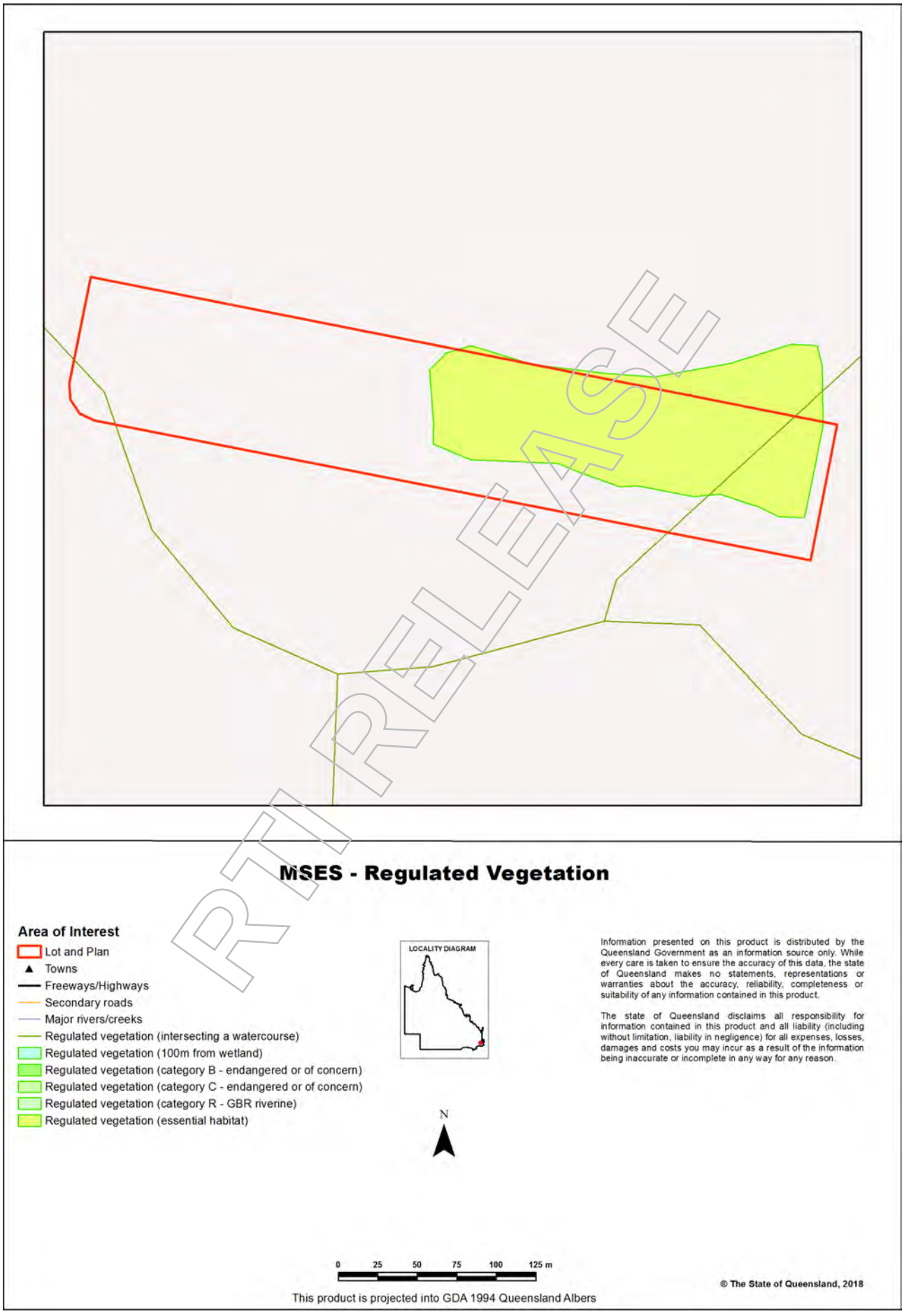
Map 2 - MSES - Wetlands and Waterways



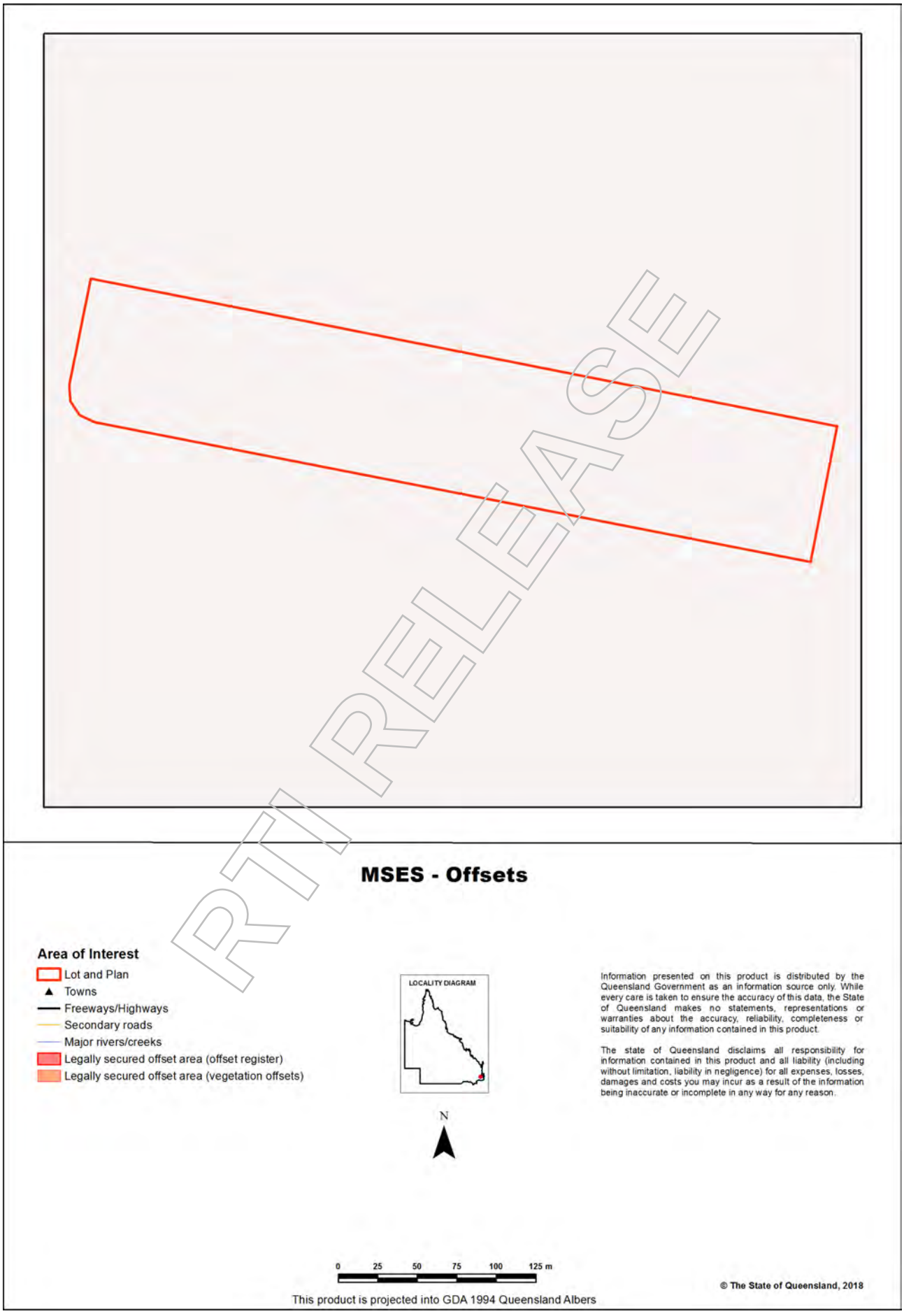
Map 3 - MSES - Species



Map 4 - MSES - Regulated Vegetation



Map 5 - MSES - Offset Areas



Appendices

Appendix 1 - Matters of State Environmental Significance (MSES) methodology

MSES mapping is a regional-scale representation of the definition for MSES under the State Planning Policy (SPP). The compiled MSES mapping product is a guide to assist planning and development assessment decision-making. Its primary purpose is to support implementation of the SPP biodiversity policy. While it supports the SPP, the mapping does not replace the regulatory mapping or environmental values specifically called up under other laws or regulations. Similarly, the SPP biodiversity policy does not override or replace specific requirements of other Acts or regulations.

The Queensland Government's "Method for mapping - matters of state environmental significance for use in land use planning and development assessment" can be downloaded from:

http://www.ehp.qld.gov.au/land/natural-resource/method-mapping-mses.html .

Appendix 2 - Source Data

The datasets listed below are available on request from:

http://qldspatial.information.qld.gov.au/catalogue/custom/index.page

- Matters of State environmental significance

Note: MSES mapping is not based on new or unique data. The primary mapping product draws data from a number of underlying environment databases and geo-referenced information sources. MSES mapping is a versioned product that is updated generally on a twice-yearly basis to incorporate the changes to underlying data sources. Several components of MSES mapping made for the current version may differ from the current underlying data sources. To ensure accuracy, or proper representation of MSES values, it is strongly recommended that users refer to the underlying data sources and review the current definition of MSES in the State Planning Policy, before applying the MSES mapping.

Individual MSES layers can be attributed to the following source data available at QSpatial:

MSES layers	**current QSpatial data (http://qspatial.ingormation.qld.gov.au)**
Protected Areas-Estates and Nature Refuges	- Protected areas of Queensland - Nature Refuges - Queensland
Marine Park-Highly Protected Zones	Moreton Bay marine park zoning 2008
Fish Habitat Areas	Queensland fish habitat areas
Strategic Environmental Areas-designated	Regional Planning Interests Act - Strategic Environmental Areas
HES wetlands	Map of Referable Wetland - wetland layers: - Wetland management area wetlands - Wetland protection area wetlands
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Wildlife habitat (threatened and special least concern)	-WildNet database species records - habitat suitability models (various)
VMA regulated regional ecosystems	Vegetation management regional ecosystem and remnant map - latest version 8.0
VMA Essential Habitat	Vegetation management - essential habitat map - latest version 4.41
VMA Wetlands	Vegetation management wetlands map - latest version 2.41
Legally secured offsets	Vegetation Management Act property maps of assessable vegetation. For offset register data-contact DES
Regulated Vegetation Map	Vegetation management - regulated vegetation management map - latest version 1.41

Appendix 3 - Acronyms and Abbreviations

AOI	- Area of Interest
DES	- Department of Environment and Science
EP Act	- *Environmental Protection Act 1994*
EPP	- Environmental Protection Policy
GDA94	- Geocentric Datum of Australia 1994
GEM	- General Environmental Matters
GIS	- Geographic Information System
MSES	- Matters of State Environmental Significance
NCA	- *Nature Conservation Act 1992*
RE	- Regional Ecosystem
SPP	- State Planning Policy
VMA	- *Vegetation Management Act 1999*

Queensland Government

Department of Environment and Science

Environmental Reports

Matters of State Environmental Significance

For the selected area of interest
Lot: 101 Plan: RP839072

Environmental Reports - General Information

The Environmental Reports portal provides for the assessment of selected matters of interest relevant to a user specified location, or area of interest (AOI). All area and derivative figures are relevant to the extent of matters of interest contained within the AOI unless otherwise stated. Please note, if a user selects an AOI via the "central coordinates" option, the resulting assessment area encompasses an area extending for a 2km radius from the point of interest.

All area and area derived figures included in this report have been calculated via reprojecting relevant spatial features to Albers equal-area conic projection (central meridian = 146, datum Geocentric Datum of Australia 1994). As a result, area figures may differ slightly if calculated for the same features using a different co-ordinate system.

Figures in tables may be affected by rounding.

The matters of interest reported on in this document are based upon available state mapped datasets. Where the report indicates that a matter of interest is not present within the AOI (e.g. where area related calculations are equal to zero, or no values are listed), this may be due either to the fact that state mapping has not been undertaken for the AOI, that state mapping is incomplete for the AOI, or that no values have been identified within the site.

The information presented in this report should be considered as a guide only and field survey may be required to validate values on the ground.

Please direct queries about these reports to: Planning.Support@des.qld.gov.au

Disclaimer

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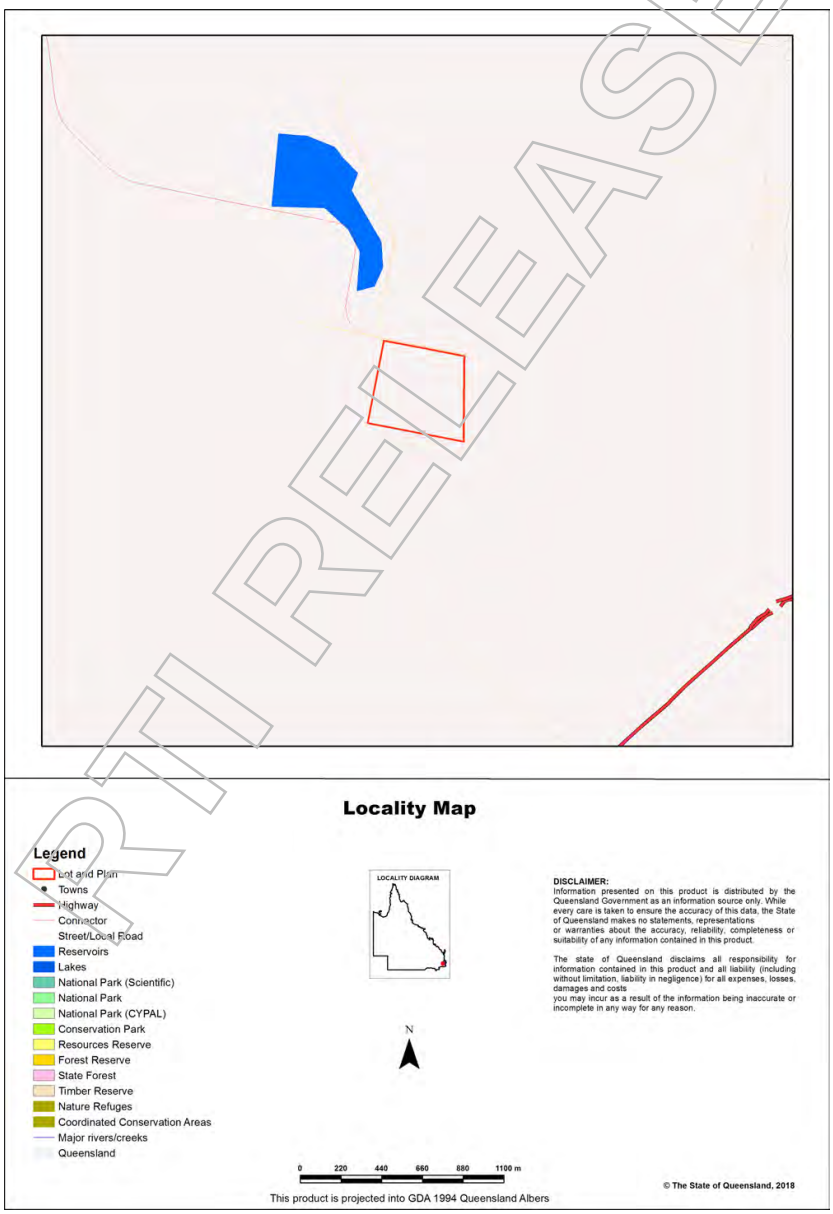
Table of Contents

Assessment Area Details

The following table provides an overview of the area of interest (AOI) with respect to selected topographic and environmental values.

Table 1: Summary table, details for AOI Lot: 101 Plan: RP839072

Size (ha)	21.95
Local Government(s)	Ipswich City
Bioregion(s)	Southeast Queensland
Subregion(s)	Moreton Basin
Catchment(s)	Brisbane



Matters of State Environmental Significance (MSES)

MSES Categories

Queensland's State Planning Policy (SPP) includes a biodiversity State interest that states:

'The sustainable, long-term conservation of biodiversity is supported. Significant impacts on matters of national or state environmental significance are avoided, or where this cannot be reasonably achieved; impacts are minimised and residual impacts offset.'

The MSES mapping product is a guide to assist planning and development assessment decision-making. Its primary purpose is to support implementation of the SPP biodiversity policy. While it supports the SPP, the mapping does not replace the regulatory mapping or environmental values specifically called up under other laws or regulations. Similarly, the SPP biodiversity policy does not override or replace specific requirements of other Acts or regulations.

The SPP defines matters of state environmental significance as:

- Protected areas (including all classes of protected area except coordinated conservation areas) under the *Nature Conservation Act 1992* ;

- Marine parks and land within a 'marine national park', 'conservation park', 'scientific research', 'preservation' or 'buffer' zone under the *Marine Parks Act 2004* ;

- Areas within declared fish habitat areas that are management A areas or management B areas under the Fisheries Regulation 2008;

- Threatened wildlife under the *Nature Conservation Act 1992* and special least concern animals under the Nature Conservation (Wildlife) Regulation 2006;

- Regulated vegetation under the *Vegetation Management Act 1999* that is:

    • Category B areas on the regulated vegetation management map, that are 'endangered' or 'of concern' regional ecosystems;

    • Category C areas on the regulated vegetation management map that are 'endangered' or 'of concern' regional ecosystems;

    • Category R areas on the regulated vegetation management map;

    • Regional ecosystems that intersect with watercourses identified on the vegetation management watercourse and drainage feature map;

    • Regional ecosystems that intersect with wetlands identified on the vegetation management wetlands map;

- Strategic Environmental Areas under the *Regional Planning Interests Act 2014* ;

- Wetlands in a wetland protection area of wetlands of high ecological significance shown on the Map of Referable Wetlands under the Environmental Protection Regulation 2008;

- Wetlands and watercourses in high ecological value waters defined in the Environmental Protection (Water) Policy 2009, schedule 2;

- Legally secured offset areas.

MSES Values Present

The MSES values that are present in the area of interest are summarised in the table below:

Table 2: Summary of MSES present within the AOI

1a Protected Areas- estates	0.0 ha	0.0 %
1b Protected Areas- nature refuges	0.0 ha	0.0 %
2 State Marine Parks- highly protected zones	0.0 ha	0.0 %
3 Fish habitat areas (A and B areas)	0.0 ha	0.0 %
4 Strategic Environmental Areas (SEA)	0.0 ha	0.0 %
5 High Ecological Significance wetlands on the map of Referable Wetlands	0.0 ha	0.0 %
6a High Ecological Value (HEV) wetlands	0.0 ha	0.0 %
6b High Ecological Value (HEV) waterways **	0.0 km	Not applicable
7 Threatened species and Iconic species	6.7 ha	30.5%
8a Regulated Vegetation - Endangered/Of concern in Category B (remnant)	0.0 ha	0.0 %
8b Regulated Vegetation - Endangered/Of concern in Category C (regrowth)	0.0 ha	0.0 %
8c Regulated Vegetation - Category R (GBR riverine regrowth)	0.0 ha	0.0 %
8d Regulated Vegetation - Essential habitat	0.0 ha	0.0 %
8e Regulated Vegetation - intersecting a watercourse **	0.9 km	Not applicable
8f Regulated Vegetation - within 100m of a Vegetation Management Wetland	0.0 ha	0.0 %
9a Legally secured offset areas- offset register areas	0.0 ha	0.0 %
9b Legally secured offset areas- vegetation offsets through a Property Map of Assessable Vegetation	0.0 ha	0.0 %

Additional Information with Respect to MSES Values Present

MSES - State Conservation Areas

1a. Protected Areas - estates

(no results)

1b. Protected Areas - nature refuges

(no results)

2. State Marine Parks - highly protected zones

(no results)

3. Fish habitat areas (A and B areas)

(no results)

Refer to **Map 1 - MSES - State Conservation Areas** for an overview of the relevant MSES.

MSES - Wetlands and Waterways

4. Strategic Environmental Areas (SEA)

(no results)

5. High Ecological Significance wetlands on the Map of Referable Wetlands

(no results)

6a. High Ecological Value (HEV) waters - wetlands

(no results)

6b. High Ecological Value (HEV) waters - waterways

(no results)

Refer to **Map 2 - MSES - Wetlands and Waterways** for an overview of the relevant MSES.

MSES - Species

7. Threatened wildlife and special least concern animal

Threatened species and iconic species	Act	Species least concern animal	Koala Bushland Habitat	Dugong Protection	VMA Essential 2014 Habitat
Threat wildlife & Spec LeastC animals	NCA	None	Koala Bushland	None	None

Threatened and special least concern species records

Scientific name	Common name	NCA status	EPBC status
Tachyglossus aculeatus	short-beaked echidna	SL	None

Note: The Threatened and Special Least Concern Animal (7) layer originates from the previous MSES version (4.1, dated at 2014). The layer does not represent all currently listed species and is subject to review.

**Nature Conservation Act 1992 (NCA) Status- Endangered (E), Vulnerable (V) or Special Least Concern Animal (SL). Environment Protection and Biodiversity Conservation Act 1999 (EPBC) status: Critically Endangered (CE) Endangered (E), Vulnerable (V)*

To request a species list for an area, or search for a species profile, access Wildlife Online at:
https://www.qld.gov.au/environment/plants-animals/species-list/

Refer to **Map 3 - MSES - Species** for an overview of the relevant MSES.

MSES - Regulated Vegetation

8a. Regulated Vegetation - Endangered/Of concern in Category B (remnant)

Not applicable

8b. Regulated Vegetation - Endangered/Of concern in Category C (regrowth)

Not applicable

For further information relating to regional ecosystems in general, go to:
https://www.qld.gov.au/environment/plants-animals/plants/ecosystems/
For a more detailed description of a particular regional ecosystem, access the regional ecosystem search page at:
https://environment.ehp.qld.gov.au/regional-ecosystems/

8c. Regulated Vegetation - Category R (GBR riverine regrowth)

Not applicable

8d. Regulated Vegetation - Essential habitat

Not applicable

8e. Regulated Vegetation - intersecting a watercourse**

A vegetation management watercourse is mapped as present

8f. Regulated Vegetation - within 100m of a Vegetation Management wetland

Not applicable

Refer to **Map 4 - MSES - Regulated Vegetation** for an overview of the relevant MSES.

MSES - Offsets

9a. Legally secured offset areas - offset register areas

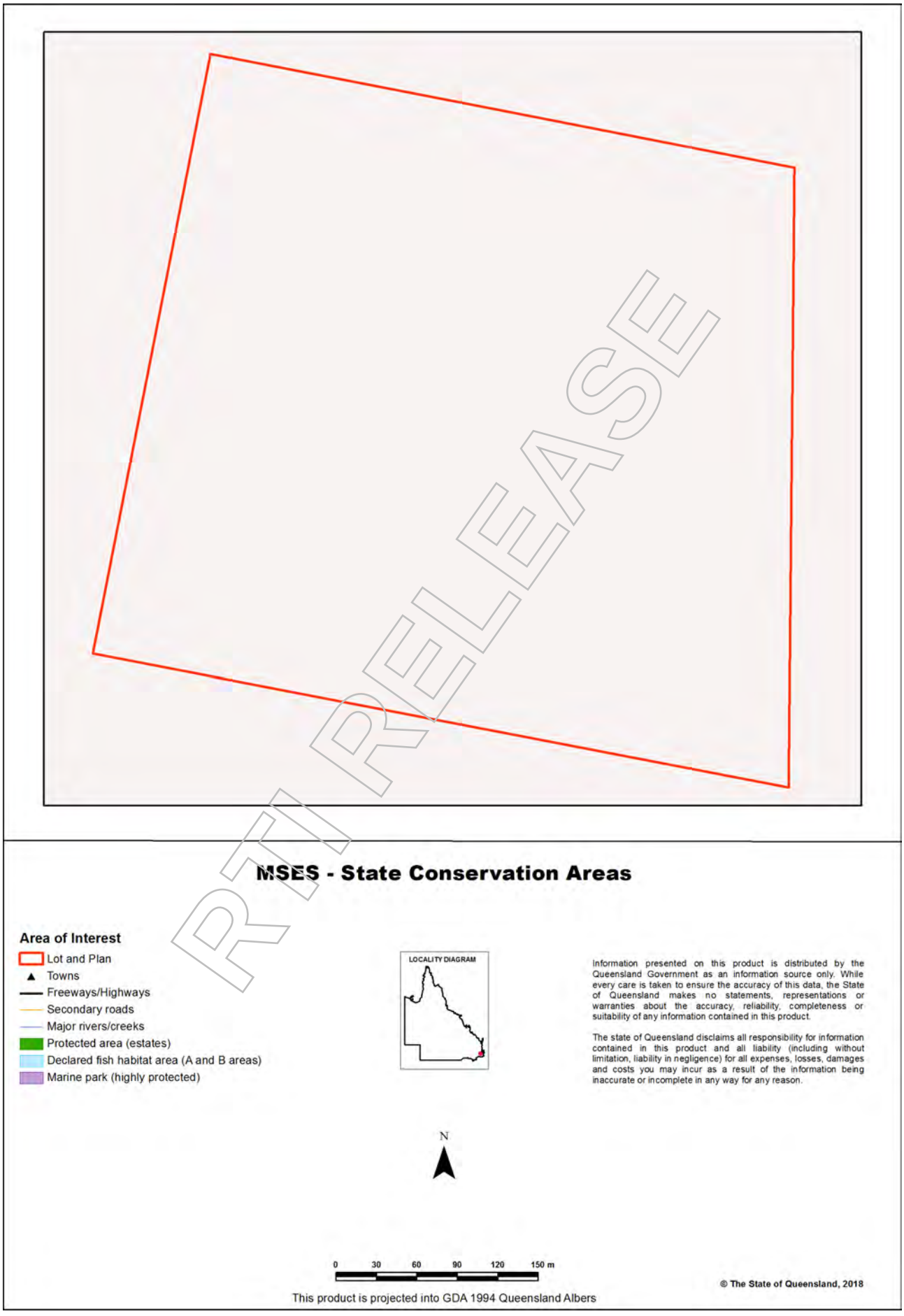
(no results)

9b. Legally secured offset areas - vegetation offsets through a Property Map of Assessable Vegetation

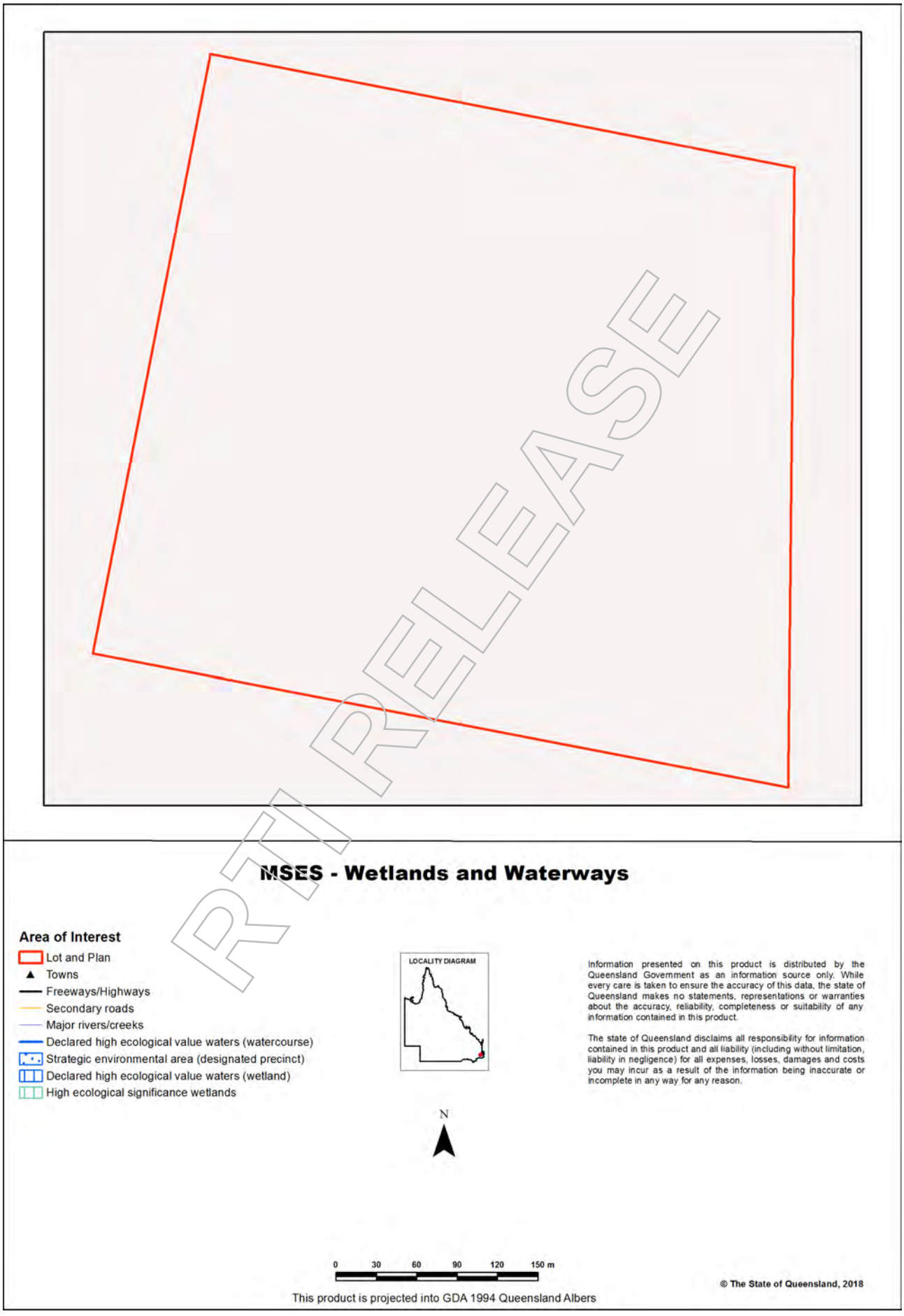
(no results)

Refer to **Map 5 - MSES - Offset Areas** for an overview of the relevant MSES.

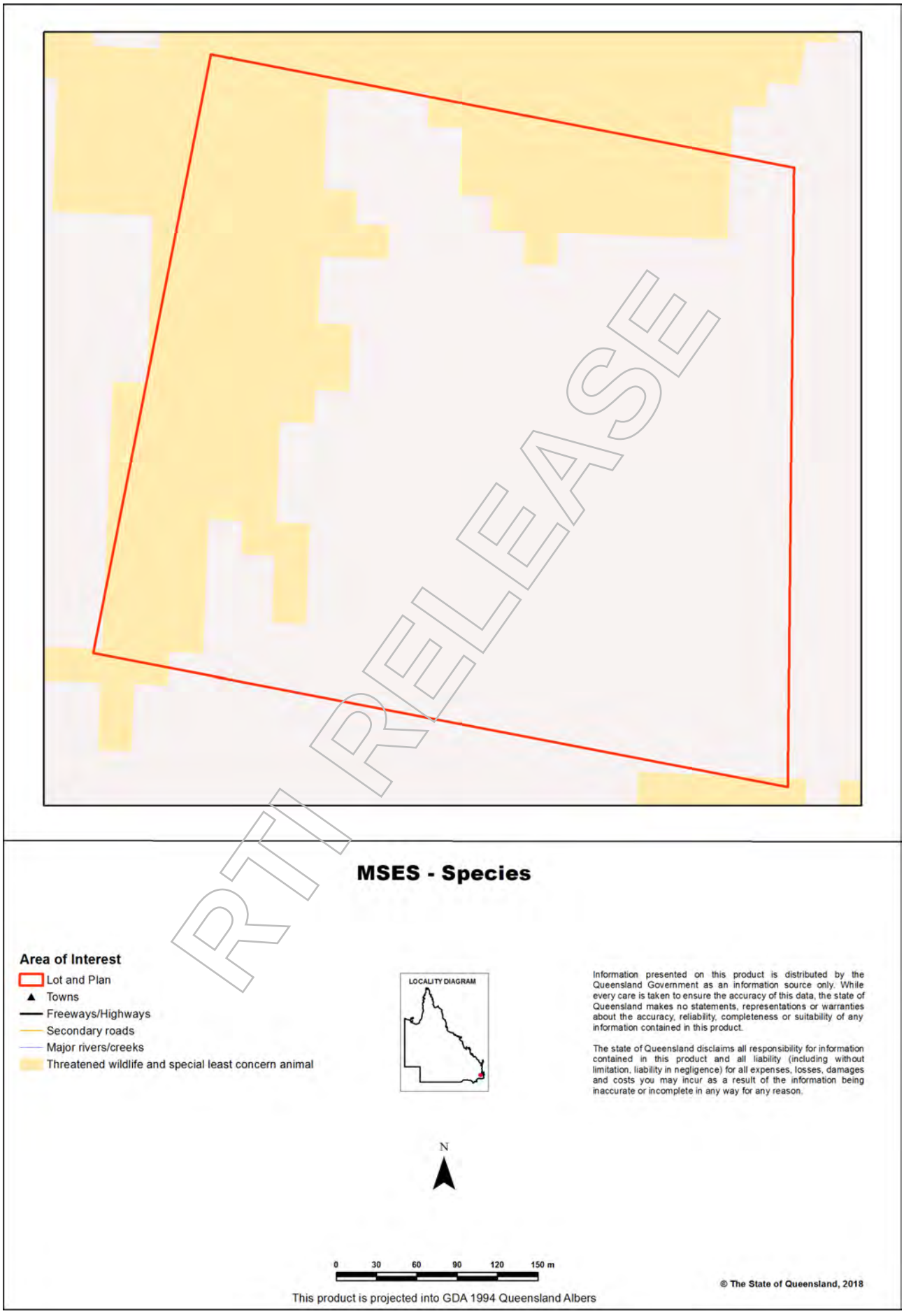
Map 1 - MSES - State Conservation Areas



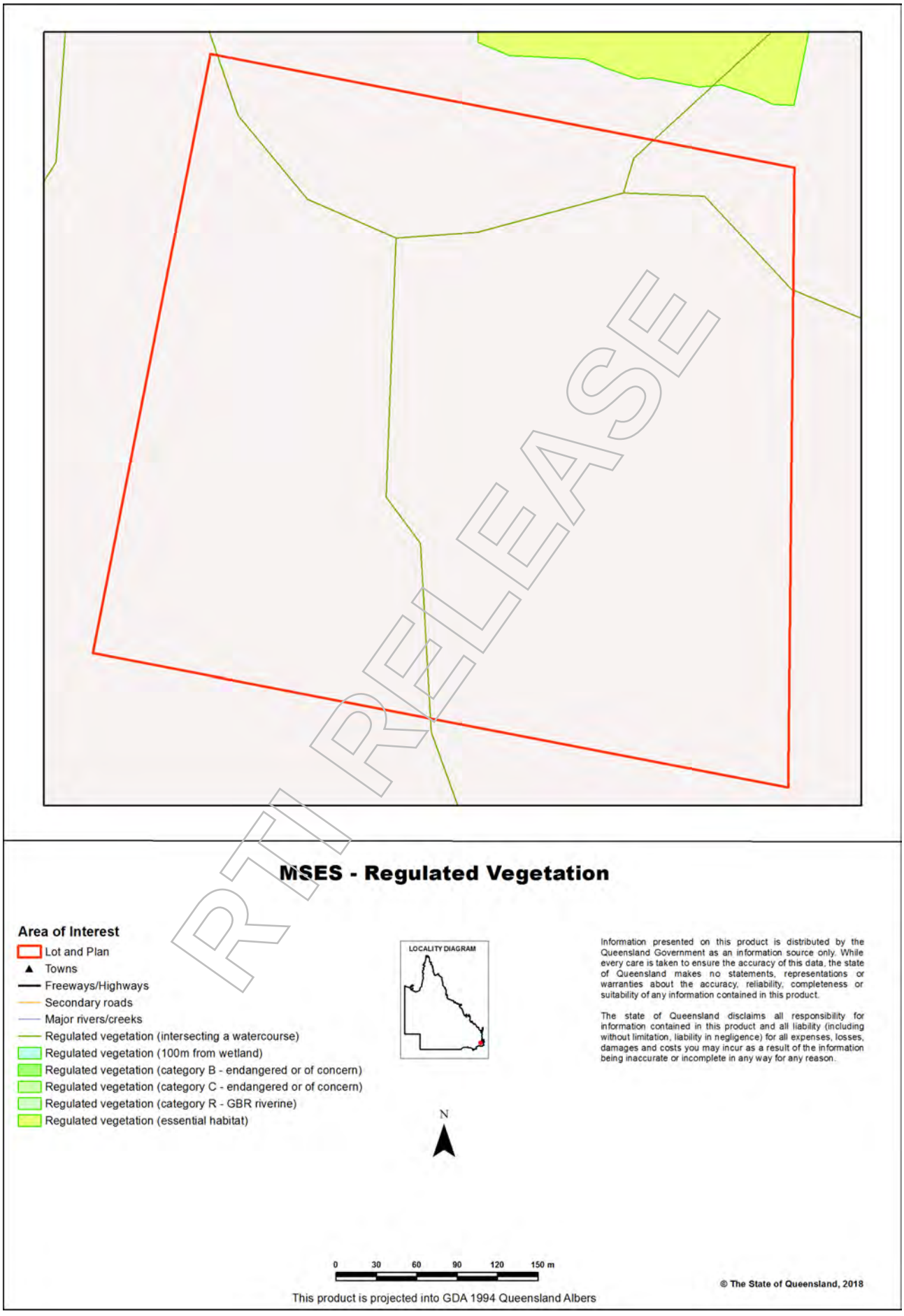
Map 2 - MSES - Wetlands and Waterways



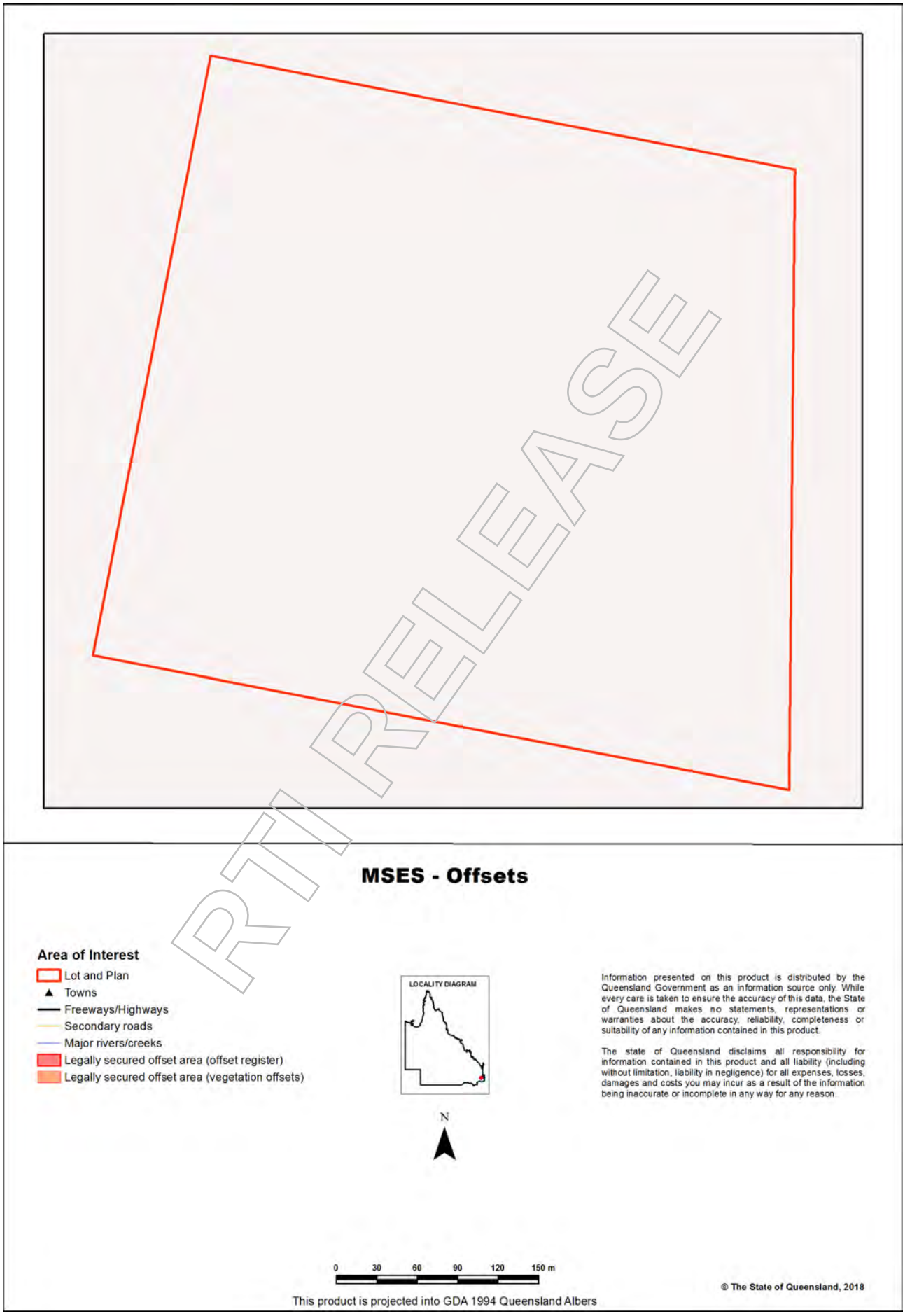
Map 3 - MSES - Species



Map 4 - MSES - Regulated Vegetation



Map 5 - MSES - Offset Areas



Appendices

Appendix 1 - Matters of State Environmental Significance (MSES) methodology

MSES mapping is a regional-scale representation of the definition for MSES under the State Planning Policy (SPP). The compiled MSES mapping product is a guide to assist planning and development assessment decision-making. Its primary purpose is to support implementation of the SPP biodiversity policy. While it supports the SPP, the mapping does not replace the regulatory mapping or environmental values specifically called up under other laws or regulations. Similarly, the SPP biodiversity policy does not override or replace specific requirements of other Acts or regulations.

The Queensland Government's "Method for mapping - matters of state environmental significance for use in land use planning and development assessment" can be downloaded from:

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- Matters of State environmental significance

Note: MSES mapping is not based on new or unique data. The primary mapping product draws data from a number of underlying environment databases and geo-referenced information sources. MSES mapping is a versioned product that is updated generally on a twice-yearly basis to incorporate the changes to underlying data sources. Several components of MSES mapping made for the current version may differ from the current underlying data sources. To ensure accuracy, or proper representation of MSES values, it is strongly recommended that users refer to the underlying data sources and review the current definition of MSES in the State Planning Policy, before applying the MSES mapping.

Individual MSES layers can be attributed to the following source data available at QSpatial:

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wetlands in HEV waters	HEV waters: - EPP Water (multiple locations) intent for waters Source Wetlands: - Queensland Wetland Mapping (Current version 4, 2015) Source Watercourses: - Vegetation management watercourse and drainage feature map (1:100000 and 1:250000) - latest version 1.4
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GEM	- General Environmental Matters
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MSES	- Matters of State Environmental Significance
NCA	- *Nature Conservation Act 1992*
RE	- Regional Ecosystem
SPP	- State Planning Policy
VMA	- *Vegetation Management Act 1999*

Queensland Government

Department of Environment and Science

Environmental Reports

Matters of State Environmental Significance

For the selected area of interest
Lot: 102 Plan: RP839072

Environmental Reports - General Information

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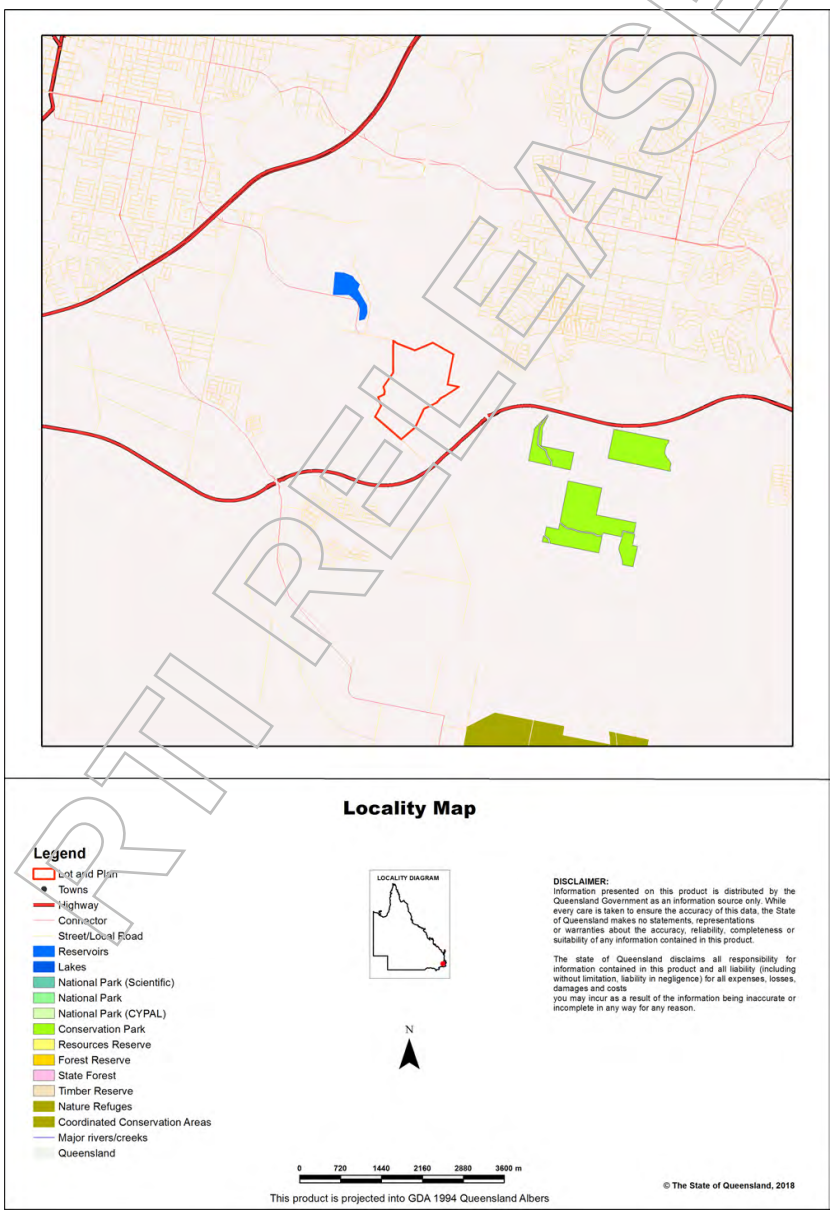
Table of Contents

Assessment Area Details

The following table provides an overview of the area of interest (AOI) with respect to selected topographic and environmental values.

Table 1: Summary table, details for AOI Lot: 102 Plan: RP839072

Size (ha)	143.21
Local Government(s)	Ipswich City
Bioregion(s)	Southeast Queensland
Subregion(s)	Moreton Basin
Catchment(s)	Brisbane



Matters of State Environmental Significance (MSES)

MSES Categories

Queensland's State Planning Policy (SPP) includes a biodiversity State interest that states:

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The SPP defines matters of state environmental significance as:

- Protected areas (including all classes of protected area except coordinated conservation areas) under the *Nature Conservation Act 1992* ;

- Marine parks and land within a 'marine national park', 'conservation park', 'scientific research', 'preservation' or 'buffer' zone under the *Marine Parks Act 2004* ;

- Areas within declared fish habitat areas that are management A areas or management B areas under the Fisheries Regulation 2008;

- Threatened wildlife under the *Nature Conservation Act 1992* and special least concern animals under the Nature Conservation (Wildlife) Regulation 2006;

- Regulated vegetation under the *Vegetation Management Act 1999* that is:

  • Category B areas on the regulated vegetation management map, that are 'endangered' or 'of concern' regional ecosystems;

  • Category C areas on the regulated vegetation management map that are 'endangered' or 'of concern' regional ecosystems;

  • Category R areas on the regulated vegetation management map;

  • Regional ecosystems that intersect with watercourses identified on the vegetation management watercourse and drainage feature map;

  • Regional ecosystems that intersect with wetlands identified on the vegetation management wetlands map;

- Strategic Environmental Areas under the *Regional Planning Interests Act 2014* ;

- Wetlands in a wetland protection area of wetlands of high ecological significance shown on the Map of Referable Wetlands under the Environmental Protection Regulation 2008;

- Wetlands and watercourses in high ecological value waters defined in the Environmental Protection (Water) Policy 2009, schedule 2;

- Legally secured offset areas.

MSES Values Present

The MSES values that are present in the area of interest are summarised in the table below:

Table 2: Summary of MSES present within the AOI

1a Protected Areas- estates	0.0 ha	0.0 %
1b Protected Areas- nature refuges	0.0 ha	0.0 %
2 State Marine Parks- highly protected zones	0.0 ha	0.0 %
3 Fish habitat areas (A and B areas)	0.0 ha	0.0 %
4 Strategic Environmental Areas (SEA)	0.0 ha	0.0 %
5 High Ecological Significance wetlands on the map of Referable Wetlands	0.0 ha	0.0 %
6a High Ecological Value (HEV) wetlands	0.0 ha	0.0 %
6b High Ecological Value (HEV) waterways **	0.0 km	Not applicable
7 Threatened species and Iconic species	24.51 ha	17.1%
8a Regulated Vegetation - Endangered/Of concern in Category B (remnant)	19.68 ha	13.7%
8b Regulated Vegetation - Endangered/Of concern in Category C (regrowth)	0.0 ha	0.0 %
8c Regulated Vegetation - Category R (GBR riverine regrowth)	0.0 ha	0.0 %
8d Regulated Vegetation - Essential habitat	19.68 ha	13.7%
8e Regulated Vegetation - intersecting a watercourse **	4.2 km	Not applicable
8f Regulated Vegetation - within 100m of a Vegetation Management Wetland	0.0 ha	0.0 %
9a Legally secured offset areas- offset register areas	0.0 ha	0.0 %
9b Legally secured offset areas- vegetation offsets through a Property Map of Assessable Vegetation	0.0 ha	0.0 %

Additional Information with Respect to MSES Values Present

MSES - State Conservation Areas

1a. Protected Areas - estates

(no results)

1b. Protected Areas - nature refuges

(no results)

2. State Marine Parks - highly protected zones

(no results)

3. Fish habitat areas (A and B areas)

(no results)

Refer to **Map 1 - MSES - State Conservation Areas** for an overview of the relevant MSES.

MSES - Wetlands and Waterways

4. Strategic Environmental Areas (SEA)

(no results)

5. High Ecological Significance wetlands on the Map of Referable Wetlands

(no results)

6a. High Ecological Value (HEV) waters - wetlands

(no results)

6b. High Ecological Value (HEV) waters - waterways

(no results)

Refer to **Map 2 - MSES - Wetlands and Waterways** for an overview of the relevant MSES.

MSES - Species

7. Threatened wildlife and special least concern animal

Threatened species and iconic species	Act	Species least concern animal	Koala Bushland Habitat	Dugong Protection	VMA Essential 2014 Habitat
Threat wildlife & Spec LeastC animals	NCA	None	Koala Bushland	None	None

Threatened species and iconic species	Act	Species least concern animal	Koala Bushland Habitat	Dugong Protection	VMA Essential 2014 Habitat
Threat wildlife & Spec LeastC animals	NCA, VMA	Echidna	Koala Bushland	None	Essential
Threat wildlife & Spec LeastC animals	NCA, VMA	None	None	None	Essential
Threat wildlife & Spec LeastC animals	NCA, VMA	Echidna	None	None	Essential
Threat wildlife & Spec LeastC animals	NCA, VMA	None	Koala Bushland	None	Essential

Threatened and special least concern species records

Scientific name	Common name	NCA status	EPBC status
Tachyglossus aculeatus	short-beaked echidna	SL	None
Marsdenia coronata	slender milkvine	V	None

Note: The Threatened and Special Least Concern Animal (7) layer originates from the previous MSES version (4.1, dated at 2014). The layer does not represent all currently listed species and is subject to review.

**Nature Conservation Act 1992 (NCA) Status- Endangered (E), Vulnerable (V) or Special Least Concern Animal (SL). Environment Protection and Biodiversity Conservation Act 1999 (EPBC) status: Critically Endangered (CE) Endangered (E), Vulnerable (V)*

To request a species list for an area, or search for a species profile, access Wildlife Online at:
https://www.qld.gov.au/environment/plants-animals/species-list/

Refer to **Map 3 - MSES - Species** for an overview of the relevant MSES.

MSES - Regulated Vegetation

8a. Regulated Vegetation - Endangered/Of concern in Category B (remnant)

Regional ecosystem	Vegetation management polygon	Vegetation management status
12.9-10.2/12.9-10.7/12.9-10.19	O-subdom	rem_oc

8b. Regulated Vegetation - Endangered/Of concern in Category C (regrowth)

Not applicable

For further information relating to regional ecosystems in general, go to:
https://www.qld.gov.au/environment/plants-animals/plants/ecosystems/
For a more detailed description of a particular regional ecosystem, access the regional ecosystem search page at:
https://environment.ehp.qld.gov.au/regional-ecosystems/

8c. Regulated Vegetation - Category R (GBR riverine regrowth)

Not applicable

8d. Regulated Vegetation - Essential habitat

Values are present

8e. Regulated Vegetation - intersecting a watercourse**

A vegetation management watercourse is mapped as present

8f. Regulated Vegetation - within 100m of a Vegetation Management wetland

Not applicable

Refer to **Map 4 - MSES - Regulated Vegetation** for an overview of the relevant MSES.

MSES - Offsets

9a. Legally secured offset areas - offset register areas

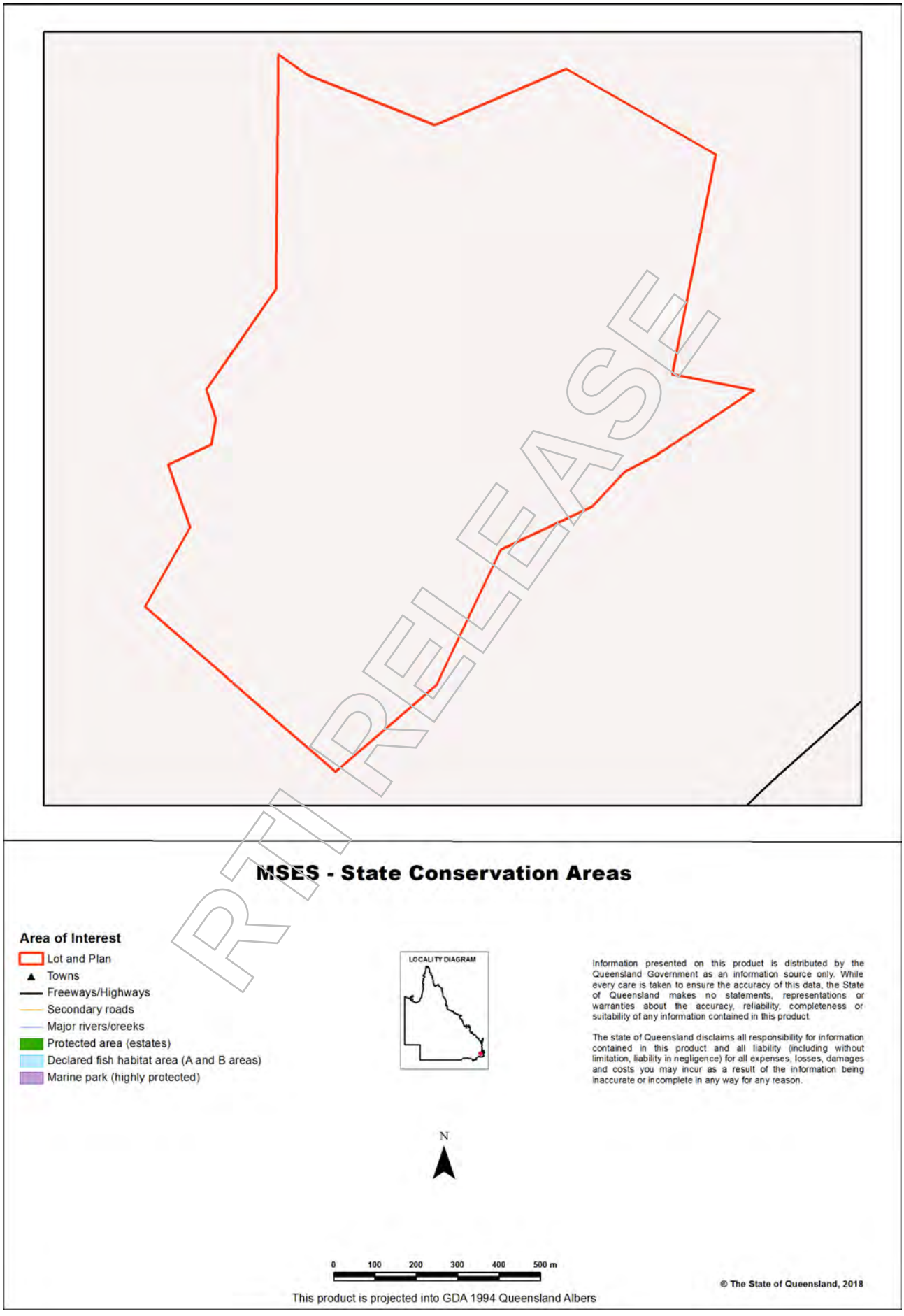
(no results)

9b. Legally secured offset areas - vegetation offsets through a Property Map of Assessable Vegetation

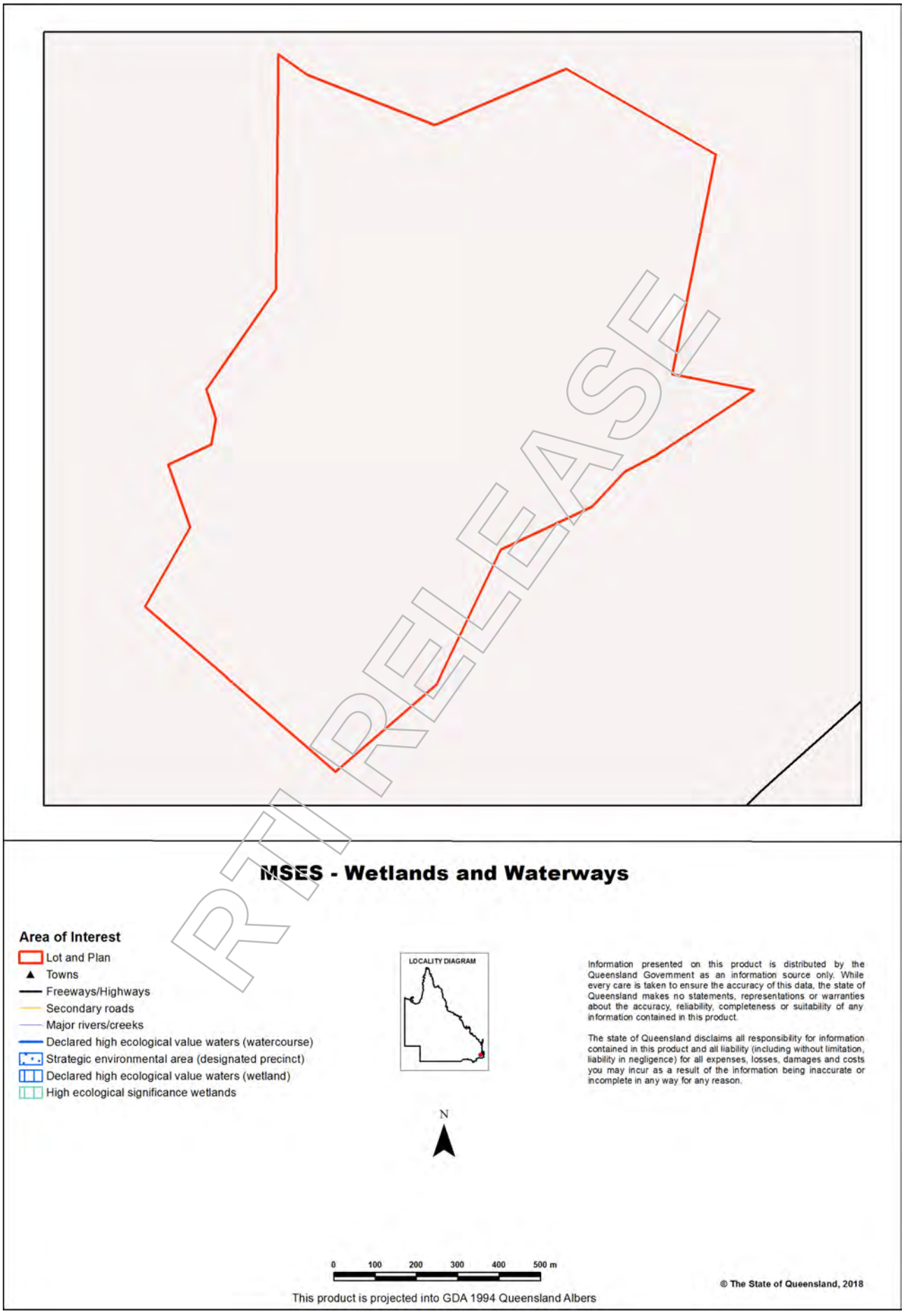
(no results)

Refer to **Map 5 - MSES - Offset Areas** for an overview of the relevant MSES.

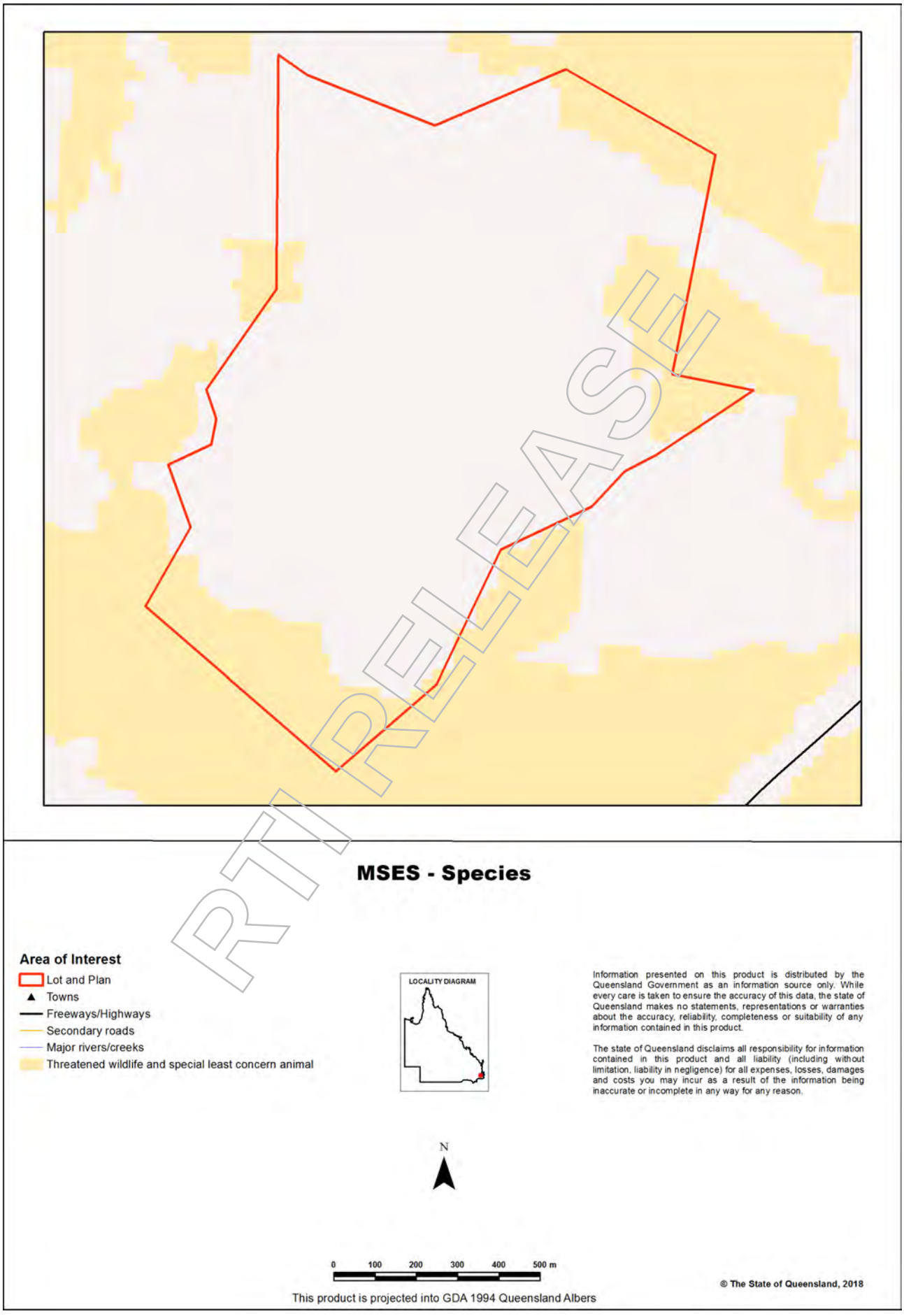
Map 1 - MSES - State Conservation Areas



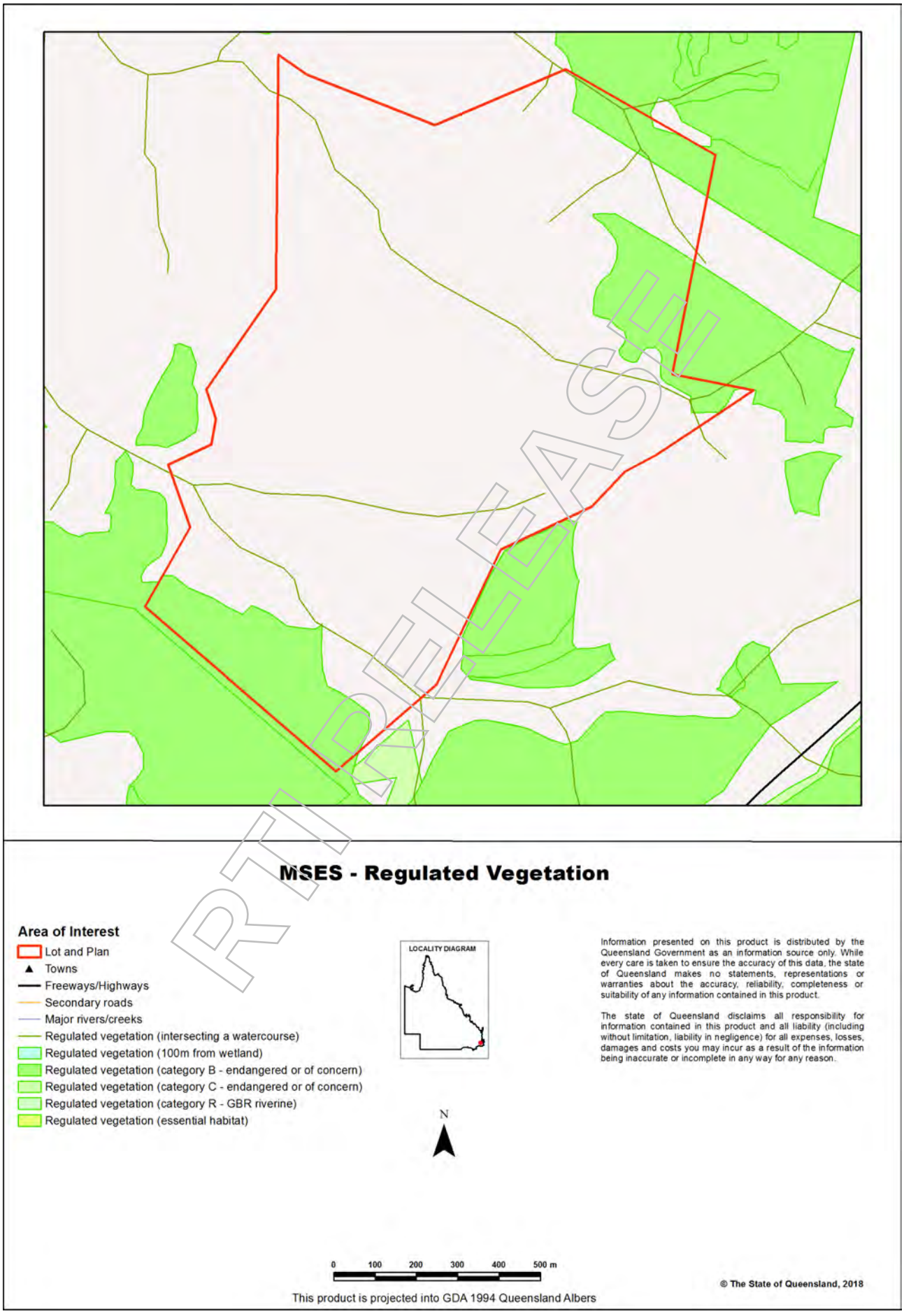
Map 2 - MSES - Wetlands and Waterways



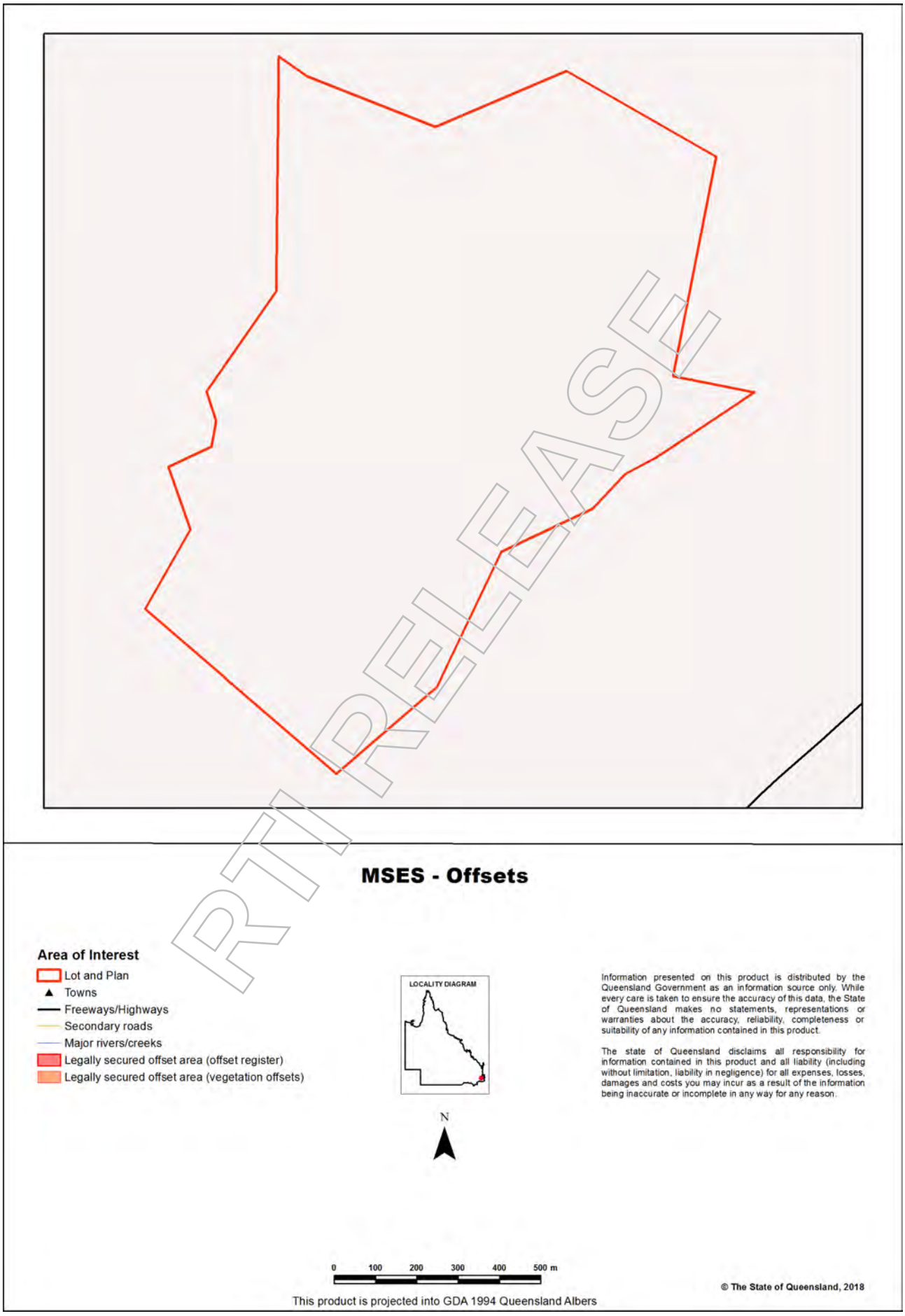
Map 3 - MSES - Species



Map 4 - MSES - Regulated Vegetation



Map 5 - MSES - Offset Areas



Appendices

Appendix 1 - Matters of State Environmental Significance (MSES) methodology

MSES mapping is a regional-scale representation of the definition for MSES under the State Planning Policy (SPP). The compiled MSES mapping product is a guide to assist planning and development assessment decision-making. Its primary purpose is to support implementation of the SPP biodiversity policy. While it supports the SPP, the mapping does not replace the regulatory mapping or environmental values specifically called up under other laws or regulations. Similarly, the SPP biodiversity policy does not override or replace specific requirements of other Acts or regulations.

The Queensland Government's "Method for mapping - matters of state environmental significance for use in land use planning and development assessment" can be downloaded from:

http://www.ehp.qld.gov.au/land/natural-resource/method-mapping-mses.html .

Appendix 2 - Source Data

The datasets listed below are available on request from:

http://qldspatial.information.qld.gov.au/catalogue/custom/index.page

- Matters of State environmental significance

Note: MSES mapping is not based on new or unique data. The primary mapping product draws data from a number of underlying environment databases and geo-referenced information sources. MSES mapping is a versioned product that is updated generally on a twice-yearly basis to incorporate the changes to underlying data sources. Several components of MSES mapping made for the current version may differ from the current underlying data sources. To ensure accuracy, or proper representation of MSES values, it is strongly recommended that users refer to the underlying data sources and review the current definition of MSES in the State Planning Policy, before applying the MSES mapping.

Individual MSES layers can be attributed to the following source data available at QSpatial:

MSES layers	**current QSpatial data (http://qspatial.information.qld.gov.au)**
Protected Areas-Estates and Nature Refuges	- Protected areas of Queensland - Nature Refuges - Queensland
Marine Park-Highly Protected Zones	Moreton Bay marine park zoning 2008
Fish Habitat Areas	Queensland fish habitat areas
Strategic Environmental Areas-designated	Regional Planning Interests Act - Strategic Environmental Areas
HES wetlands	Map of Referable Wetland - wetland layers: - Wetland management area wetlands - Wetland protection area wetlands
wetlands in HEV waters	HEV waters: - EPP Water (multiple locations) intent for waters Source Wetlands: - Queensland Wetland Mapping (Current version 4, 2015) Source Watercourses: - Vegetation management watercourse and drainage feature map (1:100000 and 1:250000) - latest version 1.4
Wildlife habitat (threatened and special least concern)	-WildNet database species records - habitat suitability models (various)
VMA regulated regional ecosystems	Vegetation management regional ecosystem and remnant map - latest version 8.0
VMA Essential Habitat	Vegetation management - essential habitat map - latest version 4.41
VMA Wetlands	Vegetation management wetlands map - latest version 2.41
Legally secured offsets	Vegetation Management Act property maps of assessable vegetation. For offset register data-contact DES
Regulated Vegetation Map	Vegetation management - regulated vegetation management map - latest version 1.41

Appendix 3 - Acronyms and Abbreviations

AOI	- Area of Interest
DES	- Department of Environment and Science
EP Act	- *Environmental Protection Act 1994*
EPP	- Environmental Protection Policy
GDA94	- Geocentric Datum of Australia 1994
GEM	- General Environmental Matters
GIS	- Geographic Information System
MSES	- Matters of State Environmental Significance
NCA	- *Nature Conservation Act 1992*
RE	- Regional Ecosystem
SPP	- State Planning Policy
VMA	- *Vegetation Management Act 1999*

Queensland Government

Department of Environment and Science

Environmental Reports

Matters of State Environmental Significance

For the selected area of interest
Lot: 103 Plan: SP189609

Environmental Reports - General Information

The Environmental Reports portal provides for the assessment of selected matters of interest relevant to a user specified location, or area of interest (AOI). All area and derivative figures are relevant to the extent of matters of interest contained within the AOI unless otherwise stated. Please note, if a user selects an AOI via the "central coordinates" option, the resulting assessment area encompasses an area extending for a 2km radius from the point of interest.

All area and area derived figures included in this report have been calculated via reprojecting relevant spatial features to Albers equal-area conic projection (central meridian = 146, datum Geocentric Datum of Australia 1994). As a result, area figures may differ slightly if calculated for the same features using a different co-ordinate system.

Figures in tables may be affected by rounding.

The matters of interest reported on in this document are based upon available state mapped datasets. Where the report indicates that a matter of interest is not present within the AOI (e.g. where area related calculations are equal to zero, or no values are listed), this may be due either to the fact that state mapping has not been undertaken for the AOI, that state mapping is incomplete for the AOI, or that no values have been identified within the site.

The information presented in this report should be considered as a guide only and field survey may be required to validate values on the ground.

Please direct queries about these reports to: Planning.Support@des.qld.gov.au

Disclaimer

Whilst every care is taken to ensure the accuracy of the information provided in this report, the Queensland Government makes no representations or warranties about its accuracy, reliability, completeness, or suitability, for any particular purpose and disclaims all responsibility and all liability (including without limitation, liability in negligence) for all expenses, losses, damages (including indirect or consequential damage) and costs which the user may incur as a consequence of the information being inaccurate or incomplete in any way and for any reason.

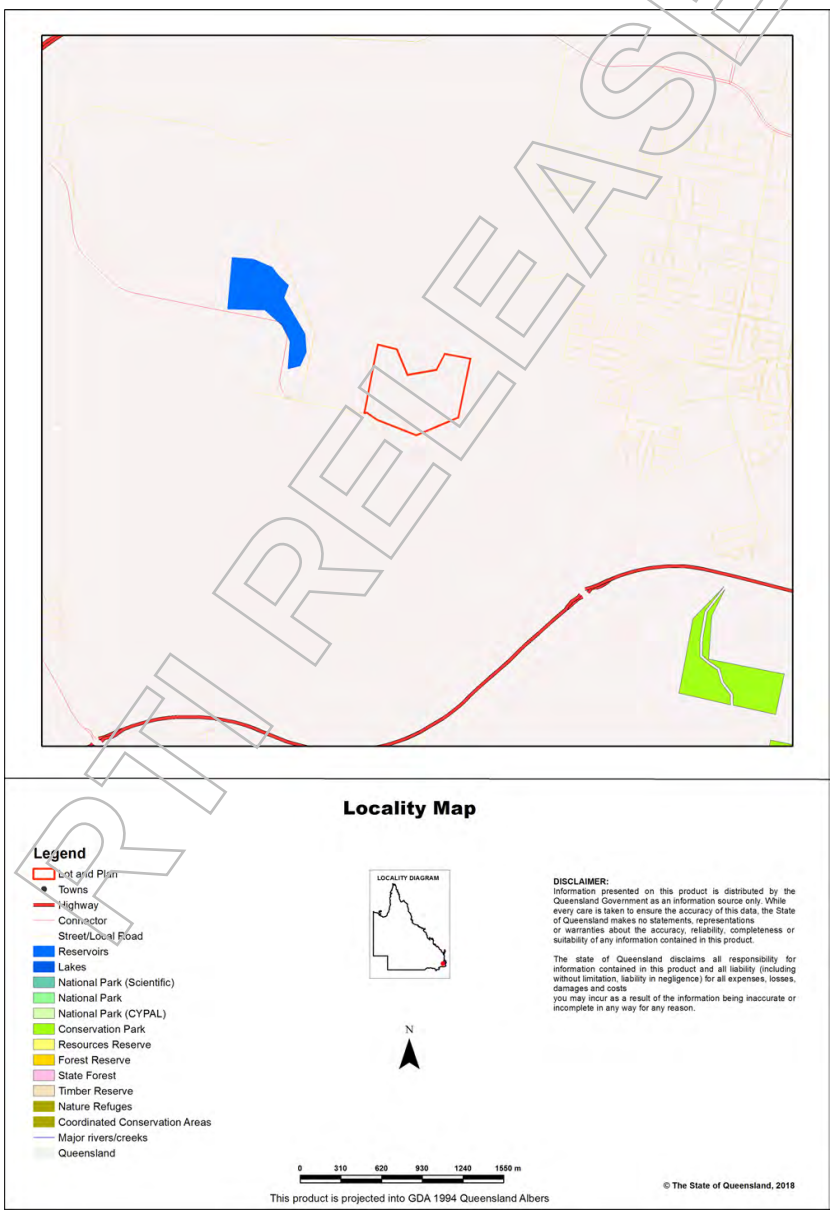
Table of Contents

Assessment Area Details

The following table provides an overview of the area of interest (AOI) with respect to selected topographic and environmental values.

Table 1: Summary table, details for AOI Lot: 103 Plan: SP189609

Size (ha)	35.84
Local Government(s)	Ipswich City
Bioregion(s)	Southeast Queensland
Subregion(s)	Moreton Basin
Catchment(s)	Brisbane



Matters of State Environmental Significance (MSES)

MSES Categories

Queensland's State Planning Policy (SPP) includes a biodiversity State interest that states:

'The sustainable, long-term conservation of biodiversity is supported. Significant impacts on matters of national or state environmental significance are avoided, or where this cannot be reasonably achieved; impacts are minimised and residual impacts offset.'

The MSES mapping product is a guide to assist planning and development assessment decision-making. Its primary purpose is to support implementation of the SPP biodiversity policy. While it supports the SPP, the mapping does not replace the regulatory mapping or environmental values specifically called up under other laws or regulations. Similarly, the SPP biodiversity policy does not override or replace specific requirements of other Acts or regulations.

The SPP defines matters of state environmental significance as:

- Protected areas (including all classes of protected area except coordinated conservation areas) under the *Nature Conservation Act 1992* ;

- Marine parks and land within a 'marine national park', 'conservation park', 'scientific research', 'preservation' or 'buffer' zone under the *Marine Parks Act 2004* ;

- Areas within declared fish habitat areas that are management A areas or management B areas under the Fisheries Regulation 2008;

- Threatened wildlife under the *Nature Conservation Act 1992* and special least concern animals under the Nature Conservation (Wildlife) Regulation 2006;

- Regulated vegetation under the *Vegetation Management Act 1999* that is:

    • Category B areas on the regulated vegetation management map, that are 'endangered' or 'of concern' regional ecosystems;

    • Category C areas on the regulated vegetation management map that are 'endangered' or 'of concern' regional ecosystems;

    • Category R areas on the regulated vegetation management map;

    • Regional ecosystems that intersect with watercourses identified on the vegetation management watercourse and drainage feature map;

    • Regional ecosystems that intersect with wetlands identified on the vegetation management wetlands map;

- Strategic Environmental Areas under the *Regional Planning Interests Act 2014* ;

- Wetlands in a wetland protection area of wetlands of high ecological significance shown on the Map of Referable Wetlands under the Environmental Protection Regulation 2008;

- Wetlands and watercourses in high ecological value waters defined in the Environmental Protection (Water) Policy 2009, schedule 2;

- Legally secured offset areas.

MSES Values Present

The MSES values that are present in the area of interest are summarised in the table below:

Table 2: Summary of MSES present within the AOI

1a Protected Areas- estates	0.0 ha	0.0 %
1b Protected Areas- nature refuges	0.0 ha	0.0 %
2 State Marine Parks- highly protected zones	0.0 ha	0.0 %
3 Fish habitat areas (A and B areas)	0.0 ha	0.0 %
4 Strategic Environmental Areas (SEA)	0.0 ha	0.0 %
5 High Ecological Significance wetlands on the map of Referable Wetlands	0.0 ha	0.0 %
6a High Ecological Value (HEV) wetlands	0.0 ha	0.0 %
6b High Ecological Value (HEV) waterways **	0.0 km	Not applicable
7 Threatened species and Iconic species	6.39 ha	17.8%
8a Regulated Vegetation - Endangered/Of concern in Category B (remnant)	2.63 ha	7.3%
8b Regulated Vegetation - Endangered/Of concern in Category C (regrowth)	0.0 ha	0.0 %
8c Regulated Vegetation - Category R (GBR riverine regrowth)	0.0 ha	0.0 %
8d Regulated Vegetation - Essential habitat	2.63 ha	7.3%
8e Regulated Vegetation - intersecting a watercourse **	1.3 km	Not applicable
8f Regulated Vegetation - within 100m of a Vegetation Management Wetland	0.0 ha	0.0 %
9a Legally secured offset areas- offset register areas	0.0 ha	0.0 %
9b Legally secured offset areas- vegetation offsets through a Property Map of Assessable Vegetation	0.0 ha	0.0 %

Additional Information with Respect to MSES Values Present

MSES - State Conservation Areas

1a. Protected Areas - estates

(no results)

1b. Protected Areas - nature refuges

(no results)

2. State Marine Parks - highly protected zones

(no results)

3. Fish habitat areas (A and B areas)

(no results)

Refer to **Map 1 - MSES - State Conservation Areas** for an overview of the relevant MSES.

MSES - Wetlands and Waterways

4. Strategic Environmental Areas (SEA)

(no results)

5. High Ecological Significance wetlands on the Map of Referable Wetlands

(no results)

6a. High Ecological Value (HEV) waters - wetlands

(no results)

6b. High Ecological Value (HEV) waters - waterways

(no results)

Refer to **Map 2 - MSES - Wetlands and Waterways** for an overview of the relevant MSES.

MSES - Species

7. Threatened wildlife and special least concern animal

Threatened species and iconic species	Act	Species least concern animal	Koala Bushland Habitat	Dugong Protection	VMA Essential 2014 Habitat
Threat wildlife & Spec LeastC animals	NCA	None	Koala Bushland	None	None

Threatened species and iconic species	Act	Species least concern animal	Koala Bushland Habitat	Dugong Protection	VMA Essential 2014 Habitat
Threat wildlife & Spec LeastC animals	NCA, VMA	None	Koala Bushland	None	Essential
Threat wildlife & Spec LeastC animals	NCA, VMA	None	None	None	Essential

Threatened and special least concern species records

Scientific name	Common name	NCA status	EPBC status
Tachyglossus aculeatus	short-beaked echidna	SL	None
Marsdenia coronata	slender milkvine	V	None

Note: The Threatened and Special Least Concern Animal (7) layer originates from the previous MSES version (4.1, dated at 2014). The layer does not represent all currently listed species and is subject to review.

**Nature Conservation Act 1992 (NCA) Status- Endangered (E), Vulnerable (V) or Special Least Concern Animal (SL). Environment Protection and Biodiversity Conservation Act 1999 (EPBC) status: Critically Endangered (CE) Endangered (E), Vulnerable (V)*

To request a species list for an area, or search for a species profile, access Wildlife Online at:
https://www.qld.gov.au/environment/plants-animals/species-list/

Refer to **Map 3 - MSES - Species** for an overview of the relevant MSES.

MSES - Regulated Vegetation

8a. Regulated Vegetation - Endangered/Of concern in Category B (remnant)

Regional ecosystem	Vegetation management polygon	Vegetation management status
12.9-10.2/12.9-10.7/12.9-10.19	O-subdom	rem_oc

8b. Regulated Vegetation - Endangered/Of concern in Category C (regrowth)

Not applicable

For further information relating to regional ecosystems in general, go to:
https://www.qld.gov.au/environment/plants-animals/plants/ecosystems/
For a more detailed description of a particular regional ecosystem, access the regional ecosystem search page at:
https://environment.ehp.qld.gov.au/regional-ecosystems/

8c. Regulated Vegetation - Category R (GBR riverine regrowth)

Not applicable

8d. Regulated Vegetation - Essential habitat

Values are present

8e. Regulated Vegetation - intersecting a watercourse**

A vegetation management watercourse is mapped as present

8f. Regulated Vegetation - within 100m of a Vegetation Management wetland

Not applicable

Refer to **Map 4 - MSES - Regulated Vegetation** for an overview of the relevant MSES.

MSES - Offsets

9a. Legally secured offset areas - offset register areas

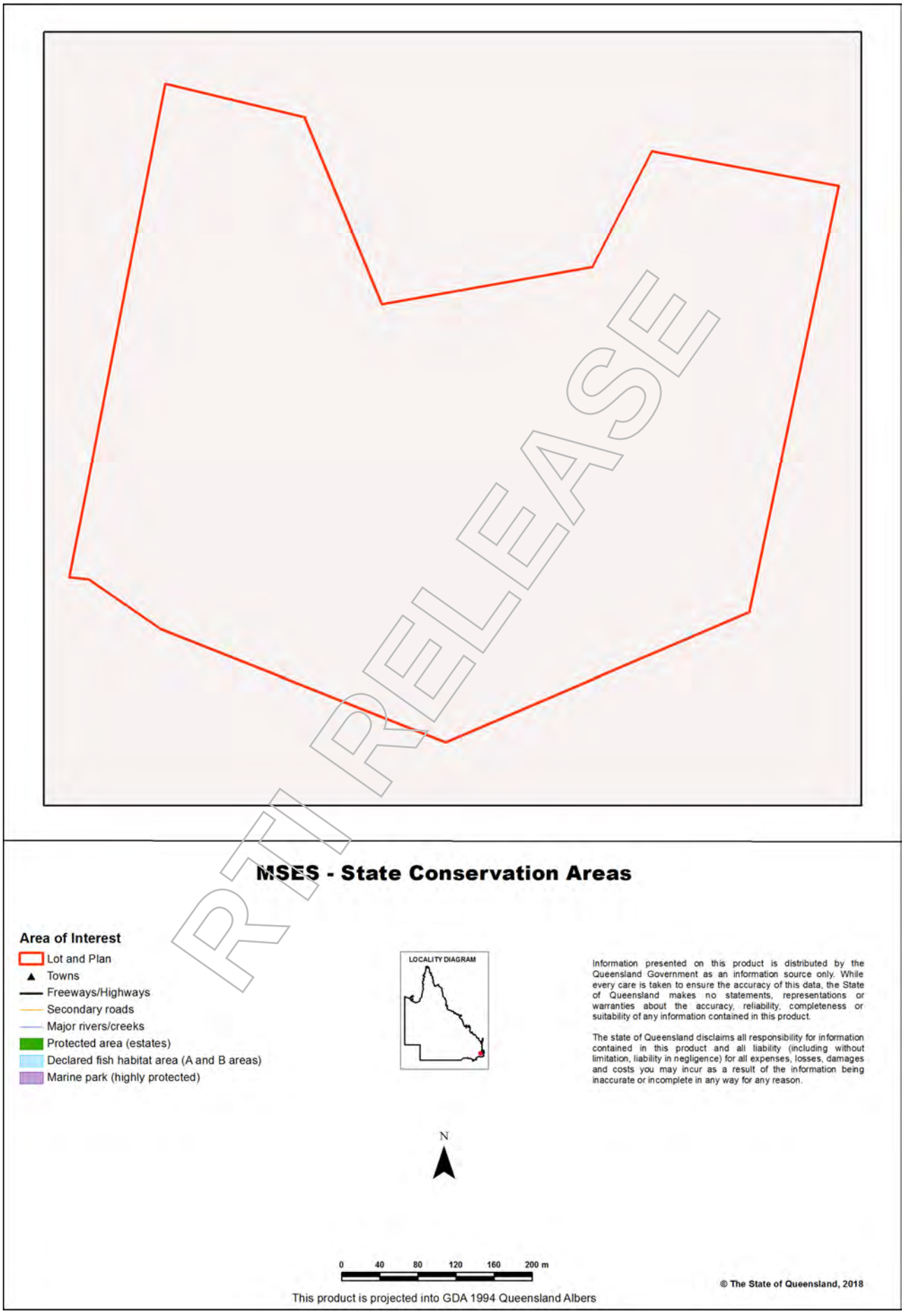
(no results)

9b. Legally secured offset areas - vegetation offsets through a Property Map of Assessable Vegetation

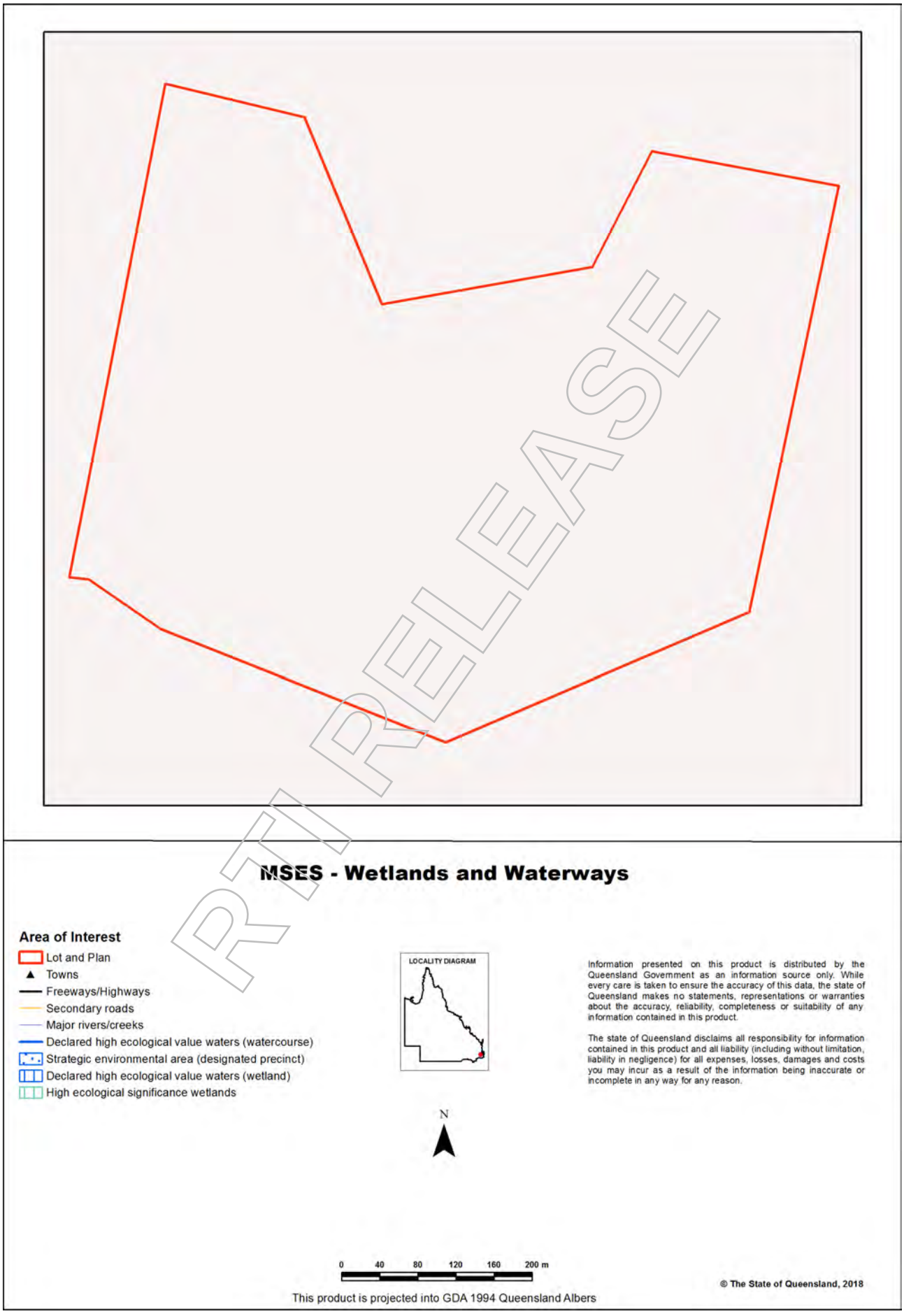
(no results)

Refer to **Map 5 - MSES - Offset Areas** for an overview of the relevant MSES.

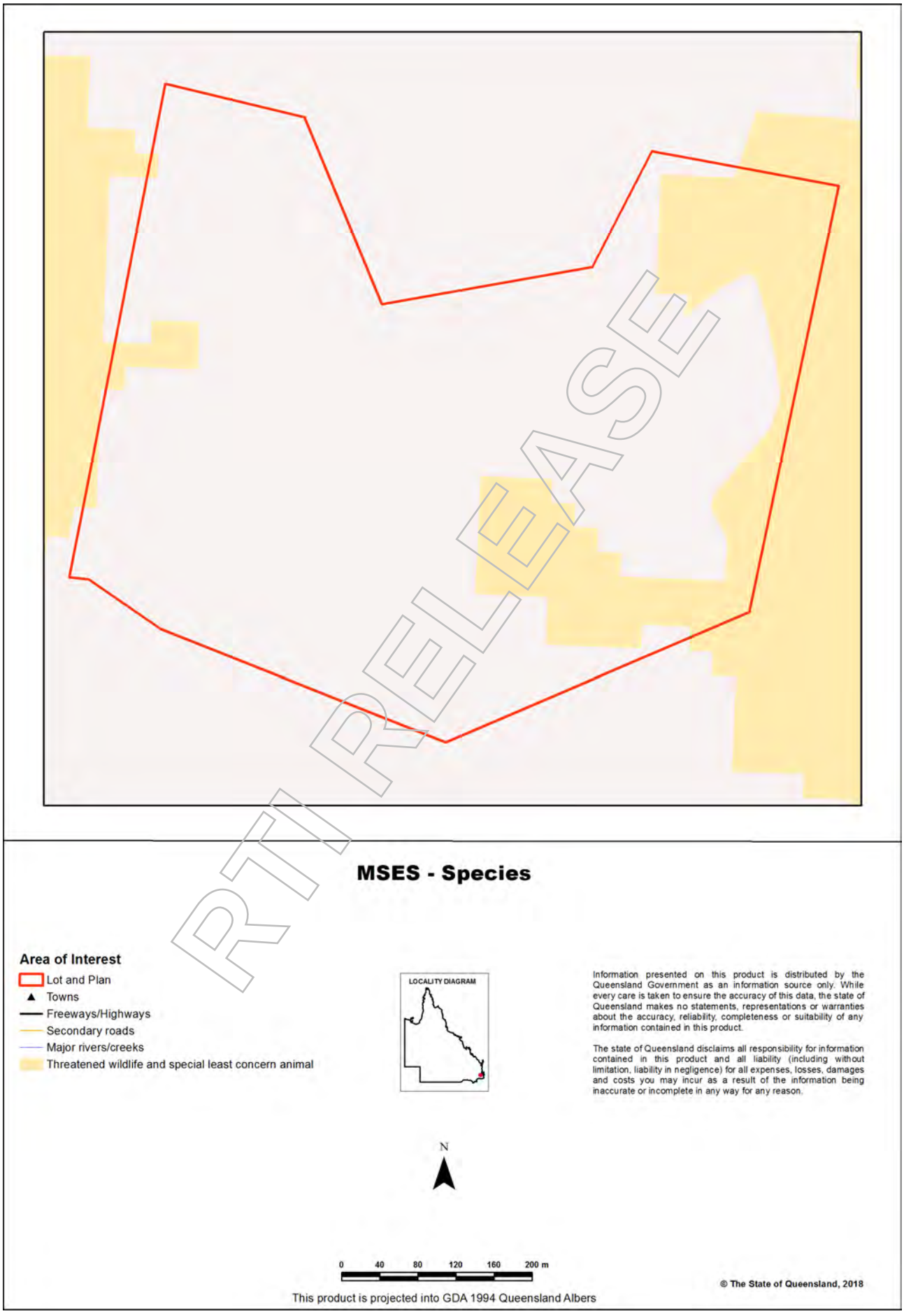
Map 1 - MSES - State Conservation Areas



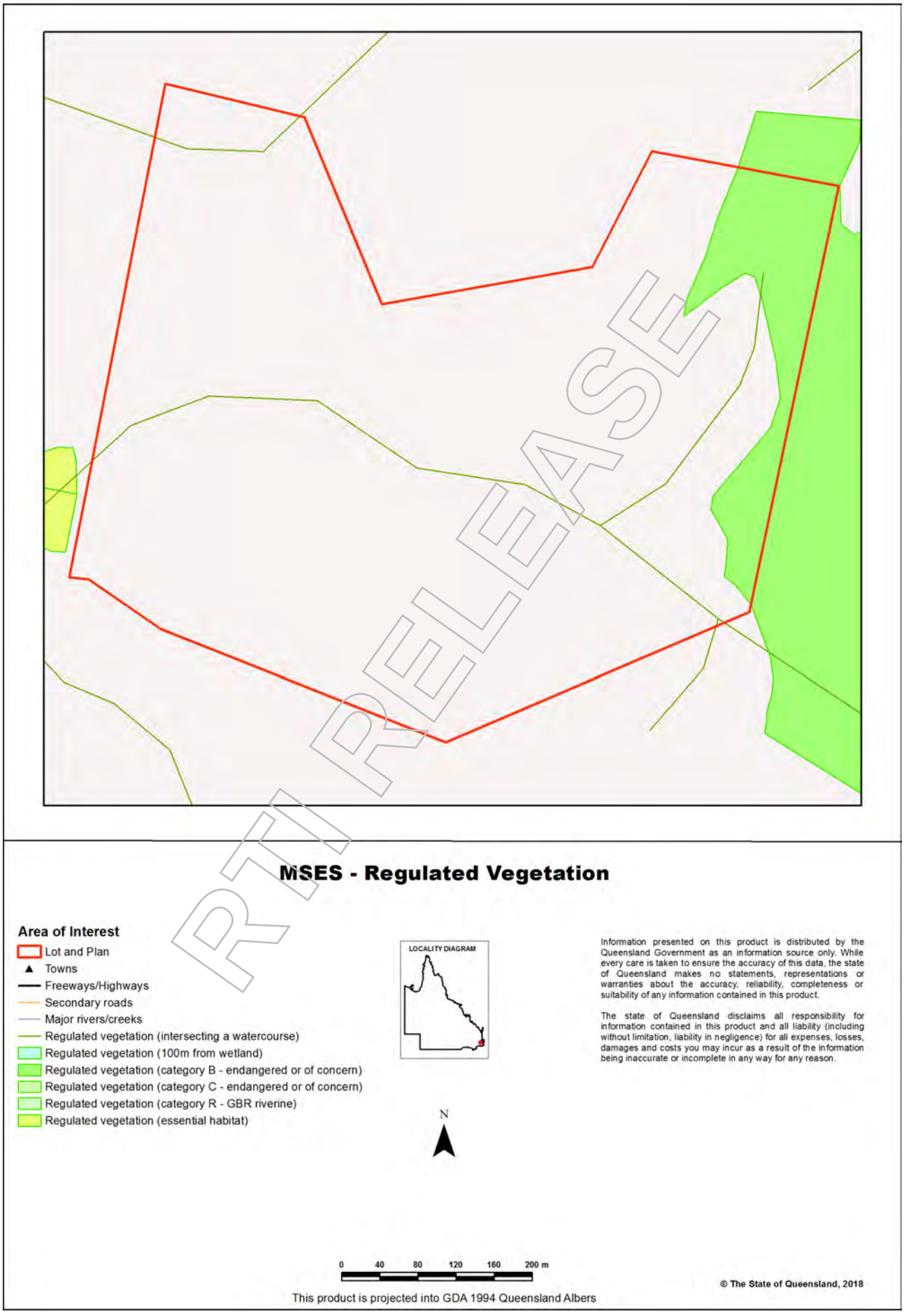
Map 2 - MSES - Wetlands and Waterways



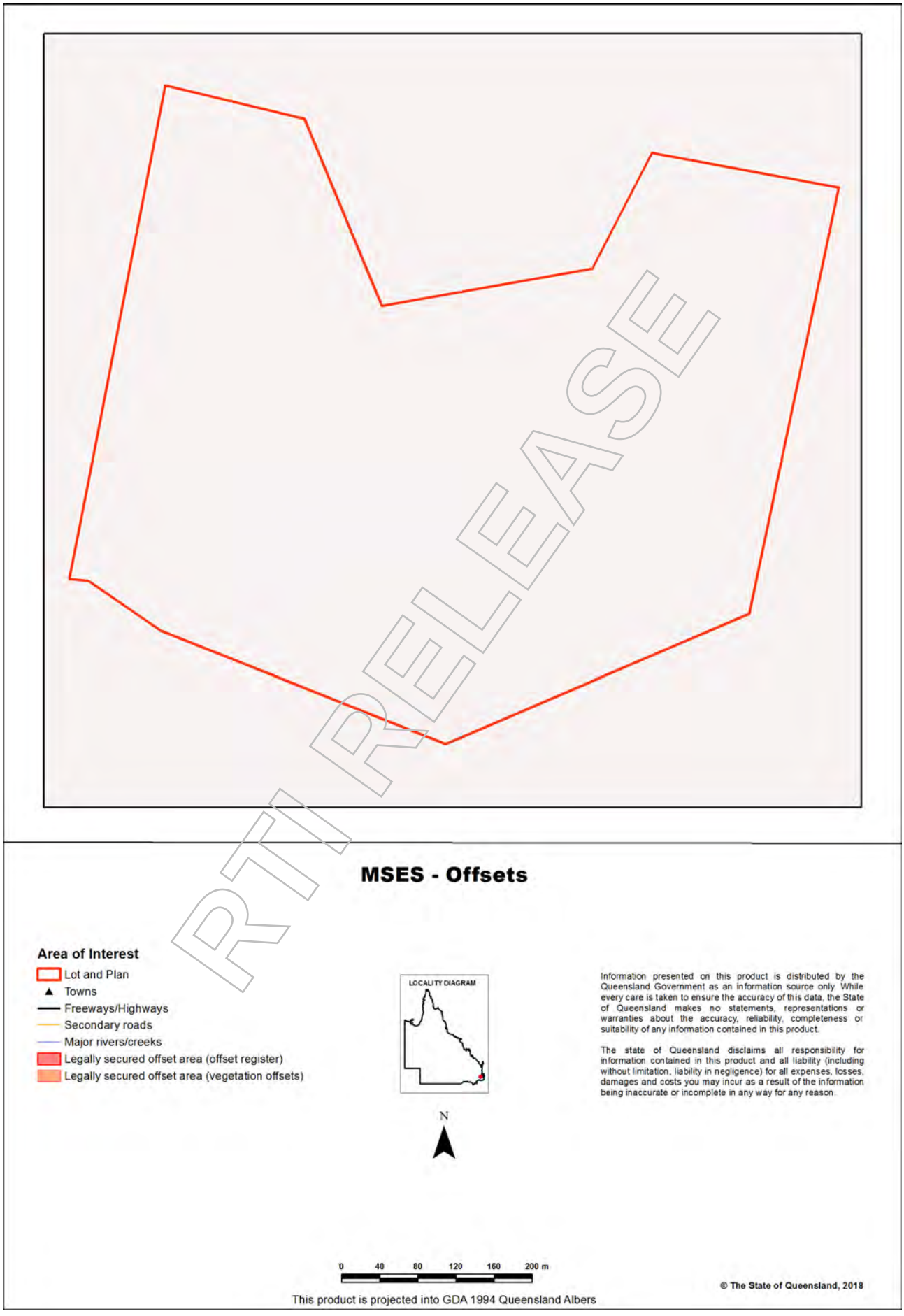
Map 3 - MSES - Species



Map 4 - MSES - Regulated Vegetation



Map 5 - MSES - Offset Areas



Appendices

Appendix 1 - Matters of State Environmental Significance (MSES) methodology

MSES mapping is a regional-scale representation of the definition for MSES under the State Planning Policy (SPP). The compiled MSES mapping product is a guide to assist planning and development assessment decision-making. Its primary purpose is to support implementation of the SPP biodiversity policy. While it supports the SPP, the mapping does not replace the regulatory mapping or environmental values specifically called up under other laws or regulations. Similarly, the SPP biodiversity policy does not override or replace specific requirements of other Acts or regulations.

The Queensland Government's "Method for mapping - matters of state environmental significance for use in land use planning and development assessment" can be downloaded from:

http://www.ehp.qld.gov.au/land/natural-resource/method-mapping-mses.html .

Appendix 2 - Source Data

The datasets listed below are available on request from:

http://qldspatial.information.qld.gov.au/catalogue/custom/index.page

- Matters of State environmental significance

Note: MSES mapping is not based on new or unique data. The primary mapping product draws data from a number of underlying environment databases and geo-referenced information sources. MSES mapping is a versioned product that is updated generally on a twice-yearly basis to incorporate the changes to underlying data sources. Several components of MSES mapping made for the current version may differ from the current underlying data sources. To ensure accuracy, or proper representation of MSES values, it is strongly recommended that users refer to the underlying data sources and review the current definition of MSES in the State Planning Policy, before applying the MSES mapping.

Individual MSES layers can be attributed to the following source data available at QSpatial:

MSES layers	**current QSpatial data (http://qspatial.information.qld.gov.au)**
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Marine Park-Highly Protected Zones	Moreton Bay marine park zoning 2008
Fish Habitat Areas	Queensland fish habitat areas
Strategic Environmental Areas-designated	Regional Planning Interests Act - Strategic Environmental Areas
HES wetlands	Map of Referable Wetland - wetland layers: - Wetland management area wetlands - Wetland protection area wetlands
wetlands in HEV waters	HEV waters: - EPP Water (multiple locations) intent for waters Source Wetlands: - Queensland Wetland Mapping (Current version 4, 2015) Source Watercourses: - Vegetation management watercourse and drainage feature map (1:100000 and 1:250000) - latest version 1.4
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Appendix 3 - Acronyms and Abbreviations

AOI	- Area of Interest
DES	- Department of Environment and Science
EP Act	- *Environmental Protection Act 1994*
EPP	- Environmental Protection Policy
GDA94	- Geocentric Datum of Australia 1994
GEM	- General Environmental Matters
GIS	- Geographic Information System
MSES	- Matters of State Environmental Significance
NCA	- *Nature Conservation Act 1992*
RE	- Regional Ecosystem
SPP	- State Planning Policy
VMA	- *Vegetation Management Act 1999*

Queensland Government

Department of Environment and Science

Environmental Reports

Matters of State Environmental Significance

For the selected area of interest
Lot: 104 Plan: RP839073

Environmental Reports - General Information

The Environmental Reports portal provides for the assessment of selected matters of interest relevant to a user specified location, or area of interest (AOI). All area and derivative figures are relevant to the extent of matters of interest contained within the AOI unless otherwise stated. Please note, if a user selects an AOI via the "central coordinates" option, the resulting assessment area encompasses an area extending for a 2km radius from the point of interest.

All area and area derived figures included in this report have been calculated via reprojecting relevant spatial features to Albers equal-area conic projection (central meridian = 146, datum Geocentric Datum of Australia 1994). As a result, area figures may differ slightly if calculated for the same features using a different co-ordinate system.

Figures in tables may be affected by rounding.

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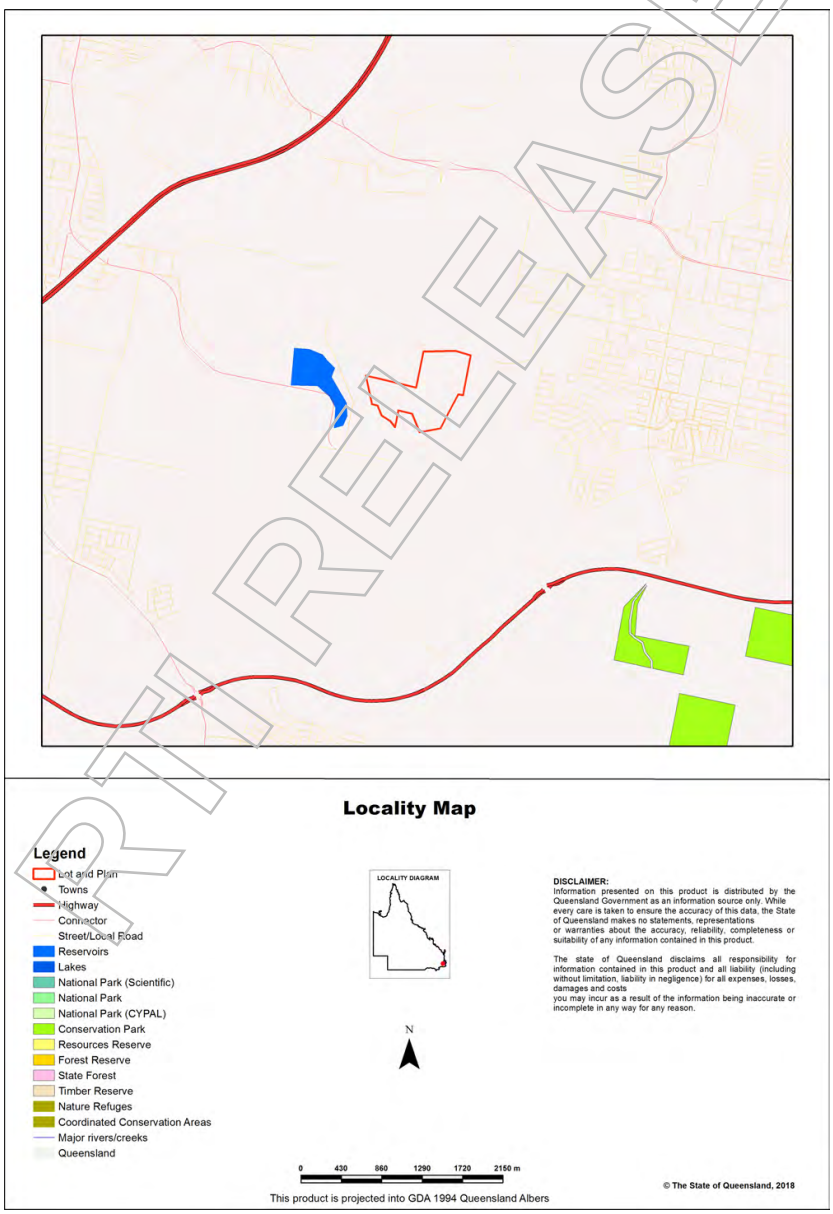
Table of Contents

Assessment Area Details

The following table provides an overview of the area of interest (AOI) with respect to selected topographic and environmental values.

Table 1: Summary table, details for AOI Lot: 104 Plan: RP839073

Size (ha)	53.59
Local Government(s)	Ipswich City
Bioregion(s)	Southeast Queensland
Subregion(s)	Moreton Basin
Catchment(s)	Brisbane



Matters of State Environmental Significance (MSES)

MSES Categories

Queensland's State Planning Policy (SPP) includes a biodiversity State interest that states:

'The sustainable, long-term conservation of biodiversity is supported. Significant impacts on matters of national or state environmental significance are avoided, or where this cannot be reasonably achieved; impacts are minimised and residual impacts offset.'

The MSES mapping product is a guide to assist planning and development assessment decision-making. Its primary purpose is to support implementation of the SPP biodiversity policy. While it supports the SPP, the mapping does not replace the regulatory mapping or environmental values specifically called up under other laws or regulations. Similarly, the SPP biodiversity policy does not override or replace specific requirements of other Acts or regulations.

The SPP defines matters of state environmental significance as:

- Protected areas (including all classes of protected area except coordinated conservation areas) under the *Nature Conservation Act 1992* ;

- Marine parks and land within a 'marine national park', 'conservation park', 'scientific research', 'preservation' or 'buffer' zone under the *Marine Parks Act 2004* ;

- Areas within declared fish habitat areas that are management A areas or management B areas under the Fisheries Regulation 2008;

- Threatened wildlife under the *Nature Conservation Act 1992* and special least concern animals under the Nature Conservation (Wildlife) Regulation 2006;

- Regulated vegetation under the *Vegetation Management Act 1999* that is:

    • Category B areas on the regulated vegetation management map, that are 'endangered' or 'of concern' regional ecosystems;

    • Category C areas on the regulated vegetation management map that are 'endangered' or 'of concern' regional ecosystems;

    • Category R areas on the regulated vegetation management map;

    • Regional ecosystems that intersect with watercourses identified on the vegetation management watercourse and drainage feature map;

    • Regional ecosystems that intersect with wetlands identified on the vegetation management wetlands map;

- Strategic Environmental Areas under the *Regional Planning Interests Act 2014* ;

- Wetlands in a wetland protection area of wetlands of high ecological significance shown on the Map of Referable Wetlands under the Environmental Protection Regulation 2008;

- Wetlands and watercourses in high ecological value waters defined in the Environmental Protection (Water) Policy 2009, schedule 2;

- Legally secured offset areas.

MSES Values Present

The MSES values that are present in the area of interest are summarised in the table below:

Table 2: Summary of MSES present within the AOI

1a Protected Areas- estates	0.0 ha	0.0 %
1b Protected Areas- nature refuges	0.0 ha	0.0 %
2 State Marine Parks- highly protected zones	0.0 ha	0.0 %
3 Fish habitat areas (A and B areas)	0.0 ha	0.0 %
4 Strategic Environmental Areas (SEA)	0.0 ha	0.0 %
5 High Ecological Significance wetlands on the map of Referable Wetlands	0.0 ha	0.0 %
6a High Ecological Value (HEV) wetlands	0.0 ha	0.0 %
6b High Ecological Value (HEV) waterways **	0.0 km	Not applicable
7 Threatened species and Iconic species	1.71 ha	3.2%
8a Regulated Vegetation - Endangered/Of concern in Category B (remnant)	0.0 ha	0.0 %
8b Regulated Vegetation - Endangered/Of concern in Category C (regrowth)	0.0 ha	0.0 %
8c Regulated Vegetation - Category R (GBR riverine regrowth)	0.0 ha	0.0 %
8d Regulated Vegetation - Essential habitat	0.0 ha	0.0 %
8e Regulated Vegetation - intersecting a watercourse **	1.2 km	Not applicable
8f Regulated Vegetation - within 100m of a Vegetation Management Wetland	0.0 ha	0.0 %
9a Legally secured offset areas- offset register areas	0.0 ha	0.0 %
9b Legally secured offset areas- vegetation offsets through a Property Map of Assessable Vegetation	0.0 ha	0.0 %

Additional Information with Respect to MSES Values Present

MSES - State Conservation Areas

1a. Protected Areas - estates

(no results)

1b. Protected Areas - nature refuges

(no results)

2. State Marine Parks - highly protected zones

(no results)

3. Fish habitat areas (A and B areas)

(no results)

Refer to **Map 1 - MSES - State Conservation Areas** for an overview of the relevant MSES.

MSES - Wetlands and Waterways

4. Strategic Environmental Areas (SEA)

(no results)

5. High Ecological Significance wetlands on the Map of Referable Wetlands

(no results)

6a. High Ecological Value (HEV) waters - wetlands

(no results)

6b. High Ecological Value (HEV) waters - waterways

(no results)

Refer to **Map 2 - MSES - Wetlands and Waterways** for an overview of the relevant MSES.

MSES - Species

7. Threatened wildlife and special least concern animal

Threatened species and iconic species	Act	Species least concern animal	Koala Bushland Habitat	Dugong Protection	VMA Essential 2014 Habitat
Threat wildlife & Spec LeastC animals	NCA	None	Koala Bushland	None	None

Threatened and special least concern species records

(no results)

Note: The Threatened and Special Least Concern Animal (7) layer originates from the previous MSES version (4.1, dated at 2014). The layer does not represent all currently listed species and is subject to review.

**Nature Conservation Act 1992 (NCA) Status- Endangered (E), Vulnerable (V) or Special Least Concern Animal (SL). Environment Protection and Biodiversity Conservation Act 1999 (EPBC) status: Critically Endangered (CE) Endangered (E), Vulnerable (V)*

To request a species list for an area, or search for a species profile, access Wildlife Online at:
https://www.qld.gov.au/environment/plants-animals/species-list/

Refer to **Map 3 - MSES - Species** for an overview of the relevant MSES.

MSES - Regulated Vegetation

8a. Regulated Vegetation - Endangered/Of concern in Category B (remnant)

Not applicable

8b. Regulated Vegetation - Endangered/Of concern in Category C (regrowth)

Not applicable

For further information relating to regional ecosystems in general, go to:
https://www.qld.gov.au/environment/plants-animals/plants/ecosystems/
For a more detailed description of a particular regional ecosystem, access the regional ecosystem search page at:
https://environment.ehp.qld.gov.au/regional-ecosystems/

8c. Regulated Vegetation - Category R (GBR riverine regrowth)

Not applicable

8d. Regulated Vegetation - Essential habitat

Not applicable

8e. Regulated Vegetation - intersecting a watercourse**

A vegetation management watercourse is mapped as present

8f. Regulated Vegetation - within 100m of a Vegetation Management wetland

Not applicable

Refer to **Map 4 - MSES - Regulated Vegetation** for an overview of the relevant MSES.

MSES - Offsets

9a. Legally secured offset areas - offset register areas

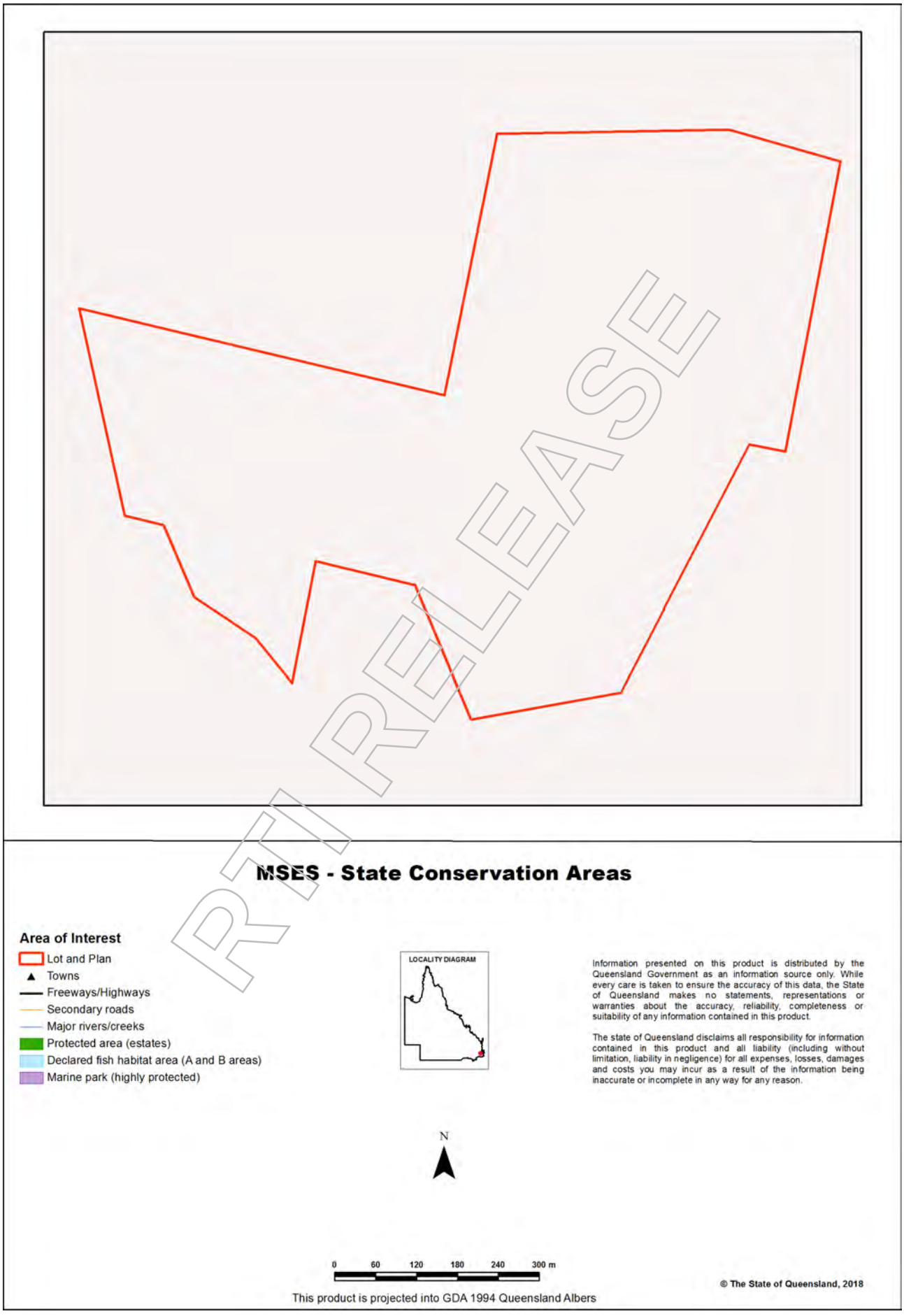
(no results)

9b. Legally secured offset areas - vegetation offsets through a Property Map of Assessable Vegetation

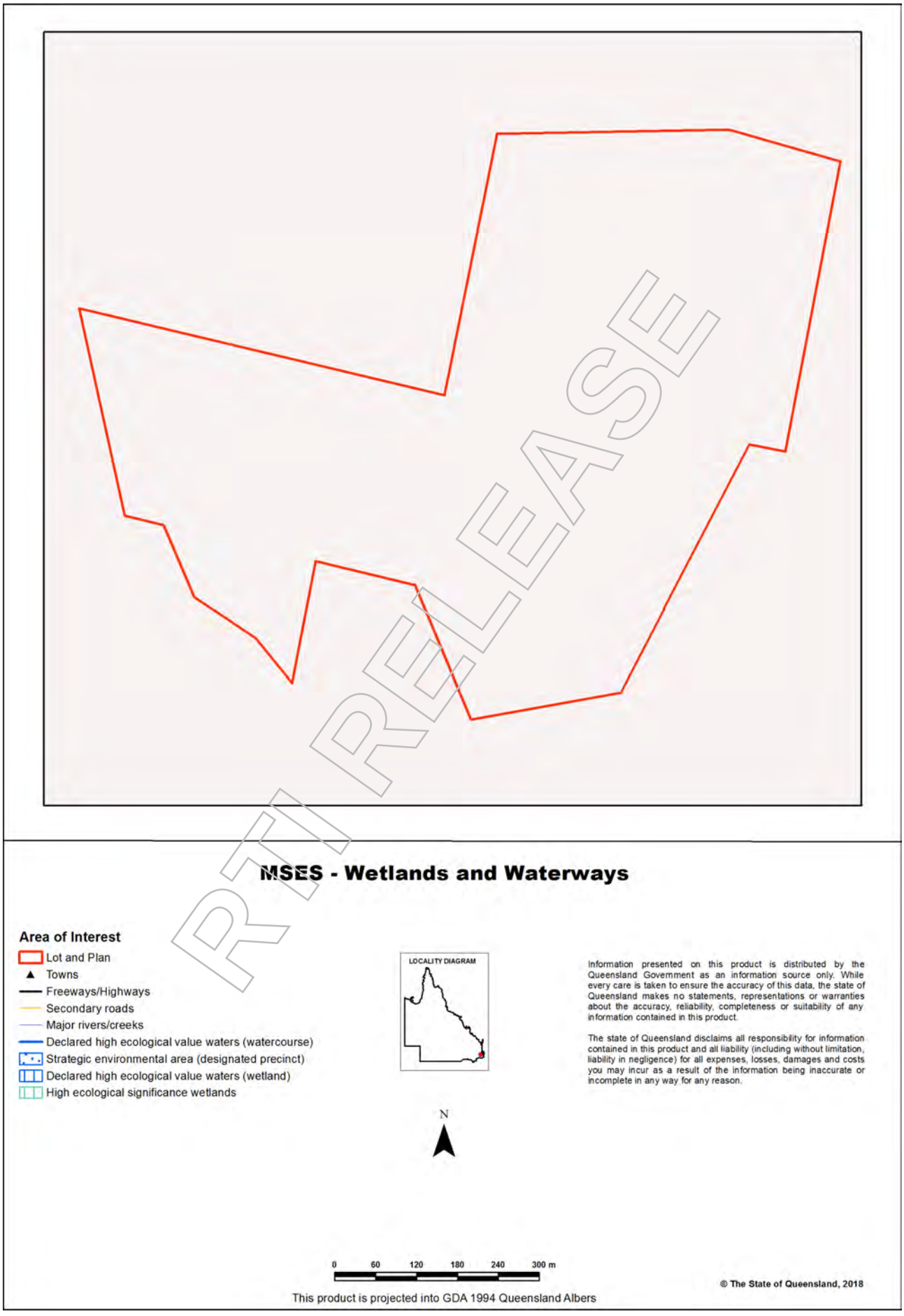
(no results)

Refer to **Map 5 - MSES - Offset Areas** for an overview of the relevant MSES.

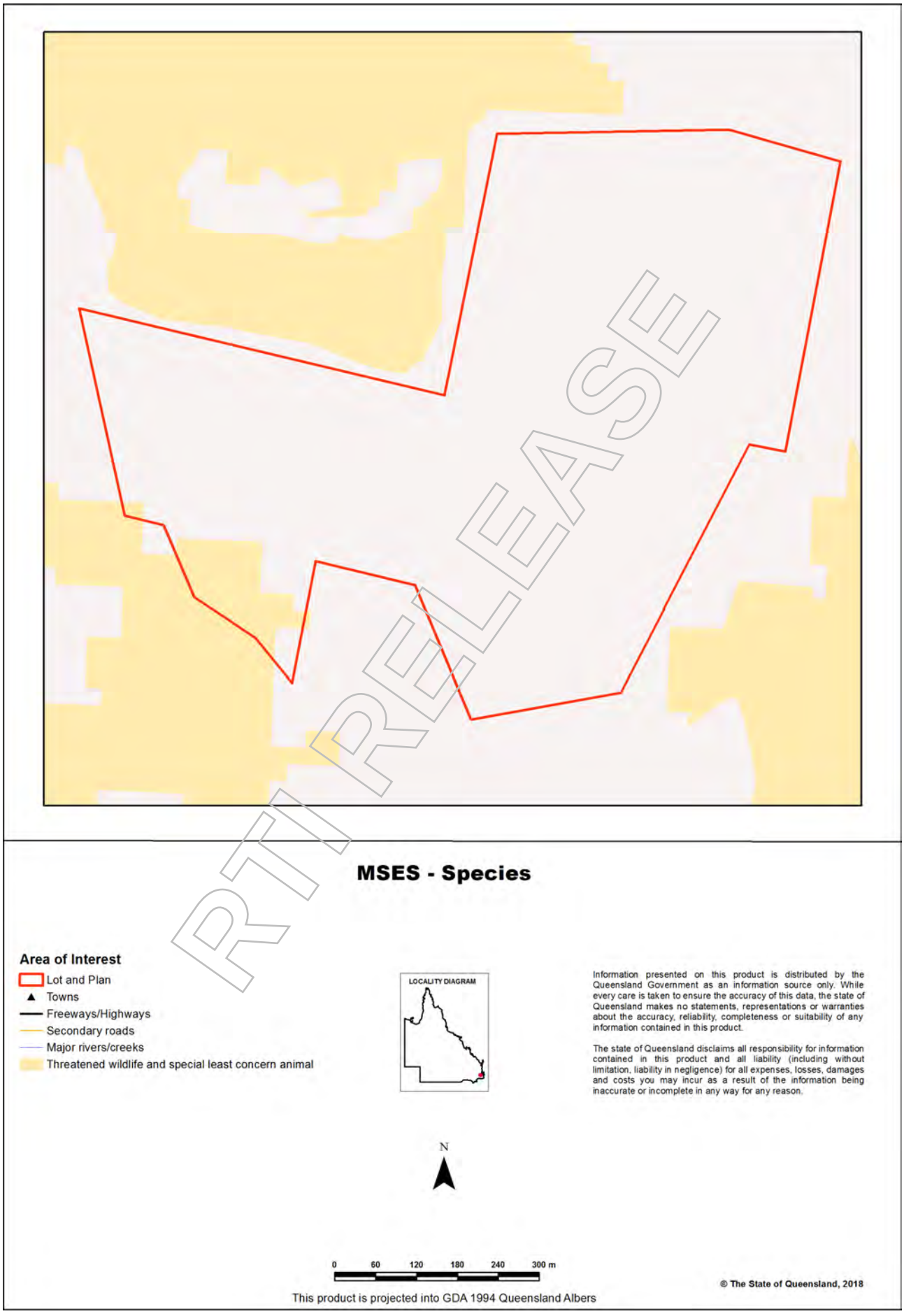
Map 1 - MSES - State Conservation Areas



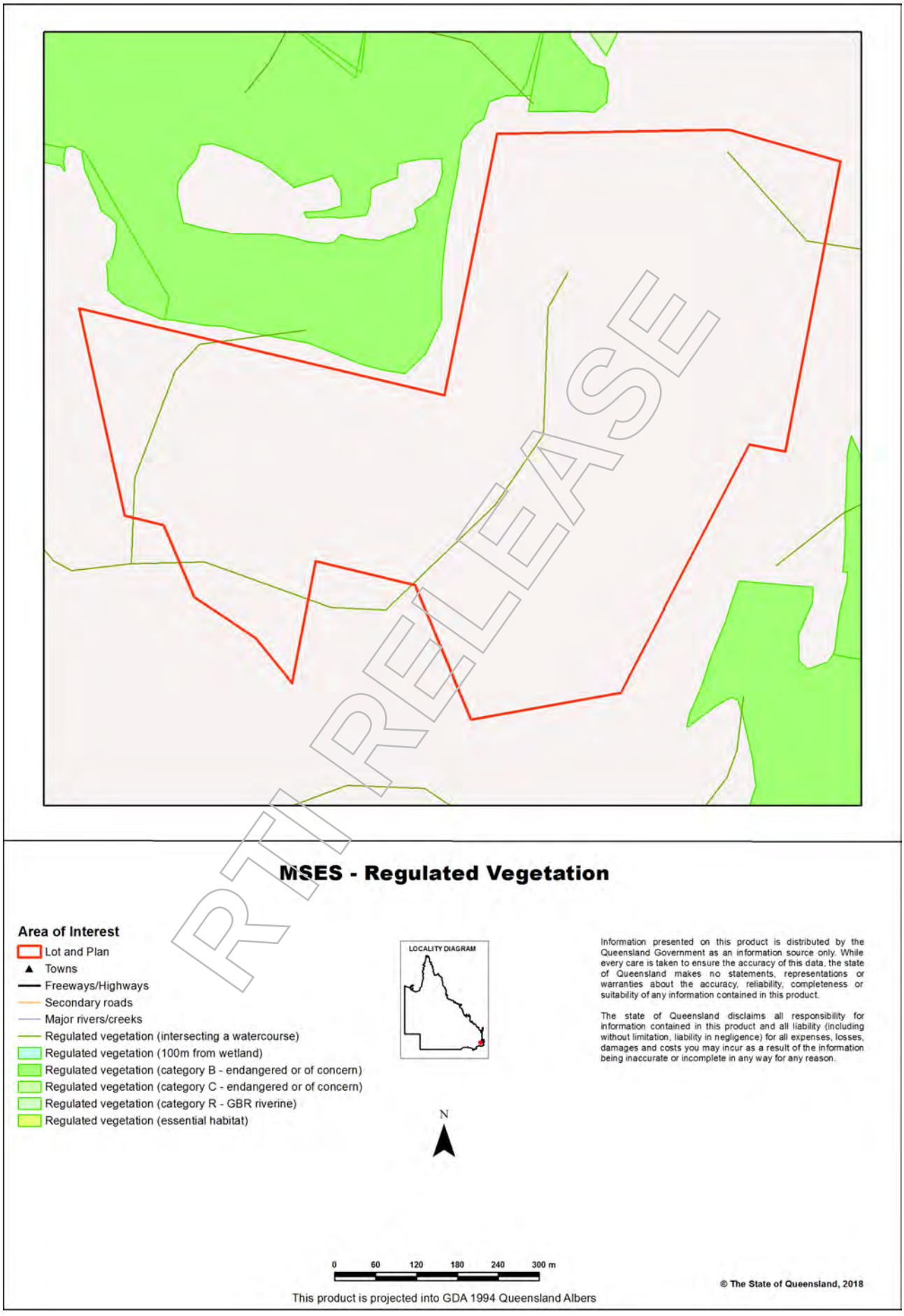
Map 2 - MSES - Wetlands and Waterways



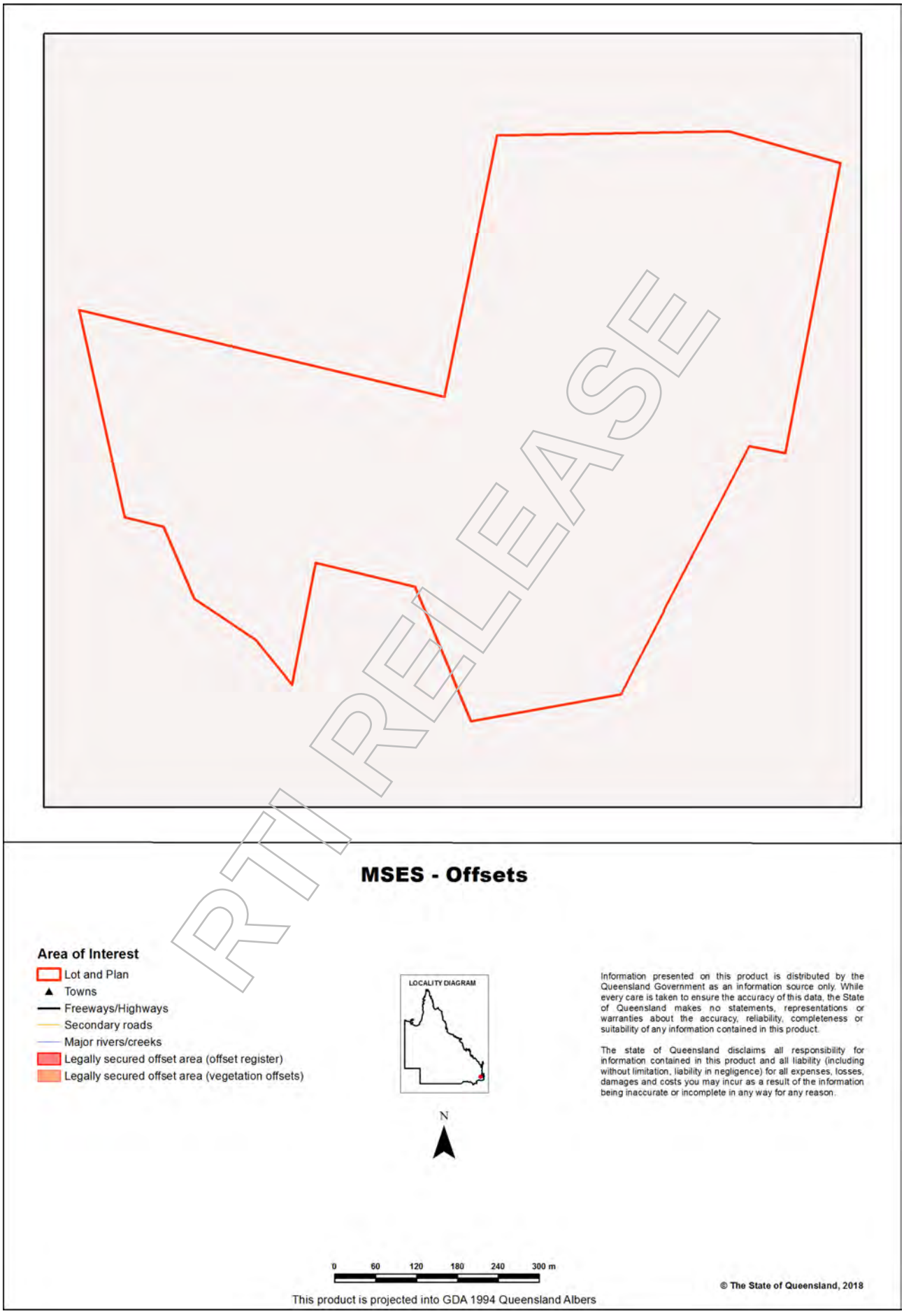
Map 3 - MSES - Species



Map 4 - MSES - Regulated Vegetation



Map 5 - MSES - Offset Areas



Appendices

Appendix 1 - Matters of State Environmental Significance (MSES) methodology

MSES mapping is a regional-scale representation of the definition for MSES under the State Planning Policy (SPP). The compiled MSES mapping product is a guide to assist planning and development assessment decision-making. Its primary purpose is to support implementation of the SPP biodiversity policy. While it supports the SPP, the mapping does not replace the regulatory mapping or environmental values specifically called up under other laws or regulations. Similarly, the SPP biodiversity policy does not override or replace specific requirements of other Acts or regulations.

The Queensland Government's "Method for mapping - matters of state environmental significance for use in land use planning and development assessment" can be downloaded from:

http://www.ehp.qld.gov.au/land/natural-resource/method-mapping-mses.html .

Appendix 2 - Source Data

The datasets listed below are available on request from:

http://qldspatial.information.qld.gov.au/catalogue/custom/index.page

- Matters of State environmental significance

Note: MSES mapping is not based on new or unique data. The primary mapping product draws data from a number of underlying environment databases and geo-referenced information sources. MSES mapping is a versioned product that is updated generally on a twice-yearly basis to incorporate the changes to underlying data sources. Several components of MSES mapping made for the current version may differ from the current underlying data sources. To ensure accuracy, or proper representation of MSES values, it is strongly recommended that users refer to the underlying data sources and review the current definition of MSES in the State Planning Policy, before applying the MSES mapping.

Individual MSES layers can be attributed to the following source data available at QSpatial:

MSES layers	**current QSpatial data (http://qspatial.ingormation.qld.gov.au)**
Protected Areas-Estates and Nature Refuges	- Protected areas of Queensland - Nature Refuges - Queensland
Marine Park-Highly Protected Zones	Moreton Bay marine park zoning 2008
Fish Habitat Areas	Queensland fish habitat areas
Strategic Environmental Areas-designated	Regional Planning Interests Act - Strategic Environmental Areas
HES wetlands	Map of Referable Wetland - wetland layers: - Wetland management area wetlands - Wetland protection area wetlands
wetlands in HEV waters	HEV waters: - EPP Water (multiple locations) intent for waters Source Wetlands: - Queensland Wetland Mapping (Current version 4, 2015) Source Watercourses: - Vegetation management watercourse and drainage feature map (1:100000 and 1:250000) - latest version 1.4
Wildlife habitat (threatened and special least concern)	-WildNet database species records - habitat suitability models (various)
VMA regulated regional ecosystems	Vegetation management regional ecosystem and remnant map - latest version 8.0
VMA Essential Habitat	Vegetation management - essential habitat map - latest version 4.41
VMA Wetlands	Vegetation management wetlands map - latest version 2.41
Legally secured offsets	Vegetation Management Act property maps of assessable vegetation. For offset register data-contact DES
Regulated Vegetation Map	Vegetation management - regulated vegetation management map - latest version 1.41

Appendix 3 - Acronyms and Abbreviations

AOI	- Area of Interest
DES	- Department of Environment and Science
EP Act	- *Environmental Protection Act 1994*
EPP	- Environmental Protection Policy
GDA94	- Geocentric Datum of Australia 1994
GEM	- General Environmental Matters
GIS	- Geographic Information System
MSES	- Matters of State Environmental Significance
NCA	- *Nature Conservation Act 1992*
RE	- Regional Ecosystem
SPP	- State Planning Policy
VMA	- *Vegetation Management Act 1999*

Queensland Government

Department of Environment and Science

Environmental Reports

Regional Ecosystems

Biodiversity Status

For the selected area of interest
Lot: 3 Plan: RP214256

Environmental Reports - General Information

The Environmental Reports portal provides for the assessment of selected matters of interest relevant to a user specified location, or area of interest (AOI). All area and derivative figures are relevant to the extent of matters of interest contained within the AOI unless otherwise stated. Please note, if a user selects an AOI via the "central coordinates" option, the resulting assessment area encompasses an area extending for a 2km radius from the input coordinates.

All area and area derived figures included in this report have been calculated via reprojecting relevant spatial features to Albers equal-area conic projection (central meridian = 146, datum Geocentric Datum of Australia 1994). As a result, area figures may differ slightly if calculated for the same features using a different co-ordinate system.

Figures in tables may be affected by rounding.

The matters of interest reported on in this document are based upon available state mapped datasets. Where the report indicates that a matter of interest is not present within the AOI (e.g. where area related calculations are equal to zero, or no values are listed), this may be due either to the fact that state mapping has not been undertaken for the AOI, that state mapping is incomplete for the AOI, or that no matters of interest have been identified within the site.

The information presented in this report should be considered as a guide only and field survey may be required to validate values on the ground.

Important Note to User

Information presented in this report is based upon the Queensland Herbarium's Regional Ecosystem framework. The Biodiversity Status has been used to depict the extent of "Endangered", "Of Concern" and "No Concern at Present" regional ecosystems in all cases, rather than the classes used for the purposes of the *Vegetation Management Act 1999* (VMA). Mapping and figures presented in this document reflect the Queensland Herbarium's Remnant and Pre-clearing Regional Ecosystem Datasets, and not the certified mapping used for the purpose of the VMA.

For matters relevant to vegetation management under the VMA, please refer to the Department of Natural Resources, Mines and Energy website

https://www.dnrme.qld.gov.au/

Please direct queries about these reports to: Queensland.Herbarium@dsiti.qld.gov.au

Disclaimer

Whilst every care is taken to ensure the accuracy of the information provided in this report, the Queensland Government makes no representations or warranties about its accuracy, reliability, completeness, or suitability, for any particular purpose and disclaims all responsibility and all liability (including without limitation, liability in negligence) for all expenses, losses, damages (including indirect or consequential damage) and costs which the user may incur as a consequence of the information being inaccurate or incomplete in any way and for any reason.

Table of Contents

Summary Information

The following table provides an overview of the AOI with respect to selected topographic and environmental themes. Refer to **Map 1** for locality information.

Table 1: Area of interest details: Lot: 3 Plan: RP214256

Size (ha)	4.24
Local Government(s)	Ipswich City
Bioregion(s)	Southeast Queensland
Subregion(s)	Moreton Basin
Catchment(s)	Brisbane

The table below summarizes the extent of remnant vegetation classed as "Endangered", "Of concern" and "No concern at present" regional ecosystems classified by Biodiversity Status within the area of interest (AOI).

Table 2: Summary table, biodiversity status of regional ecosystems within the AOI

Biodiversity Status	Area (Ha)	% of AOI
Endangered	0.0	0.0
Of concern	0.0	0.0
No concern at present	1.52	35.94
Total remnant vegetation	1.52	35.94

Refer to **Map 2** for further information.

Regional Ecosystems

1. Introduction

Regional ecosystems are vegetation communities in a bioregion that are consistently associated with particular combinations of geology, landform and soil (Sattler and Williams 1999). Descriptions of Queensland's Regional ecosystems are available online from the Regional Ecosystem Description Database (REDD). Descriptions are compiled from a broad range of information sources including vegetation, land system and geology survey and mapping and detailed vegetation site data. The regional ecosystem classification and descriptions are reviewed as new information becomes available. A number of vegetation communities may form a single regional ecosystem and are usually distinguished by differences in dominant species, frequently in the shrub or ground layers and are denoted by a letter following the regional ecosystem code (e.g. a, b, c). Vegetation communities and regional ecosystems are amalgamated into a higher level classification of broad vegetation groups (BVGs).

A published methodology for survey and mapping of regional ecosystems across Queensland (Neldner et al 2017) provides further details on regional ecosystem concepts and terminology.

This report provides information on the type, status, and extent of vegetation communities, regional ecosystems and broad vegetation groups present within a user specified area of interest. Please note, for the purpose of this report, the Biodiversity Status is used. This report has not been developed for application of the *Vegetation Management Act 1999* (VMA). Additionally, information generated in this report has been derived from the Queensland Herbarium's Regional Ecosystem Mapping, and not the regulated mapping certified for the purposes of the VMA. If your interest/matter relates to regional ecosystems and the VMA, users should refer to the Department of Natural Resources, Mines and Energy website.

https://www.dnrme.qld.gov.au/

With respect to the Queensland Biodiversity Status,

"Endangered" regional ecosystems are described as those where:

- remnant vegetation is less than 10 per cent of its pre-clearing extent across the bioregion; or 10-30% of its pre-clearing extent remains and the remnant vegetation is less than 10,000 hectares, or
- less than 10 per cent of its pre-clearing extent remains unaffected by severe degradation and/or biodiversity loss*, or
- 10-30 per cent of its pre-clearing extent remains unaffected by severe degradation and/or biodiversity loss and the remnant vegetation is less than 10,000 hectares; or
- it is a rare** regional ecosystem subject to a threatening process.***

"Of concern" regional ecosystems are described as those where:

- the degradation criteria listed above for 'Endangered' regional ecosystems are not met and,
- remnant vegetation is 10-30 per cent of its pre-clearing extent across the bioregion; or more than 20 per cent of its pre-clearing extent remains and the remnant extent is less than 10,000 hectares, or
- 10-30 percent of its pre-clearing extent remains unaffected by moderate degradation and/or biodiversity loss.****

and "No concern at present" regional ecosystems are described as those where:

- remnant vegetation is over 30 per cent of its pre-clearing extent across the bioregion, and the remnant area is greater than 10,000 hectares, and
- the degradation criteria listed above for 'Endangered' or 'Of concern' regional ecosystems are not met.

**Severe degradation and/or biodiversity loss is defined as: floristic and/or faunal diversity is greatly reduced but unlikely to recover within the next 50 years even with the removal of threatening processes; or soil surface is severely degraded, for example, by loss of A horizon, surface expression of salinity; surface compaction, loss of organic matter or sheet erosion.*

***Rare regional ecosystem: pre-clearing extent (1000 ha); or patch size (100 ha and of limited total extent across its range).*

****Threatening processes are those that are reducing or will reduce the biodiversity and ecological integrity of a regional ecosystem. For example, clearing, weed invasion, fragmentation, inappropriate fire regime or grazing pressure, or infrastructure development.*

*****Moderate degradation and/or biodiversity loss is defined as: floristic and/or faunal diversity is greatly reduced but unlikely to recover within the next 20 years even with the removal of threatening processes; or soil surface is moderately degraded.*

2. Remnant Regional Ecosystems

The following table identifies the remnant regional ecosystems and vegetation communities mapped within the AOI and provides their short descriptions, Biodiversity Status, and remnant extent within the selected AOI. Please note, where heterogeneous vegetated patches (mixed patches of remnant vegetation mapped as containing multiple regional ecosystems) occur within the AOI, they have been split and listed as individual regional ecosystems (or vegetation communities where present) for the purposes of the table below. In such instances, associated area figures have been generated based upon the estimated proportion of each regional ecosystem (or vegetation community) predicted to be present within the larger mixed patch.

Table 3: Remnant regional ecosystems, description and status within the AOI

Regional Ecosystem	Short Description	BD Status	Area (Ha)	% of AOI
12.9-10.19	Eucalyptus fibrosa subsp. fibrosa woodland on sedimentary rocks	No concern at present	1.52	35.94
non-rem	None	None	2.71	64.0

Refer to **Map 2** for further information. **Map 3** also provides a visual estimate of the distribution of regional ecosystems present before clearing.

Table 4 provides further information in regards to the remnant regional ecosystems present within the SOI. Specifically, the extent of remnant vegetation remaining within the bioregion, the 1:1,000,000 broad vegetation group (BVG) classification, whether the regional ecosystem is identified as a wetland, and extent of representation in Queensland's Protected Area Estate. For a description of the vegetation communities within the AOI and classified according to the 1:1,000,000 BVG, refer to **Table 6**.

Table 4: Remnant regional ecosystems within the AOI, additional information

Regional Ecosystem	Remnant Extent	BVG (1 Million)	Wetland	Representation in protected estate
12.9-10.19	Pre-clearing 59000 ha; Remnant 2015 42000 ha	12a	None	Medium
non-rem	None	None	None	None

Representation in Protected Area Estate: High greater than 10% of pre-clearing extent is represented; Medium 4 - 10% is represented; Low less than 4% is represented, No representation.

The distribution of mapped wetland systems within the area of interest is displayed in **Map 6**.

The following table lists known special values associated with a regional ecosystem type.

Table 5: Remnant regional ecosystems within the AOI, special values

Regional Ecosystem	Special Values
12.9-10.19	Habitat for threatened plant species including Macrozamia parcifolia,
non-rem	None

3. Remnant Regional Ecosystems by Broad Vegetation Group

BVGs are a higher-level grouping of vegetation communities. Queensland encompasses a wide variety of landscapes across temperate, wet and dry tropics and semi-arid climatic zones. BVGs provide an overview of vegetation communities across the

state or a bioregion and allow comparison with other states. There are three levels of BVGs which reflect the approximate scale at which they are designed to be used: the 1:5,000,000 (national), 1:2,000,000 (state) and 1:1,000,000 (regional) scales.

A comprehensive description of BVGs is available at:

https://publications.qld.gov.au/dataset/redd/resource/

The following table provides a description of the 1:1,000,000 BVGs present and their associated extent within the AOI.

Table 6: Broad vegetation groups (1 million) within the AOI

BVG (1 Million)	Description	Area (Ha)	% of AOI
None	None	2.71	64.0
12a	Dry woodlands to open woodlands dominated by ironbarks such as Eucalyptus decorticans (gum-topped ironbark), E. fibrosa subsp. nubila (blue-leaved ironbark), or E. crebra (narrow-leaved red ironbark) and/or bloodwoods such as Corymbia trachyphloia (yellow bloodwood), C. leichhardtii (rustyjacket), C. watsoniana (Watson's yellow bloodwood), C. lamprophylla, C. peltata (yellowjacket). Occasionally E. thozetiana (mountain yapunyah), E. cloeziana (Gympie messmate) or E. mediocris are dominant. Mostly on sub-coastal/inland hills with shallow soils. (land zones 10, 7, 9) (BRB, DEU, SEQ, GUP)	1.52	35.94

Refer to **Map 4** for further information. **Map 5** also provides a representation of the distribution of vegetation communities as per the 1:5,000,000 BVG believed to be present prior to European settlement.

4. Technical and BioCondition Benchmark Descriptions

Technical descriptions provide a detailed description of the full range in structure and floristic composition of regional ecosystems (e.g. 11.3.1) and their component vegetation communities (e.g. 11.3.1a, 11.3.1b). See:

http://www.qld.gov.au/environment/plants-animals/plants/ecosystems/technical-descriptions/

The descriptions are compiled using site survey data from the Queensland Herbarium's CORVEG database. Distribution maps, representative images (if available) and the pre-clearing and remnant extent (hectares) of each vegetation community derived from the regional ecosystem mapping data are included. The technical descriptions should be used in conjunction with the fields from the regional ecosystem description database (REDD) for a full description of the regional ecosystem.

Technical descriptions include data on canopy height, canopy cover and native plant species composition of the predominant layer, which are attributes relevant to assessment of the remnant status of vegetation under the *Vegetation Management Act 1999*. However, as technical descriptions reflect the full range in structure and floristic composition across the climatic, natural disturbance and geographic range of the regional ecosystem, local reference sites should be used for remnant assessment where possible (Neldner et al. 2012 (PDF)* section 3.3.1 of:

https://publications.qld.gov.au/dataset/redd/resource/

The technical descriptions are subject to review and are updated as additional data becomes available.

When conducting a BioCondition assessment, these technical descriptions should be used in conjunction with BioCondition benchmarks for the specific regional ecosystem, or component vegetation community.

http://www.qld.gov.au/environment/plants-animals/biodiversity/benchmarks/

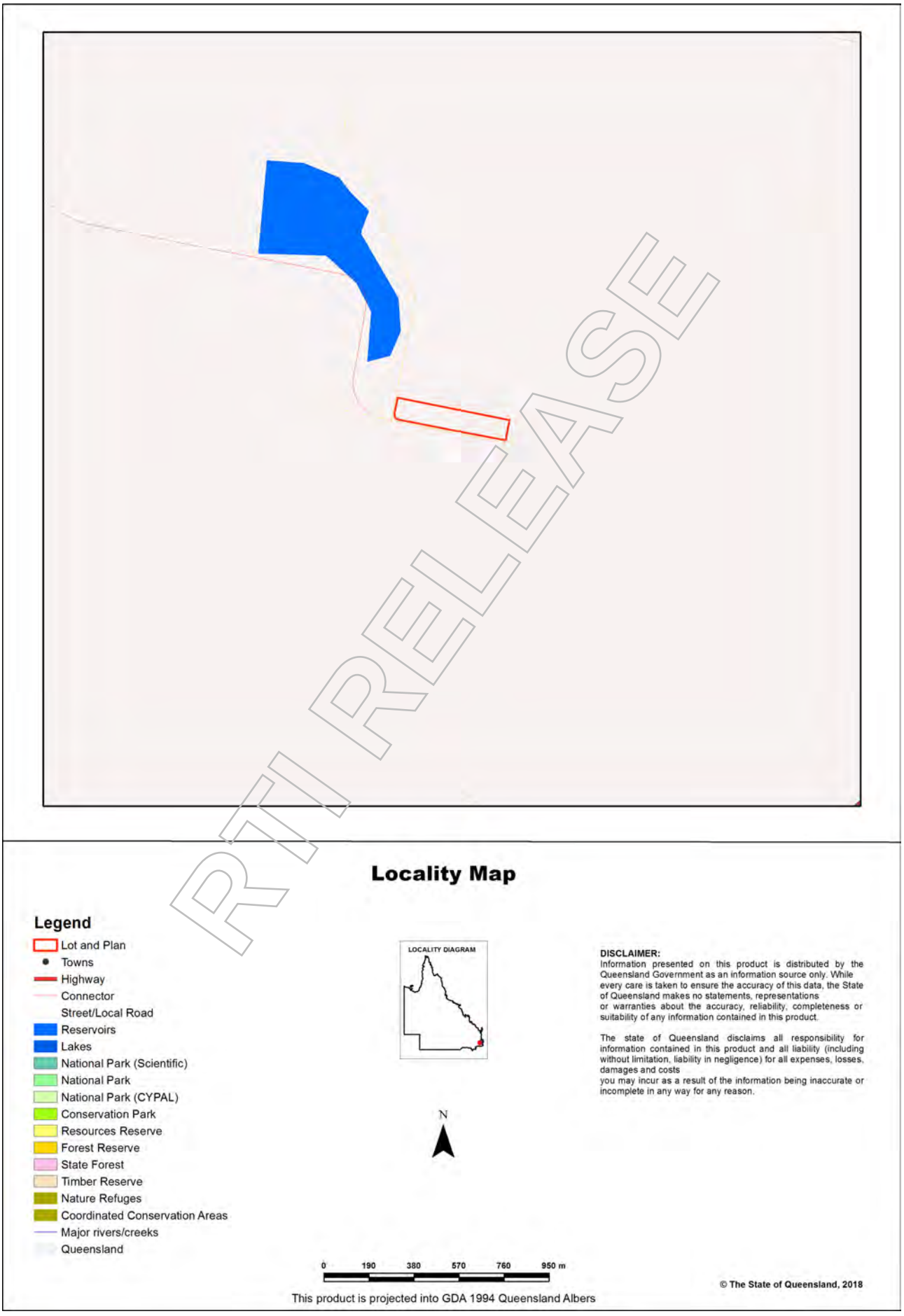
Benchmarks are based on a combination of quantitative and qualitative information and should be used as a guide only. Benchmarks are specific to one regional ecosystem vegetation community, however, the natural variability in structure and floristic composition under a range of climatic and natural disturbance regimes has been considered throughout the geographic extent of the regional ecosystem. Local reference sites should be used for this spatial and temporal (seasonal and annual) variability.

Table 7: List of remnant regional ecosystems within the AOI for which technical and biocondition benchmark descriptions are available

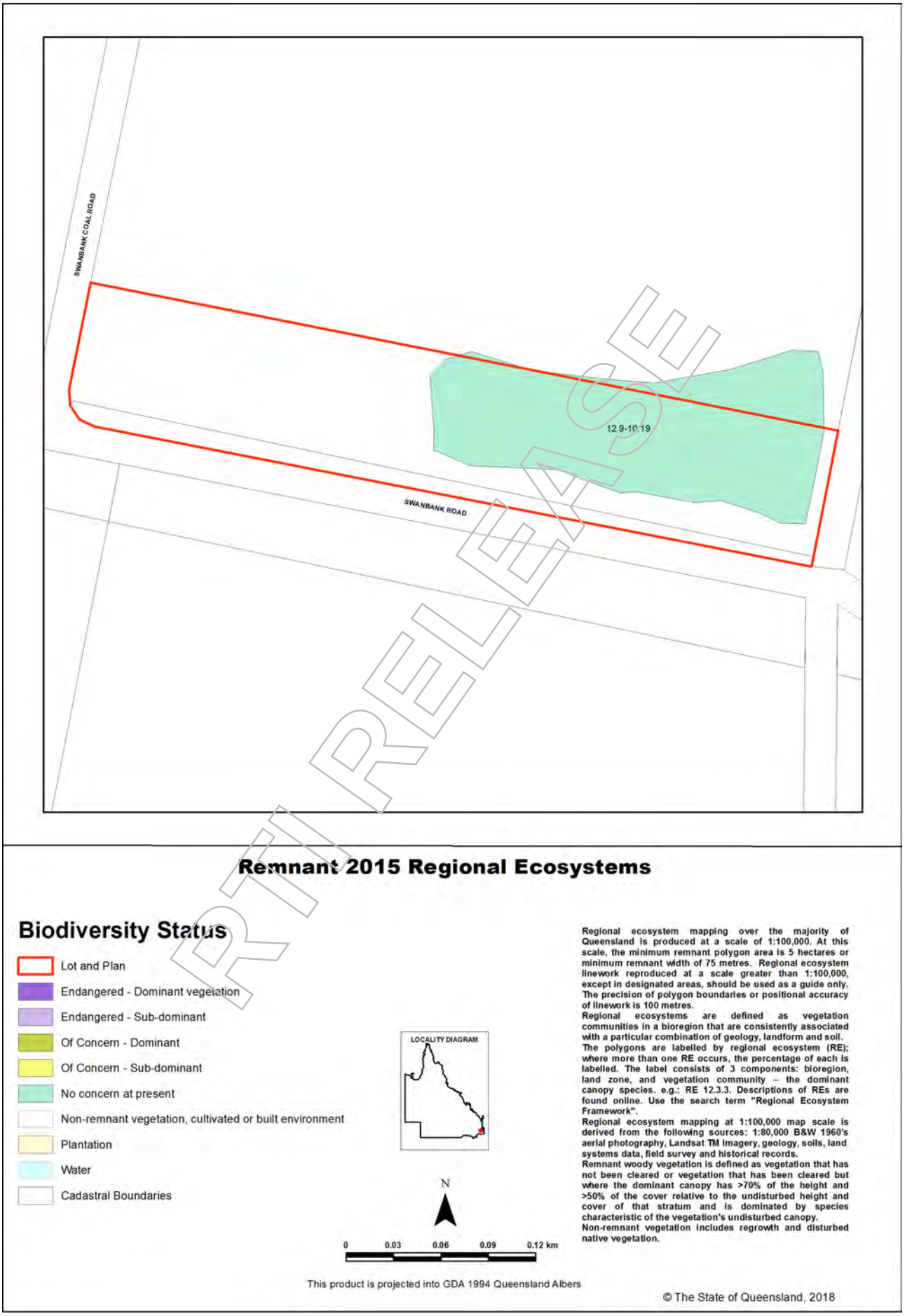
Regional ecosystems mapped as within the AOI	Technical Descriptions	Biocondition Benchmarks
12.9-10.19	Available	Available
non-rem	Not currently available	Not currently available

Maps

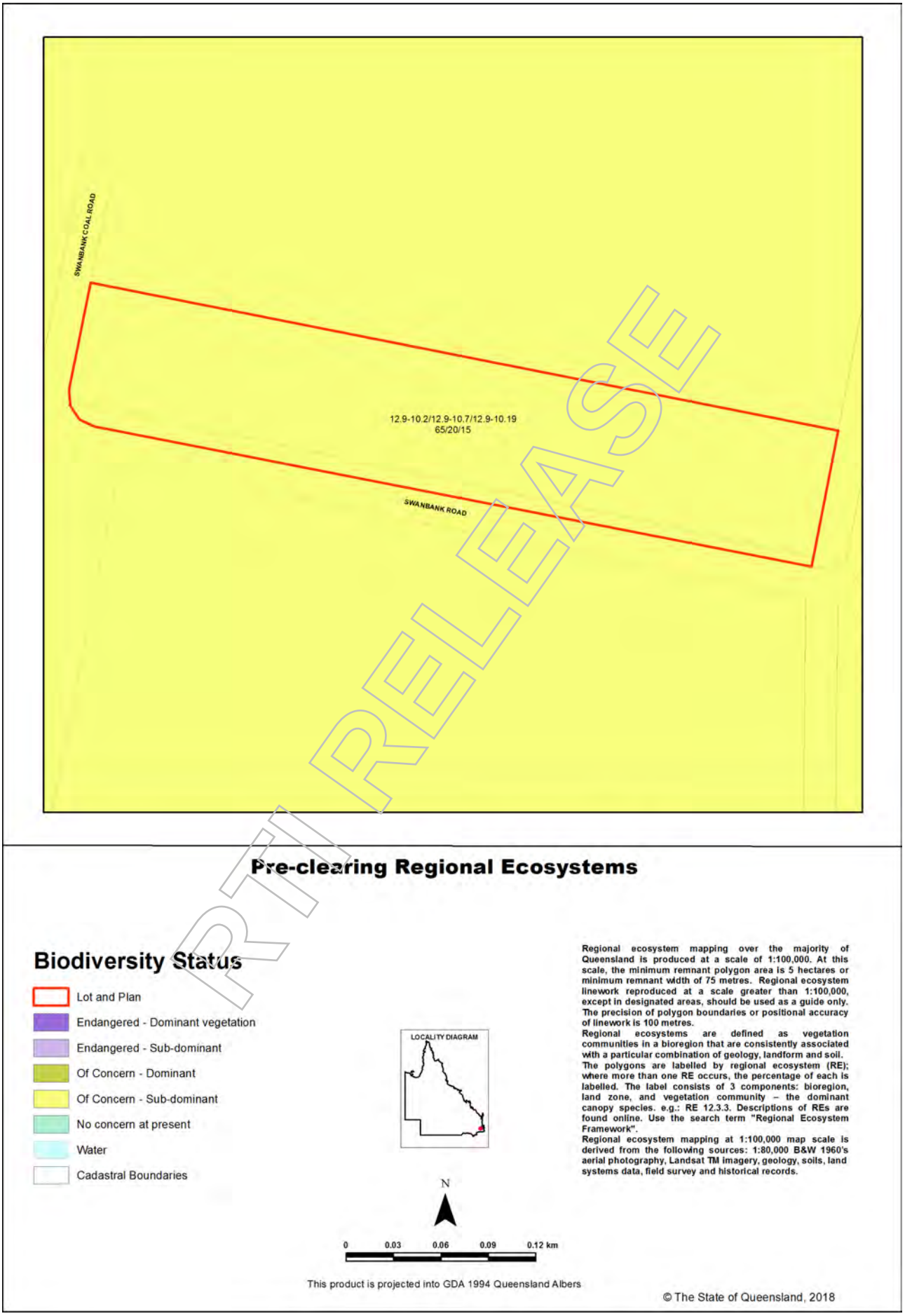
Map 1 - Location



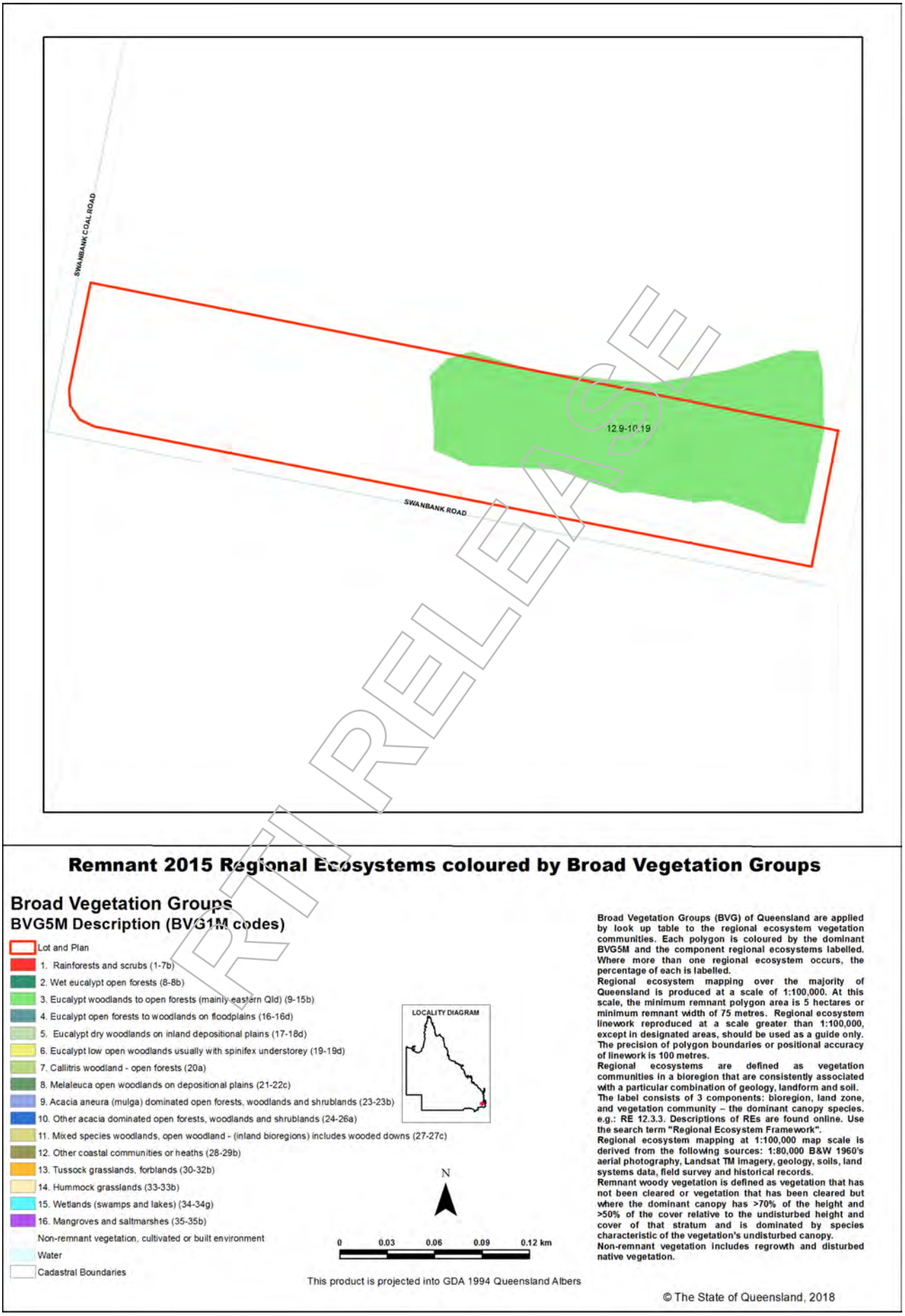
Map 2 - Remnant 2015 regional ecosystems



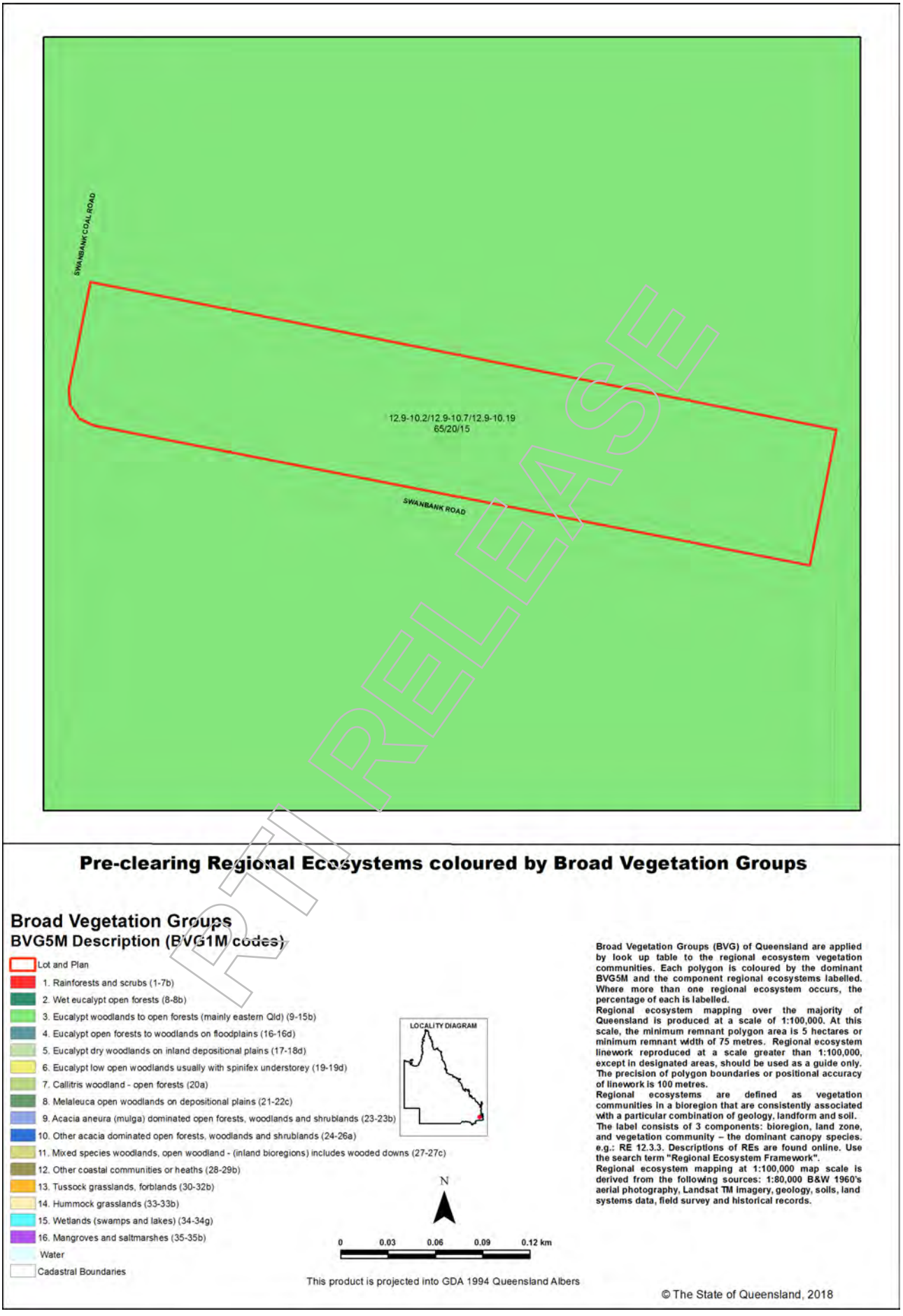
Map 3 - Pre-clearing regional ecosystems



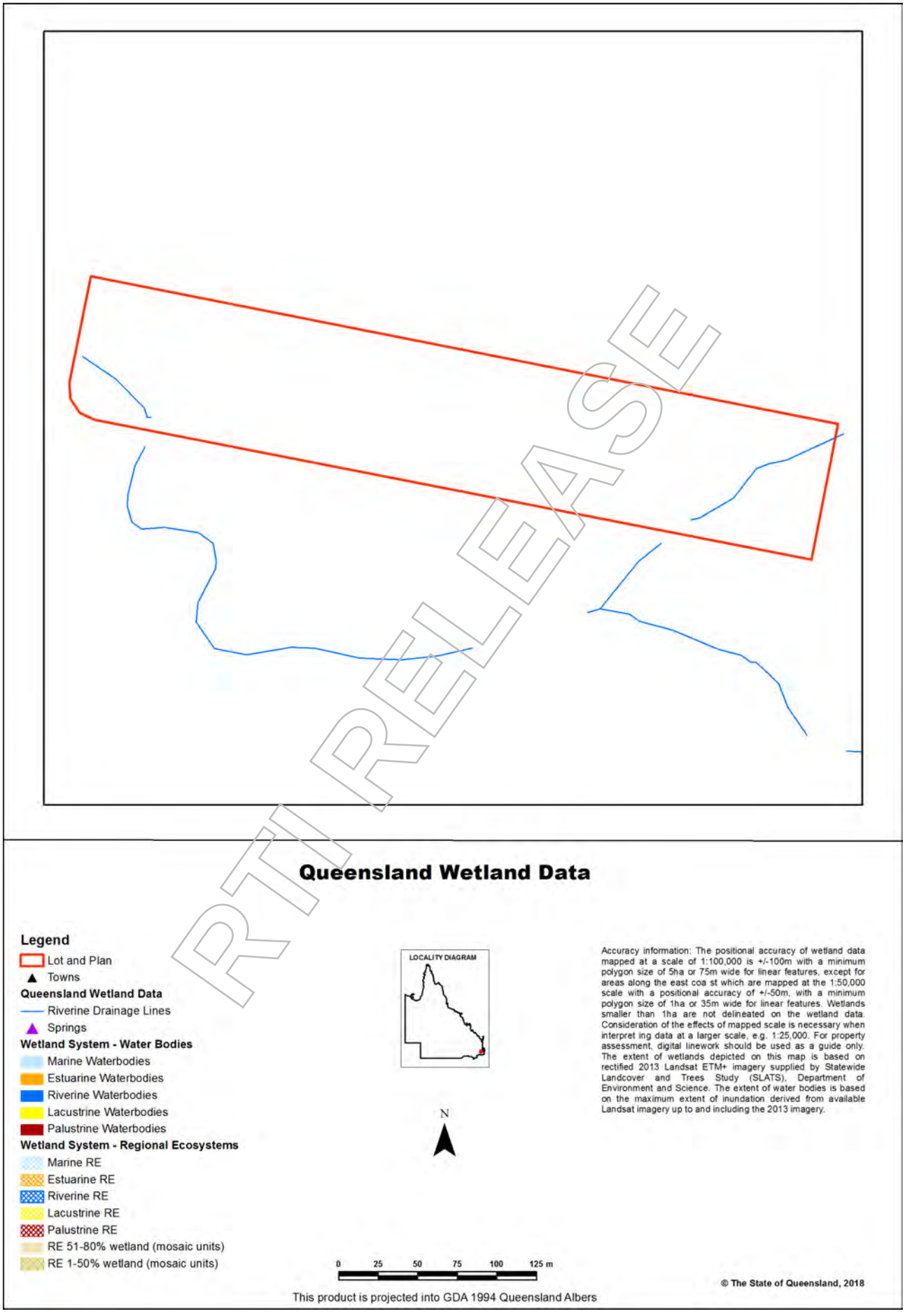
Map 4 - Remnant 2015 regional ecosystems by BVG (5M)



Map 5 - Pre-clearing regional ecosystems by BVG (5M)



Map 6 - Wetlands and waterways



Links and Other Information Sources

The Department of Environment and Science's Website -

http://www.qld.gov.au/environment/plants-animals/plants/ecosystems/

provides further information on the regional ecosystem framework, including access to links to the Regional Ecosystem Database, Broad Vegetation Group Definitions, Regional Ecosystem and Land zone descriptions.

Descriptions of the broad vegetation groups of Queensland can be downloaded from:

https://publications.qld.gov.au/dataset/redd/resource/

The methodology for mapping regional ecosystems can be downloaded from:

https://publications.qld.gov.au/dataset/redd/resource/

Technical descriptions for regional ecosystems can be obtained from:

http://www.qld.gov.au/environment/plants-animals/plants/ecosystems/technical-descriptions/

Benchmarks can be obtained from:

http://www.qld.gov.au/environment/plants-animals/biodiversity/benchmarks/

For further information associated with the remnant regional ecosystem dataset used by this report, refer to the metadata associated with the Biodiversity status of pre-clearing and Remnant Regional Ecosystems of Queensland dataset (version listed in **Appendix 1**) which is available through the Queensland Government Information System portal,

http://dds.information.qld.gov.au/dds/

The Queensland Globe is a mapping and data application. As an interactive online tool, Queensland Globe allows you to view and explore Queensland maps, imagery (including up-to-date satellite images) and other spatial data, including regional ecosystem mapping. To further view and explore regional ecosystems over an area of interest, access the Biota Globe (a component of the Queensland Globe). The Queensland Globe can be accessed via the following link:

http://www.dnrm.qld.gov.au/mapping-data/queensland-globe

References

Neldner, V.J., Niehus R.E., Wilson, B.A. McDonald, W.J.F., Ford, A.J. and Accad, A. (2017) The Vegetation of Queensland. Descriptions of Broad Vegetation Groups. Version 3.0. Queensland Herbarium, Department of Science, Information Technology, Innovation and the Arts.

(https://publications.qld.gov.au/dataset/redd/resource/78209e74-c7f2-4589-90c1-c33188359086)

Neldner, V.J., Wilson, B.A., Dillewaard, H.A., Ryan, T.S. and Butler, D.W. (2017) *Methodology for Survey and Mapping of Regional Ecosystems and Vegetation Communities in Queensland*. Version 4.0. Queensland Herbarium, Department of Science, Information Technology, Innovation and the Arts.

(https://publications.qld.gov.au/dataset/redd/resource/6dee78ab-c12c-4692-9842-b7257c2511e4)

Sattler, P.S. and Williams, R.D. (eds) (1999). *The Conservation Status of Queensland's Bioregional Ecosystems*. Environmental Protection Agency, Brisbane.

Appendices

Appendix 1 - Source Data

The dataset listed below is available for download from:

http://www.qld.gov.au/environment/plants-animals/plants/ecosystems/download/

- Regional Ecosystem Description Database

The datasets listed below are available for download from:

http://dds.information.qld.gov.au/dds/

- Biodiversity status of pre-clearing and 2015 remnant regional ecosystems of Queensland
- Pre-clearing Vegetation Communities and Regional Ecosystems of Queensland
- Queensland Wetland Data Version - Wetland lines
- Queensland Wetland Data Version - Wetland points
- Queensland Wetland Data Version - Wetland areas

Appendix 2 - Acronyms and Abbreviations

AOI	- Area of Interest
GDA94	- Geocentric Datum of Australia 1994
GIS	- Geographic Information System
RE	- Regional Ecosystem
REDD	- Regional Ecosystem Description Database
VMA	- *Vegetation Management Act 1999*

Queensland Government

Department of Environment and Science

Environmental Reports

Regional Ecosystems

Biodiversity Status

For the selected area of interest
Lot: 101 Plan: RP839072

Environmental Reports - General Information

The Environmental Reports portal provides for the assessment of selected matters of interest relevant to a user specified location, or area of interest (AOI). All area and derivative figures are relevant to the extent of matters of interest contained within the AOI unless otherwise stated. Please note, if a user selects an AOI via the "central coordinates" option, the resulting assessment area encompasses an area extending for a 2km radius from the input coordinates.

All area and area derived figures included in this report have been calculated via reprojecting relevant spatial features to Albers equal-area conic projection (central meridian = 146, datum Geocentric Datum of Australia 1994). As a result, area figures may differ slightly if calculated for the same features using a different co-ordinate system.

Figures in tables may be affected by rounding.

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For matters relevant to vegetation management under the VMA, please refer to the Department of Natural Resources, Mines and Energy website

https://www.dnrme.qld.gov.au/

Please direct queries about these reports to: Queensland.Herbarium@dsiti.qld.gov.au

Disclaimer

Whilst every care is taken to ensure the accuracy of the information provided in this report, the Queensland Government makes no representations or warranties about its accuracy, reliability, completeness, or suitability, for any particular purpose and disclaims all responsibility and all liability (including without limitation, liability in negligence) for all expenses, losses, damages (including indirect or consequential damage) and costs which the user may incur as a consequence of the information being inaccurate or incomplete in any way and for any reason.

Table of Contents

Summary Information

The following table provides an overview of the AOI with respect to selected topographic and environmental themes. Refer to **Map 1** for locality information.

Table 1: Area of interest details: Lot: 101 Plan: RP839072

Size (ha)	21.95
Local Government(s)	Ipswich City
Bioregion(s)	Southeast Queensland
Subregion(s)	Moreton Basin
Catchment(s)	Brisbane

The table below summarizes the extent of remnant vegetation classed as "Endangered", "Of concern" and "No concern at present" regional ecosystems classified by Biodiversity Status within the area of interest (AOI).

Table 2: Summary table, biodiversity status of regional ecosystems within the AOI

Biodiversity Status	Area (Ha)	% of AOI
Endangered	0.0	0.0
Of concern	0.0	0.0
No concern at present	0.0	0.0
Total remnant vegetation	0.0	0.0

Refer to **Map 2** for further information.

Regional Ecosystems

1. Introduction

Regional ecosystems are vegetation communities in a bioregion that are consistently associated with particular combinations of geology, landform and soil (Sattler and Williams 1999). Descriptions of Queensland's Regional ecosystems are available online from the Regional Ecosystem Description Database (REDD). Descriptions are compiled from a broad range of information sources including vegetation, land system and geology survey and mapping and detailed vegetation site data. The regional ecosystem classification and descriptions are reviewed as new information becomes available. A number of vegetation communities may form a single regional ecosystem and are usually distinguished by differences in dominant species, frequently in the shrub or ground layers and are denoted by a letter following the regional ecosystem code (e.g. a, b, c). Vegetation communities and regional ecosystems are amalgamated into a higher level classification of broad vegetation groups (BVGs).

A published methodology for survey and mapping of regional ecosystems across Queensland (Neldner et al 2017) provides further details on regional ecosystem concepts and terminology.

This report provides information on the type, status, and extent of vegetation communities, regional ecosystems and broad vegetation groups present within a user specified area of interest. Please note, for the purpose of this report, the Biodiversity Status is used. This report has not been developed for application of the *Vegetation Management Act 1999* (VMA). Additionally, information generated in this report has been derived from the Queensland Herbarium's Regional Ecosystem Mapping, and not the regulated mapping certified for the purposes of the VMA. If your interest/matter relates to regional ecosystems and the VMA, users should refer to the Department of Natural Resources, Mines and Energy website.

https://www.dnrme.qld.gov.au/

With respect to the Queensland Biodiversity Status,

"Endangered" regional ecosystems are described as those where:

- remnant vegetation is less than 10 per cent of its pre-clearing extent across the bioregion; or 10-30% of its pre-clearing extent remains and the remnant vegetation is less than 10,000 hectares, or
- less than 10 per cent of its pre-clearing extent remains unaffected by severe degradation and/or biodiversity loss*, or
- 10-30 per cent of its pre-clearing extent remains unaffected by severe degradation and/or biodiversity loss and the remnant vegetation is less than 10,000 hectares; or
- it is a rare** regional ecosystem subject to a threatening process.***

"Of concern" regional ecosystems are described as those where:

- the degradation criteria listed above for 'Endangered' regional ecosystems are not met and,
- remnant vegetation is 10-30 per cent of its pre-clearing extent across the bioregion; or more than 20 per cent of its pre-clearing extent remains and the remnant extent is less than 10,000 hectares, or
- 10-30 percent of its pre-clearing extent remains unaffected by moderate degradation and/or biodiversity loss.****

and "No concern at present" regional ecosystems are described as those where:

- remnant vegetation is over 30 per cent of its pre-clearing extent across the bioregion, and the remnant area is greater than 10,000 hectares, and
- the degradation criteria listed above for 'Endangered' or 'Of concern' regional ecosystems are not met.

**Severe degradation and/or biodiversity loss is defined as: floristic and/or faunal diversity is greatly reduced but unlikely to recover within the next 50 years even with the removal of threatening processes; or soil surface is severely degraded, for example, by loss of A horizon, surface expression of salinity; surface compaction, loss of organic matter or sheet erosion.*

***Rare regional ecosystem: pre-clearing extent (1000 ha); or patch size (100 ha and of limited total extent across its range).*

****Threatening processes are those that are reducing or will reduce the biodiversity and ecological integrity of a regional ecosystem. For example, clearing, weed invasion, fragmentation, inappropriate fire regime or grazing pressure, or infrastructure development.*

*****Moderate degradation and/or biodiversity loss is defined as: floristic and/or faunal diversity is greatly reduced but unlikely to recover within the next 20 years even with the removal of threatening processes; or soil surface is moderately degraded.*

2. Remnant Regional Ecosystems

The following table identifies the remnant regional ecosystems and vegetation communities mapped within the AOI and provides their short descriptions, Biodiversity Status, and remnant extent within the selected AOI. Please note, where heterogeneous vegetated patches (mixed patches of remnant vegetation mapped as containing multiple regional ecosystems) occur within the AOI, they have been split and listed as individual regional ecosystems (or vegetation communities where present) for the purposes of the table below. In such instances, associated area figures have been generated based upon the estimated proportion of each regional ecosystem (or vegetation community) predicted to be present within the larger mixed patch.

Table 3: Remnant regional ecosystems, description and status within the AOI

Regional Ecosystem	Short Description	BD Status	Area (Ha)	% of AOI
non-rem	None	None	21.95	99.98

Refer to **Map 2** for further information. **Map 3** also provides a visual estimate of the distribution of regional ecosystems present before clearing.

Table 4 provides further information in regards to the remnant regional ecosystems present within the SOI. Specifically, the extent of remnant vegetation remaining within the bioregion, the 1:1,000,000 broad vegetation group (BVG) classification, whether the regional ecosystem is identified as a wetland, and extent of representation in Queensland's Protected Area Estate. For a description of the vegetation communities within the AOI and classified according to the 1:1,000,000 BVG, refer to **Table 6**.

Table 4: Remnant regional ecosystems within the AOI, additional information

Regional Ecosystem	Remnant Extent	BVG (1 Million)	Wetland	Representation in protected estate
non-rem	None	None	None	None

Representation in Protected Area Estate: High greater than 10% of pre-clearing extent is represented; Medium 4 - 10% is represented; Low less than 4% is represented, No representation.

The distribution of mapped wetland systems within the area of interest is displayed in **Map 6**.

The following table lists known special values associated with a regional ecosystem type.

Table 5: Remnant regional ecosystems within the AOI, special values

Regional Ecosystem	Special Values
non-rem	None

3. Remnant Regional Ecosystems by Broad Vegetation Group

BVGs are a higher-level grouping of vegetation communities. Queensland encompasses a wide variety of landscapes across temperate, wet and dry tropics and semi-arid climatic zones. BVGs provide an overview of vegetation communities across the state or a bioregion and allow comparison with other states. There are three levels of BVGs which reflect the approximate scale at which they are designed to be used: the 1:5,000,000 (national), 1:2,000,000 (state) and 1:1,000,000 (regional) scales.

A comprehensive description of BVGs is available at:

https://publications.qld.gov.au/dataset/redd/resource/

The following table provides a description of the 1:1,000,000 BVGs present and their associated extent within the AOI.

Table 6: Broad vegetation groups (1 million) within the AOI

BVG (1 Million)	Description	Area (Ha)	% of AOI
None	None	21.95	99.98

Refer to **Map 4** for further information. **Map 5** also provides a representation of the distribution of vegetation communities as per the 1:5,000,000 BVG believed to be present prior to European settlement.

4. Technical and BioCondition Benchmark Descriptions

Technical descriptions provide a detailed description of the full range in structure and floristic composition of regional ecosystems (e.g. 11.3.1) and their component vegetation communities (e.g. 11.3.1a, 11.3.1b). See:

http://www.qld.gov.au/environment/plants-animals/plants/ecosystems/technical-descriptions/

The descriptions are compiled using site survey data from the Queensland Herbarium's CORVEG database. Distribution maps, representative images (if available) and the pre-clearing and remnant extent (hectares) of each vegetation community derived from the regional ecosystem mapping data are included. The technical descriptions should be used in conjunction with the fields from the regional ecosystem description database (REDD) for a full description of the regional ecosystem.

Technical descriptions include data on canopy height, canopy cover and native plant species composition of the predominant layer, which are attributes relevant to assessment of the remnant status of vegetation under the *Vegetation Management Act 1999*. However, as technical descriptions reflect the full range in structure and floristic composition across the climatic, natural disturbance and geographic range of the regional ecosystem, local reference sites should be used for remnant assessment where possible (Neldner et al. 2012 (PDF)* section 3.3.1 of:

https://publications.qld.gov.au/dataset/redd/resource/

The technical descriptions are subject to review and are updated as additional data becomes available.

When conducting a BioCondition assessment, these technical descriptions should be used in conjunction with BioCondition benchmarks for the specific regional ecosystem, or component vegetation community.

http://www.qld.gov.au/environment/plants-animals/biodiversity/benchmarks/

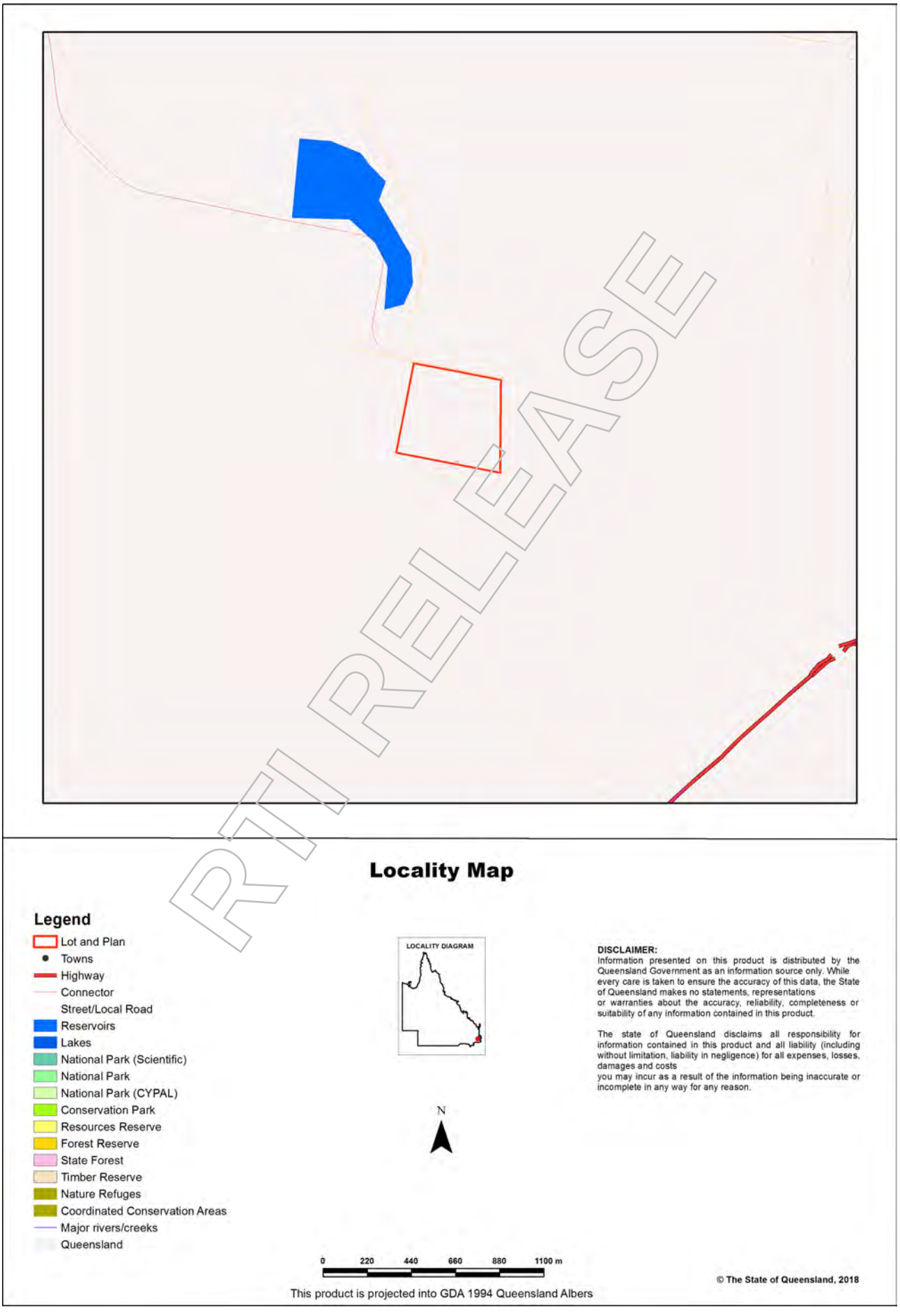
Benchmarks are based on a combination of quantitative and qualitative information and should be used as a guide only. Benchmarks are specific to one regional ecosystem vegetation community, however, the natural variability in structure and floristic composition under a range of climatic and natural disturbance regimes has been considered throughout the geographic extent of the regional ecosystem. Local reference sites should be used for this spatial and temporal (seasonal and annual) variability.

Table 7: List of remnant regional ecosystems within the AOI for which technical and biocondition benchmark descriptions are available

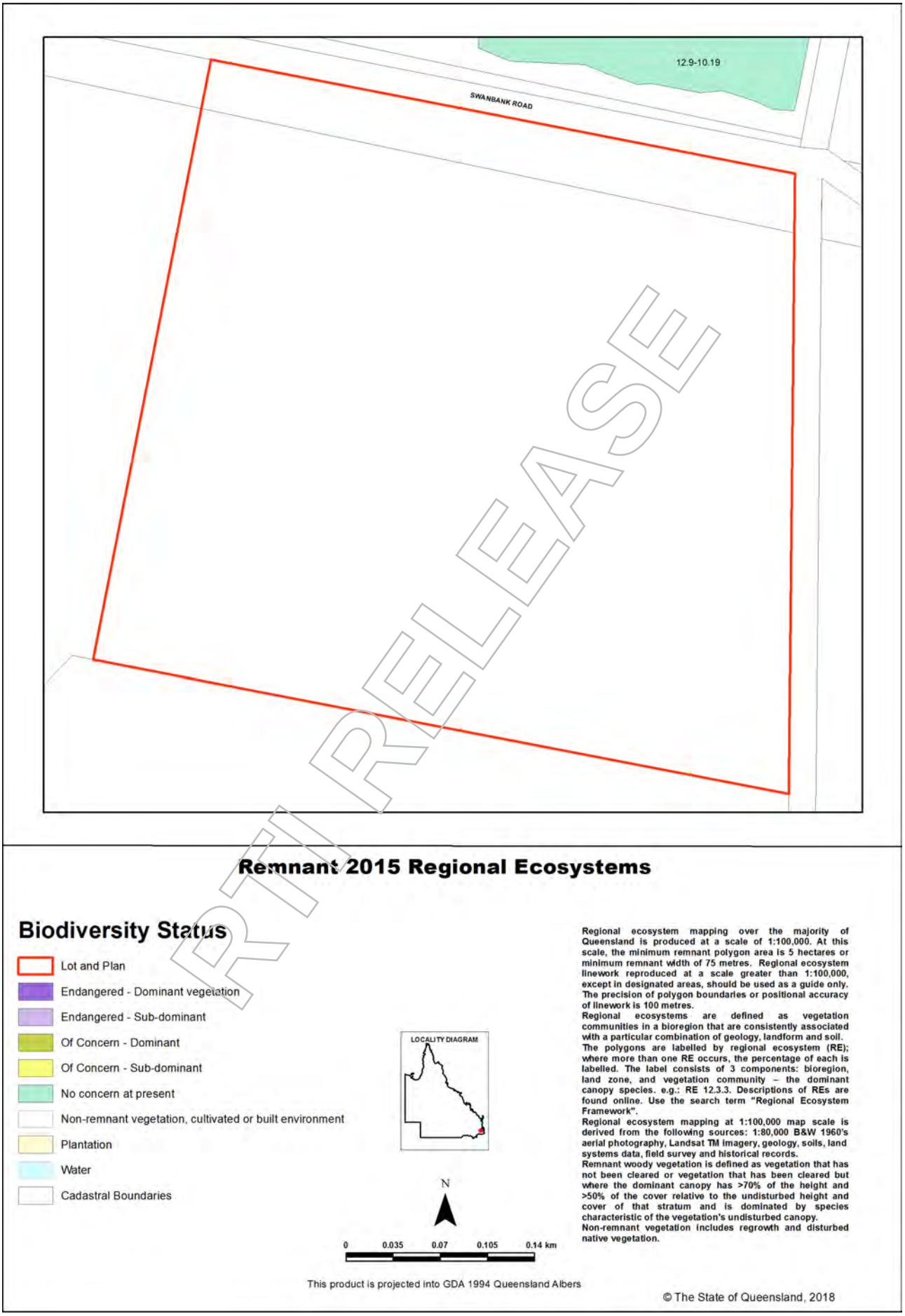
Regional ecosystems mapped as within the AOI	Technical Descriptions	Biocondition Benchmarks
non-rem	Not currently available	Not currently available

Maps

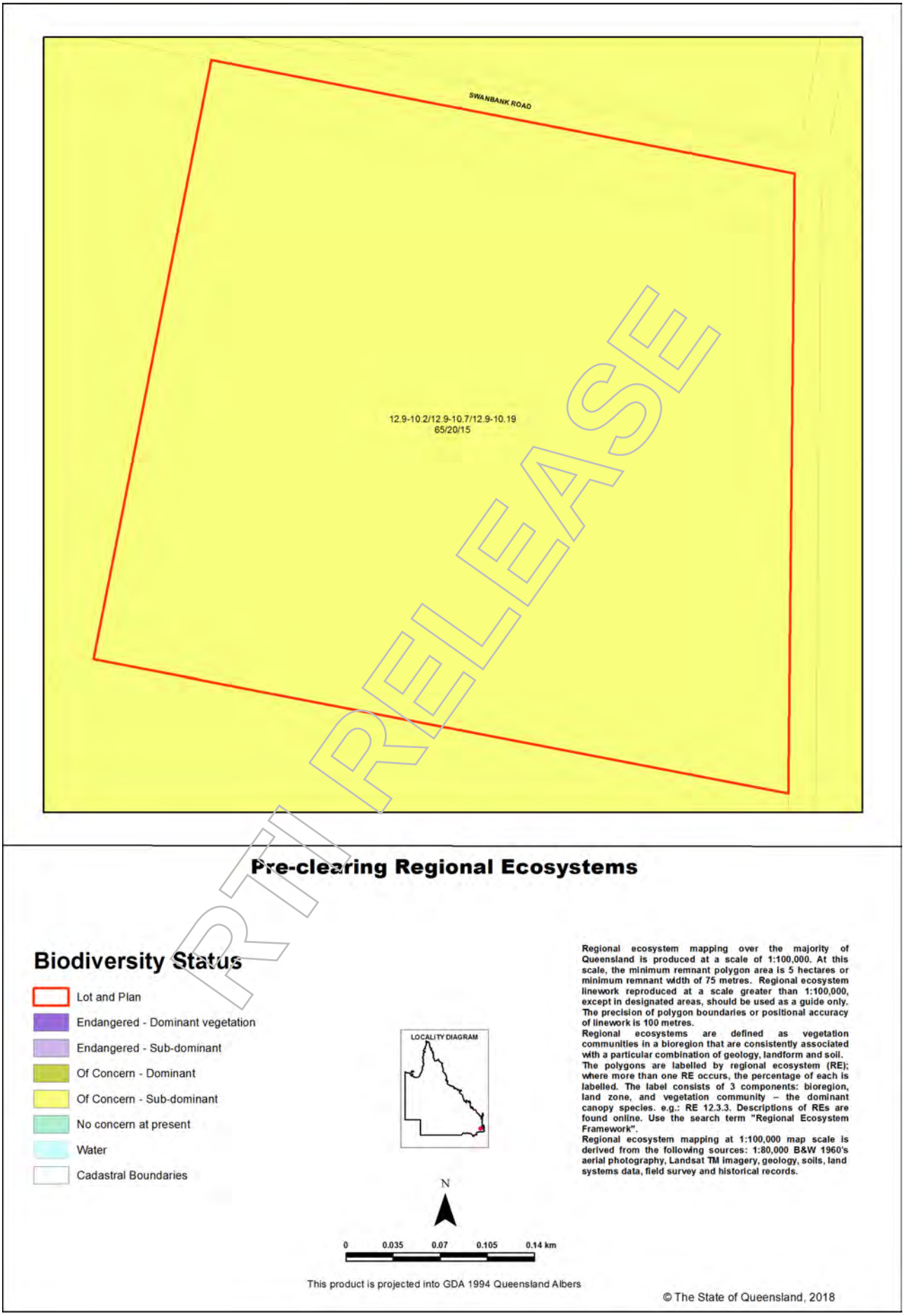
Map 1 - Location



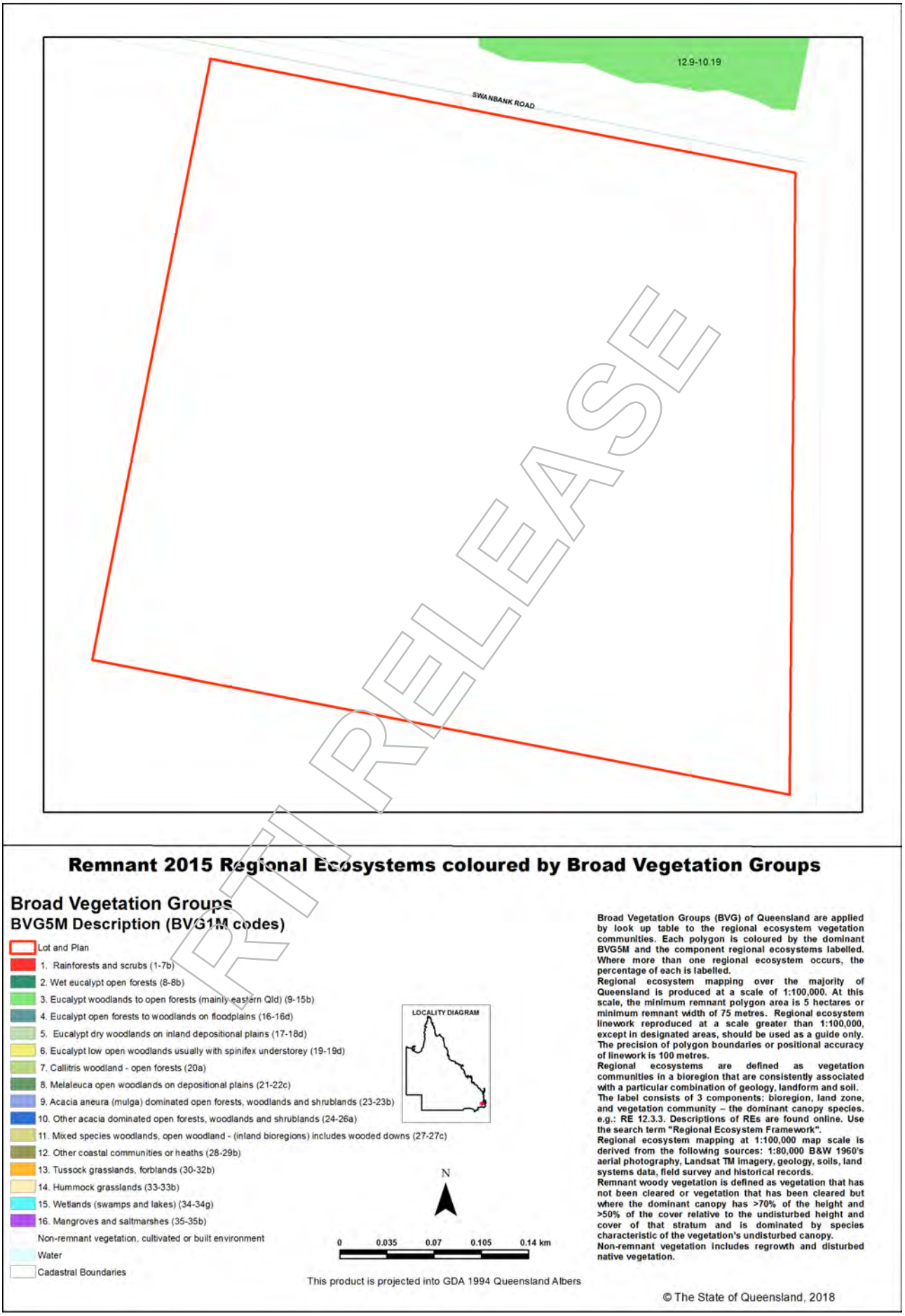
Map 2 - Remnant 2015 regional ecosystems



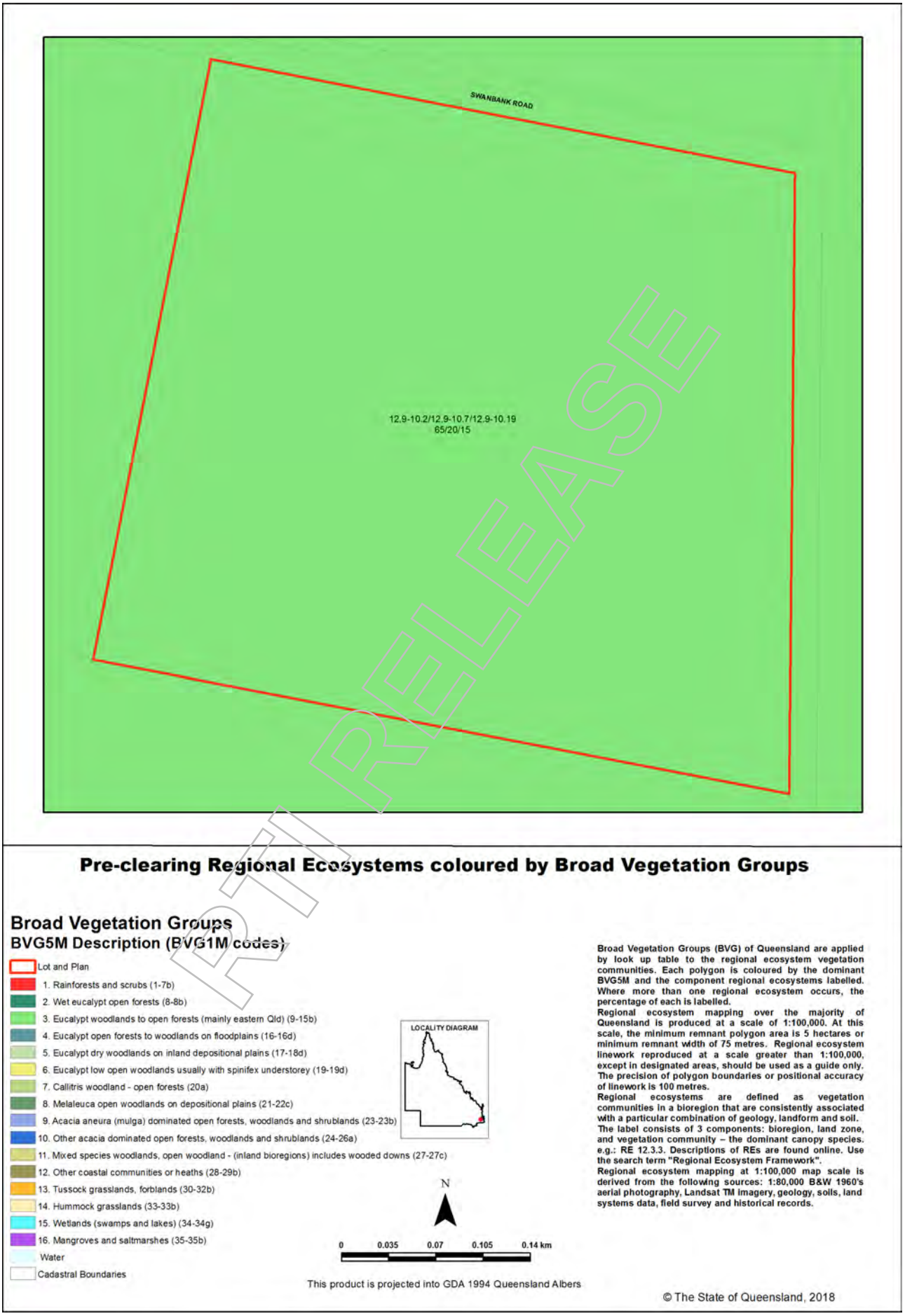
Map 3 - Pre-clearing regional ecosystems



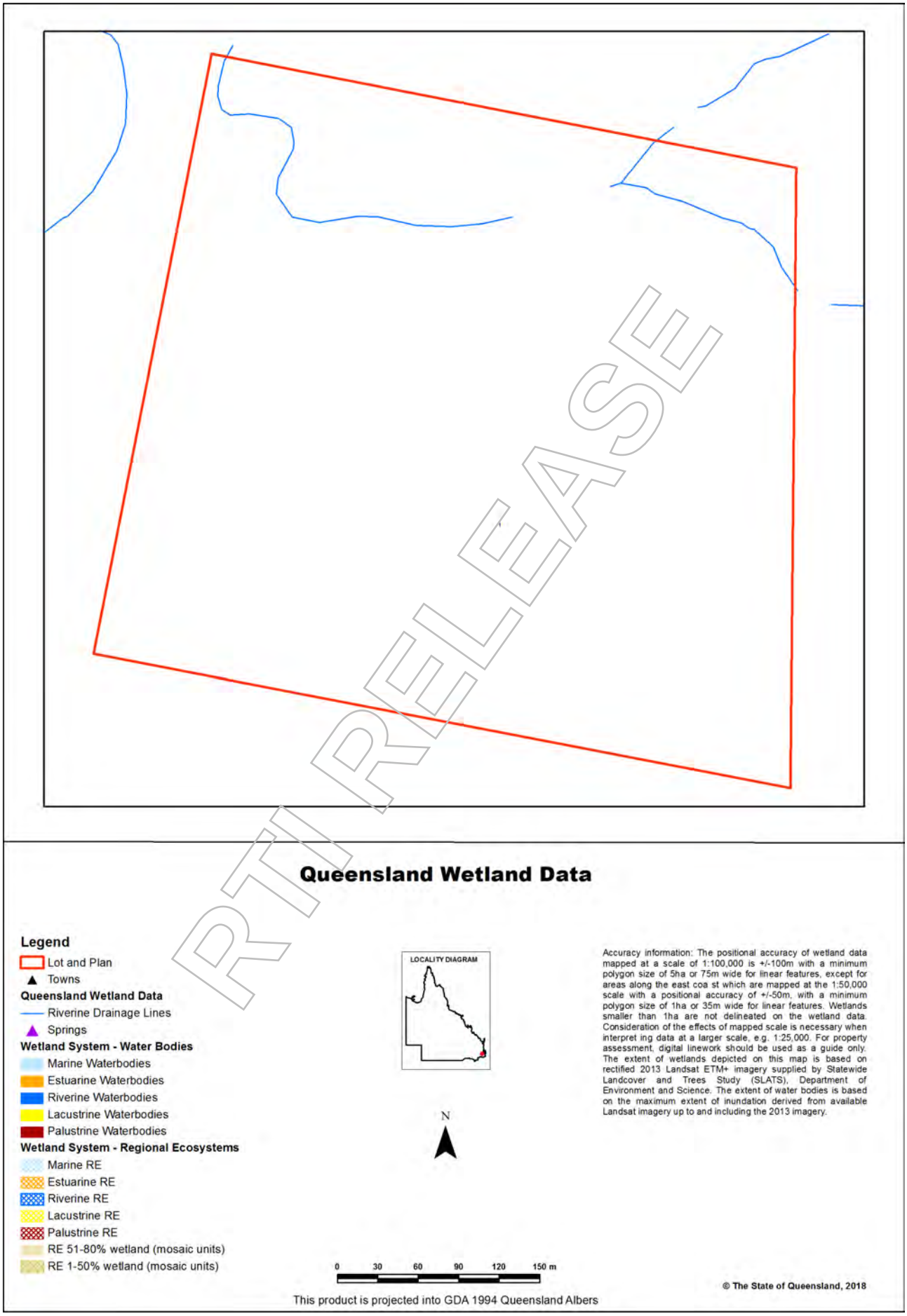
Map 4 - Remnant 2015 regional ecosystems by BVG (5M)



Map 5 - Pre-clearing regional ecosystems by BVG (5M)



Map 6 - Wetlands and waterways



Links and Other Information Sources

The Department of Environment and Science's Website -

http://www.qld.gov.au/environment/plants-animals/plants/ecosystems/

provides further information on the regional ecosystem framework, including access to links to the Regional Ecosystem Database, Broad Vegetation Group Definitions, Regional Ecosystem and Land zone descriptions.

Descriptions of the broad vegetation groups of Queensland can be downloaded from:

https://publications.qld.gov.au/dataset/redd/resource/

The methodology for mapping regional ecosystems can be downloaded from:

https://publications.qld.gov.au/dataset/redd/resource/

Technical descriptions for regional ecosystems can be obtained from:

http://www.qld.gov.au/environment/plants-animals/plants/ecosystems/technical-descriptions/

Benchmarks can be obtained from:

http://www.qld.gov.au/environment/plants-animals/biodiversity/benchmarks/

For further information associated with the remnant regional ecosystem dataset used by this report, refer to the metadata associated with the Biodiversity status of pre-clearing and Remnant Regional Ecosystems of Queensland dataset (version listed in **Appendix 1**) which is available through the Queensland Government Information System portal,

http://dds.information.qld.gov.au/dds/

The Queensland Globe is a mapping and data application. As an interactive online tool, Queensland Globe allows you to view and explore Queensland maps, imagery (including up-to-date satellite images) and other spatial data, including regional ecosystem mapping. To further view and explore regional ecosystems over an area of interest, access the Biota Globe (a component of the Queensland Globe). The Queensland Globe can be accessed via the following link:

http://www.dnrm.qld.gov.au/mapping-data/queensland-globe

References

Neldner, V.J., Niehus R.E., Wilson, B.A. McDonald, W.J.F., Ford, A.J. and Accad, A. (2017) The Vegetation of Queensland. Descriptions of Broad Vegetation Groups. Version 3.0. Queensland Herbarium, Department of Science, Information Technology, Innovation and the Arts.

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Size (ha)	143.21
Local Government(s)	Ipswich City
Bioregion(s)	Southeast Queensland
Subregion(s)	Moreton Basin
Catchment(s)	Brisbane

The table below summarizes the extent of remnant vegetation classed as "Endangered", "Of concern" and "No concern at present" regional ecosystems classified by Biodiversity Status within the area of interest (AOI).

Table 2: Summary table, biodiversity status of regional ecosystems within the AOI

Biodiversity Status	Area (Ha)	% of AOI
Endangered	0.0	0.0
Of concern	3.94	2.75
No concern at present	15.74	10.99
Total remnant vegetation	19.68	13.74

Refer to **Map 2** for further information.

Regional Ecosystems

1. Introduction

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- remnant vegetation is less than 10 per cent of its pre-clearing extent across the bioregion; or 10-30% of its pre-clearing extent remains and the remnant vegetation is less than 10,000 hectares, or
- less than 10 per cent of its pre-clearing extent remains unaffected by severe degradation and/or biodiversity loss*, or
- 10-30 per cent of its pre-clearing extent remains unaffected by severe degradation and/or biodiversity loss and the remnant vegetation is less than 10,000 hectares; or
- it is a rare** regional ecosystem subject to a threatening process.***

"Of concern" regional ecosystems are described as those where:

- the degradation criteria listed above for 'Endangered' regional ecosystems are not met and,
- remnant vegetation is 10-30 per cent of its pre-clearing extent across the bioregion; or more than 20 per cent of its pre-clearing extent remains and the remnant extent is less than 10,000 hectares, or
- 10-30 percent of its pre-clearing extent remains unaffected by moderate degradation and/or biodiversity loss.****

and "No concern at present" regional ecosystems are described as those where:

- remnant vegetation is over 30 per cent of its pre-clearing extent across the bioregion, and the remnant area is greater than 10,000 hectares, and
- the degradation criteria listed above for 'Endangered' or 'Of concern' regional ecosystems are not met.

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***Rare regional ecosystem: pre-clearing extent (1000 ha); or patch size (100 ha and of limited total extent across its range).*

****Threatening processes are those that are reducing or will reduce the biodiversity and ecological integrity of a regional ecosystem. For example, clearing, weed invasion, fragmentation, inappropriate fire regime or grazing pressure, or infrastructure development.*

*****Moderate degradation and/or biodiversity loss is defined as: floristic and/or faunal diversity is greatly reduced but unlikely to recover within the next 20 years even with the removal of threatening processes; or soil surface is moderately degraded.*

2. Remnant Regional Ecosystems

The following table identifies the remnant regional ecosystems and vegetation communities mapped within the AOI and provides their short descriptions, Biodiversity Status, and remnant extent within the selected AOI. Please note, where heterogeneous vegetated patches (mixed patches of remnant vegetation mapped as containing multiple regional ecosystems) occur within the AOI, they have been split and listed as individual regional ecosystems (or vegetation communities where present) for the purposes of the table below. In such instances, associated area figures have been generated based upon the estimated proportion of each regional ecosystem (or vegetation community) predicted to be present within the larger mixed patch.

Table 3: Remnant regional ecosystems, description and status within the AOI

Regional Ecosystem	Short Description	BD Status	Area (Ha)	% of AOI
12.9-10.19	Eucalyptus fibrosa subsp. fibrosa woodland on sedimentary rocks	No concern at present	2.95	2.06
12.9-10.2	Corymbia citriodora subsp. variegata +/- Eucalyptus crebra open forest on sedimentary rocks	No concern at present	12.79	8.93
12.9-10.7	Eucalyptus crebra +/- E. tereticornis, Corymbia tessellaris, Angophora spp., E. melanophloia woodland on sedimentary rocks	Of concern	3.94	2.75
non-rem	None	None	123.54	86.26

Refer to **Map 2** for further information. **Map 3** also provides a visual estimate of the distribution of regional ecosystems present before clearing.

Table 4 provides further information in regards to the remnant regional ecosystems present within the SOI. Specifically, the extent of remnant vegetation remaining within the bioregion, the 1:1,000,000 broad vegetation group (BVG) classification, whether the regional ecosystem is identified as a wetland, and extent of representation in Queensland's Protected Area Estate. For a description of the vegetation communities within the AOI and classified according to the 1:1,000,000 BVG, refer to **Table 6**.

Table 4: Remnant regional ecosystems within the AOI, additional information

Regional Ecosystem	Remnant Extent	BVG (1 Million)	Wetland	Representation in protected estate
12.9-10.19	Pre-clearing 59000 ha; Remnant 2015 42000 ha	12a	None	Medium
12.9-10.2	Pre-clearing 222000 ha; Remnant 2015 86000 ha	10b	None	Medium
12.9-10.7	Pre-clearing 248000 ha; Remnant 2015 42000 ha	13c	None	Low
non-rem	None	None	None	None

Representation in Protected Area Estate: High greater than 10% of pre-clearing extent is represented; Medium 4 - 10% is represented; Low less than 4% is represented, No representation.

The distribution of mapped wetland systems within the area of interest is displayed in **Map 6**.

The following table lists known special values associated with a regional ecosystem type.

Table 5: Remnant regional ecosystems within the AOI, special values

Regional Ecosystem	Special Values
12.9-10.19	Habitat for threatened plant species including Macrozamia parcifolia,
12.9-10.2	Habitat for threatened plant species including Notelaea lloydii, Grevillea quadricauda, Westringia sericea, Plectranthus habrophyllus
12.9-10.7	None
non-rem	None

3. Remnant Regional Ecosystems by Broad Vegetation Group

BVGs are a higher-level grouping of vegetation communities. Queensland encompasses a wide variety of landscapes across temperate, wet and dry tropics and semi-arid climatic zones. BVGs provide an overview of vegetation communities across the state or a bioregion and allow comparison with other states. There are three levels of BVGs which reflect the approximate scale at which they are designed to be used: the 1:5,000,000 (national), 1:2,000,000 (state) and 1:1,000,000 (regional) scales.

A comprehensive description of BVGs is available at:

https://publications.qld.gov.au/dataset/redd/resource/

The following table provides a description of the 1:1,000,000 BVGs present and their associated extent within the AOI.

Table 6: Broad vegetation groups (1 million) within the AOI

BVG (1 Million)	Description	Area (Ha)	% of AOI
None	None	123.54	86.26
10b	Moist open forests to woodlands dominated by Corymbia citriodora (spotted gum). (land zones 12, 11, 9, 5, 8) (SEQ, CQC, EIU, WET)	12.79	8.93
12a	Dry woodlands to open woodlands dominated by ironbarks such as Eucalyptus decorticans (gum-topped ironbark), E. fibrosa subsp. nubila (blue-leaved ironbark), or E. crebra (narrow-leaved red ironbark) and/or bloodwoods such as Corymbia trachyphloia (yellow bloodwood), C. leichhardtii (rustyjacket), C. watsoniana (Watson's yellow bloodwood), C. lamprophylla, C. peltata (yellowjacket). Occasionally E. thozetiana (mountain yapunyah), E. cloeziana (Gympie messmate) or E. mediocris are dominant. Mostly on sub-coastal/inland hills with shallow soils. (land zones 10, 7, 9) (BRB, DEU, SEQ, GUP)	2.95	2.06
13c	Woodlands of Eucalyptus crebra (sens. lat.) (narrow-leaved red ironbark), E. drepanophylla (grey ironbark), E. fibrosa (dusky-leaved ironbark), E. shirleyi (shirley's silver-leaved ironbark) on granitic and metamorphic ranges (land zones 12, 11, 9, [5]) (BRB, EIU, SEQ, NET, CQC)	3.94	2.75

Refer to **Map 4** for further information. **Map 5** also provides a representation of the distribution of vegetation communities as per the 1:5,000,000 BVG believed to be present prior to European settlement.

4. Technical and BioCondition Benchmark Descriptions

Technical descriptions provide a detailed description of the full range in structure and floristic composition of regional ecosystems (e.g. 11.3.1) and their component vegetation communities (e.g. 11.3.1a, 11.3.1b). See:

http://www.qld.gov.au/environment/plants-animals/plants/ecosystems/technical-descriptions/

The descriptions are compiled using site survey data from the Queensland Herbarium's CORVEG database. Distribution maps, representative images (if available) and the pre-clearing and remnant extent (hectares) of each vegetation community derived from the regional ecosystem mapping data are included. The technical descriptions should be used in conjunction

with the fields from the regional ecosystem description database (REDD) for a full description of the regional ecosystem.

Technical descriptions include data on canopy height, canopy cover and native plant species composition of the predominant layer, which are attributes relevant to assessment of the remnant status of vegetation under the *Vegetation Management Act 1999*. However, as technical descriptions reflect the full range in structure and floristic composition across the climatic, natural disturbance and geographic range of the regional ecosystem, local reference sites should be used for remnant assessment where possible (Neldner et al. 2012 (PDF)* section 3.3.1 of:

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The technical descriptions are subject to review and are updated as additional data becomes available.

When conducting a BioCondition assessment, these technical descriptions should be used in conjunction with BioCondition benchmarks for the specific regional ecosystem, or component vegetation community.

http://www.qld.gov.au/environment/plants-animals/biodiversity/benchmarks/

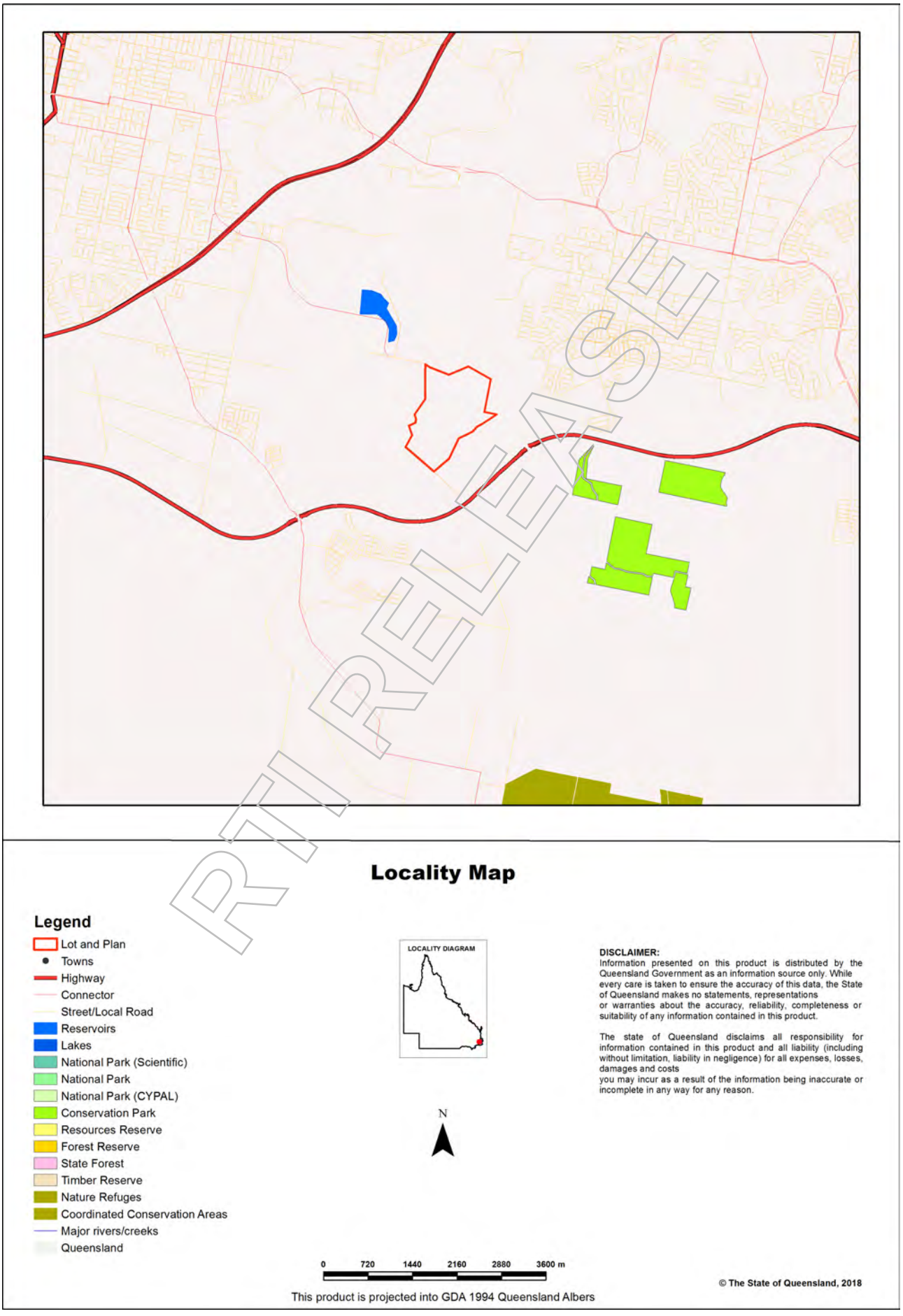
Benchmarks are based on a combination of quantitative and qualitative information and should be used as a guide only. Benchmarks are specific to one regional ecosystem vegetation community, however, the natural variability in structure and floristic composition under a range of climatic and natural disturbance regimes has been considered throughout the geographic extent of the regional ecosystem. Local reference sites should be used for this spatial and temporal (seasonal and annual) variability.

Table 7: List of remnant regional ecosystems within the AOI for which technical and biocondition benchmark descriptions are available

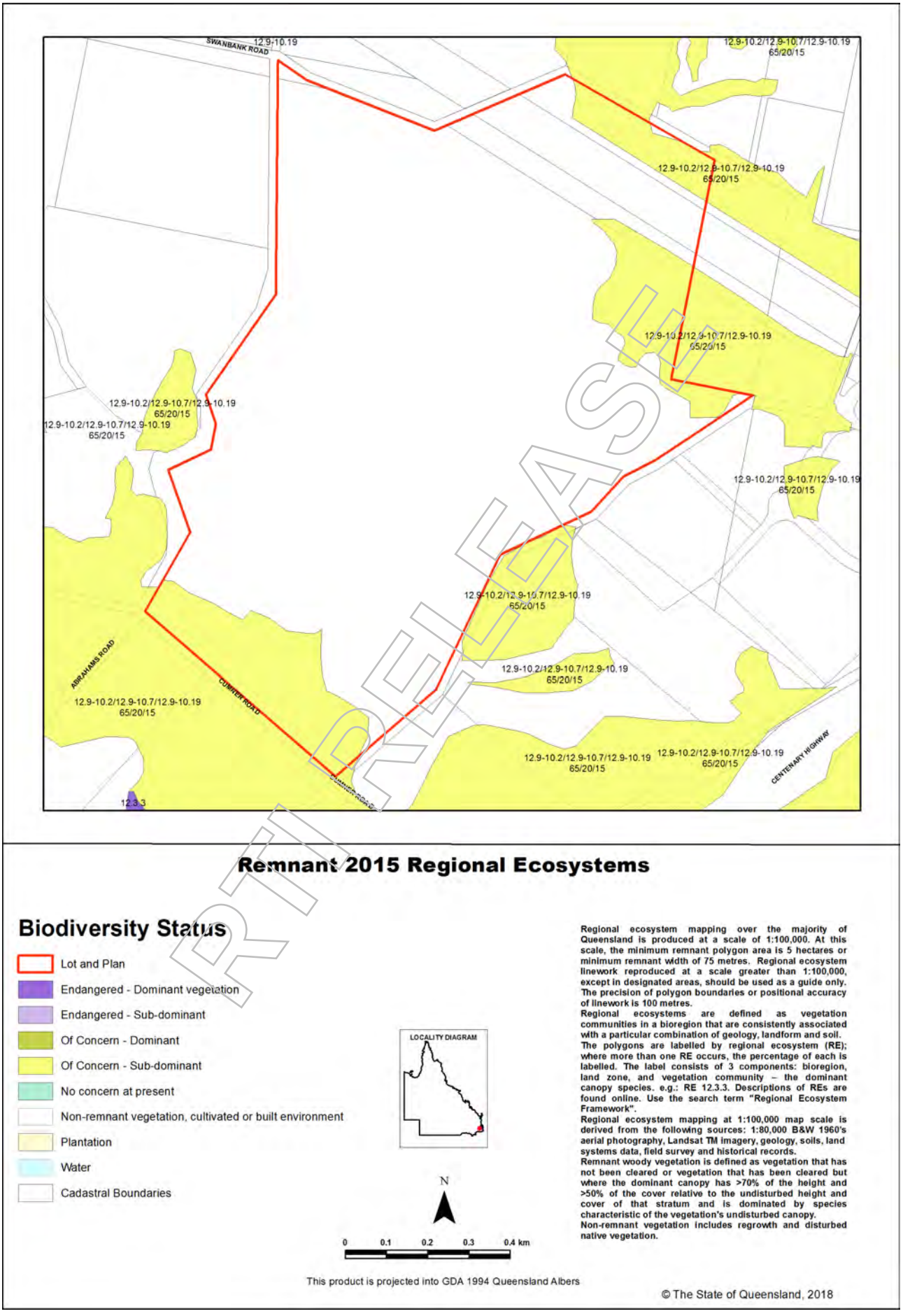
Regional ecosystems mapped as within the AOI	Technical Descriptions	Biocondition Benchmarks
12.9-10.19	Available	Available
12.9-10.2	Available	Available
12.9-10.7	Available	Available
non-rem	Not currently available	Not currently available

Maps

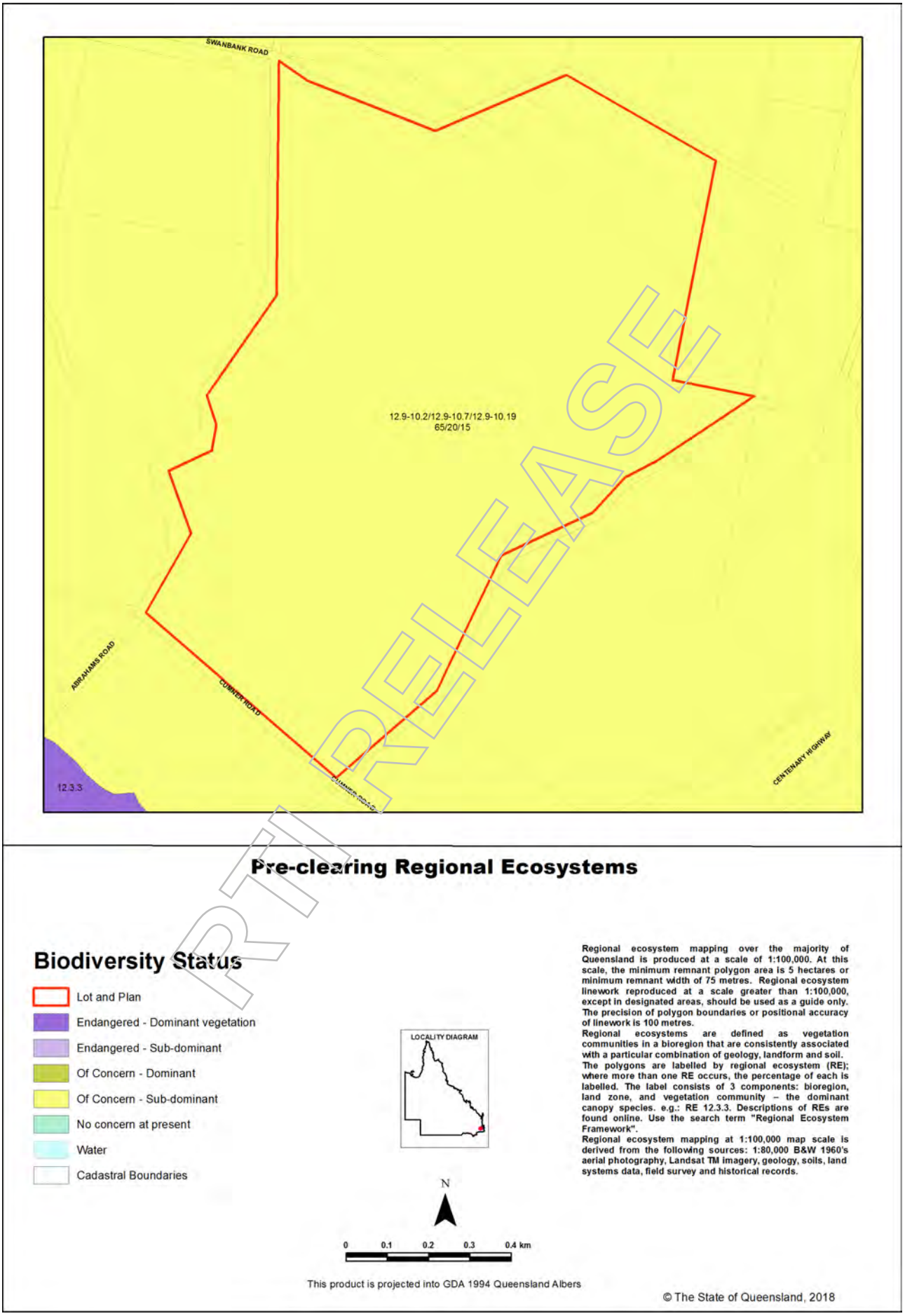
Map 1 - Location



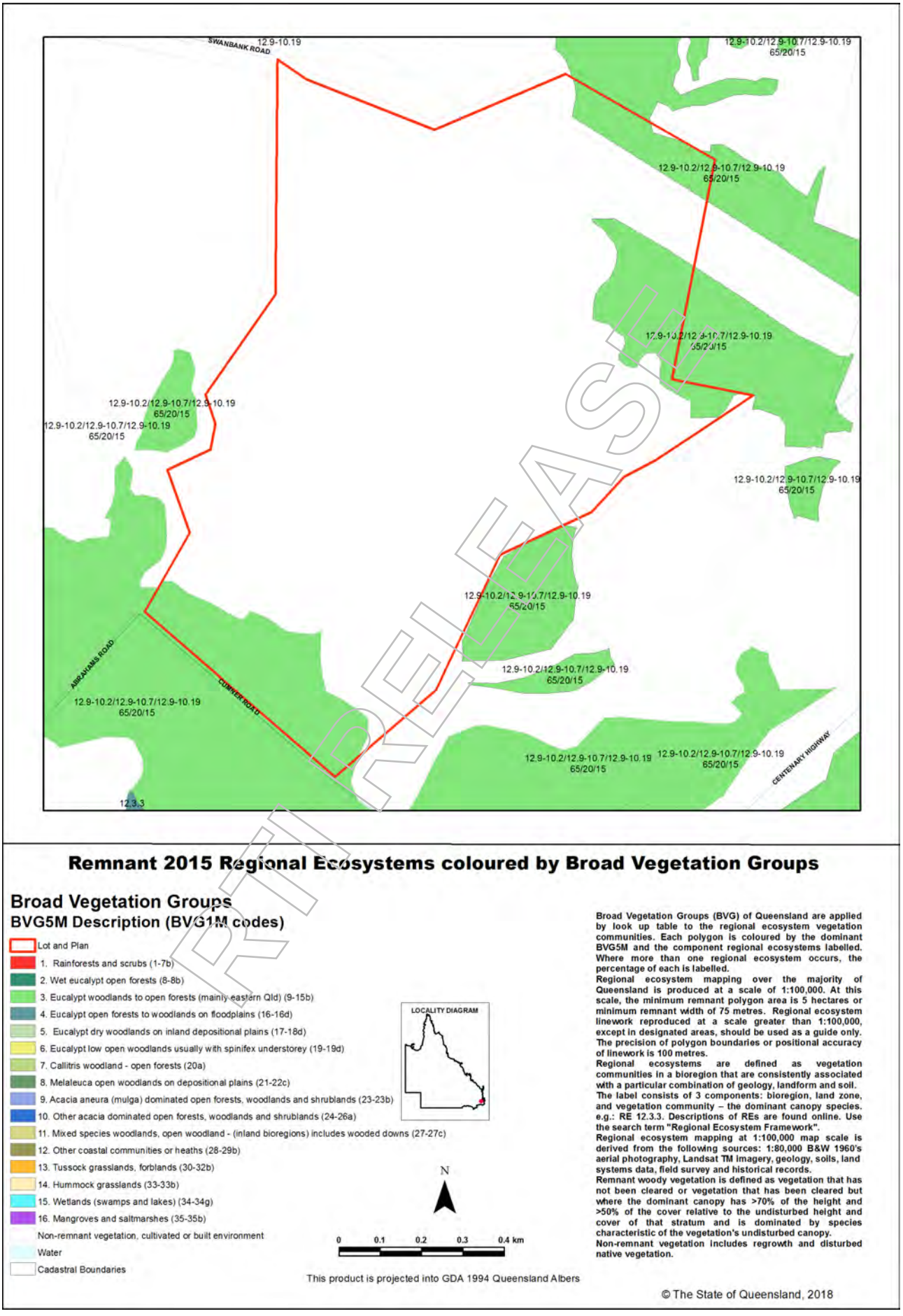
Map 2 - Remnant 2015 regional ecosystems



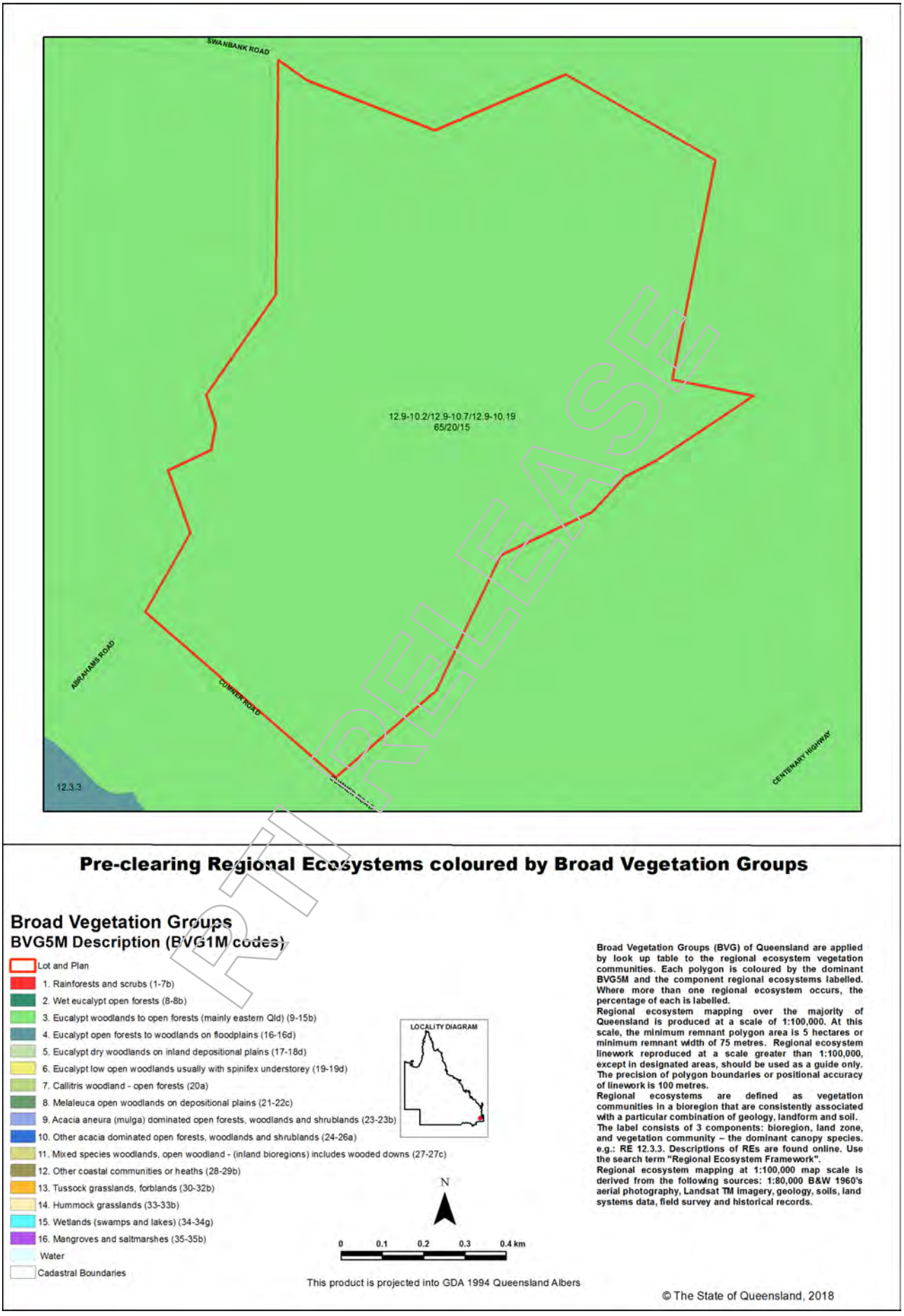
Map 3 - Pre-clearing regional ecosystems



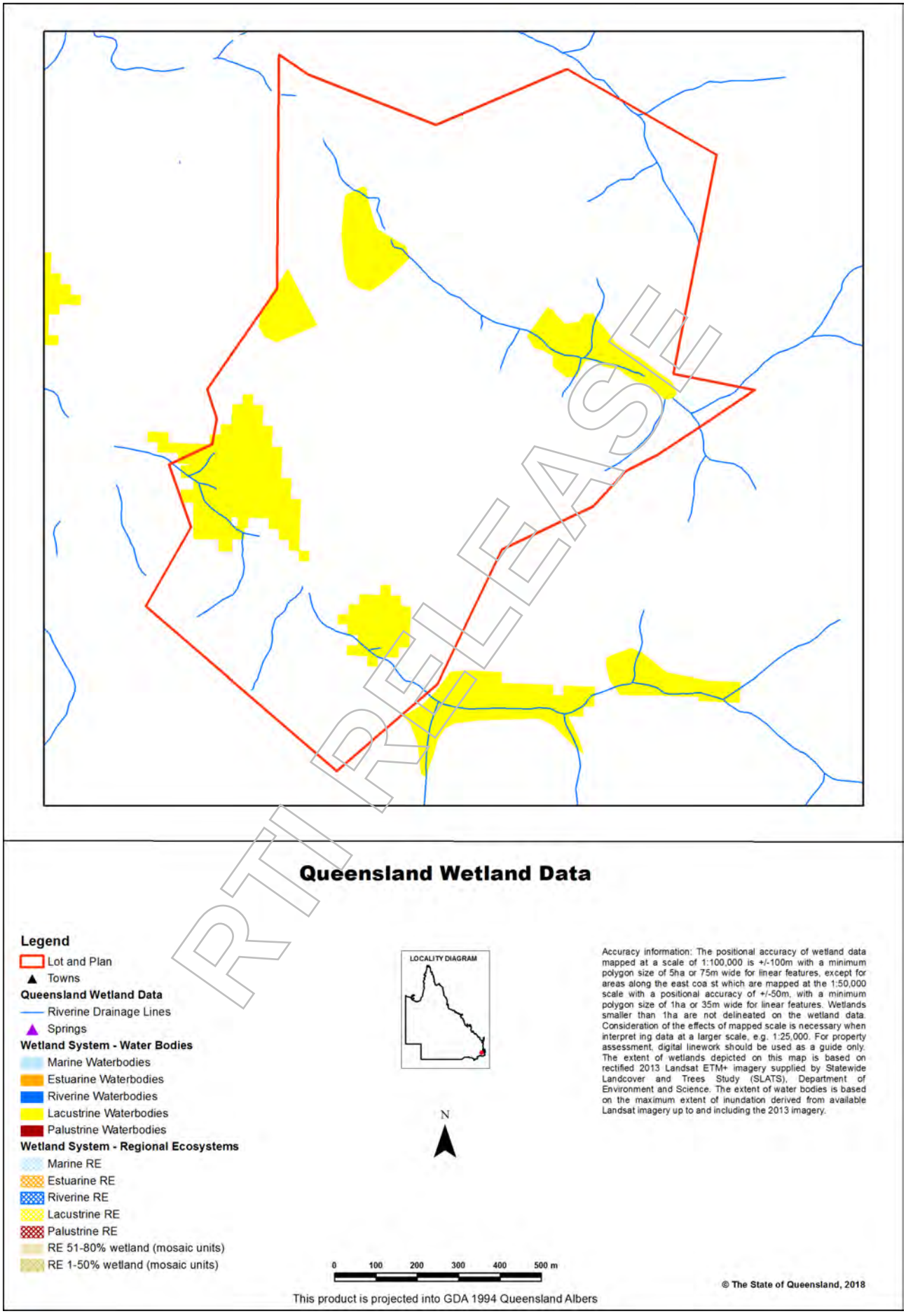
Map 4 - Remnant 2015 regional ecosystems by BVG (5M)



Map 5 - Pre-clearing regional ecosystems by BVG (5M)



Map 6 - Wetlands and waterways



Links and Other Information Sources

The Department of Environment and Science's Website -

http://www.qld.gov.au/environment/plants-animals/plants/ecosystems/

provides further information on the regional ecosystem framework, including access to links to the Regional Ecosystem Database, Broad Vegetation Group Definitions, Regional Ecosystem and Land zone descriptions.

Descriptions of the broad vegetation groups of Queensland can be downloaded from:

https://publications.qld.gov.au/dataset/redd/resource/

The methodology for mapping regional ecosystems can be downloaded from:

https://publications.qld.gov.au/dataset/redd/resource/

Technical descriptions for regional ecosystems can be obtained from:

http://www.qld.gov.au/environment/plants-animals/plants/ecosystems/technical-descriptions/

Benchmarks can be obtained from:

http://www.qld.gov.au/environment/plants-animals/biodiversity/benchmarks/

For further information associated with the remnant regional ecosystem dataset used by this report, refer to the metadata associated with the Biodiversity status of pre-clearing and Remnant Regional Ecosystems of Queensland dataset (version listed in **Appendix 1**) which is available through the Queensland Government Information System portal,

http://dds.information.qld.gov.au/dds/

The Queensland Globe is a mapping and data application. As an interactive online tool, Queensland Globe allows you to view and explore Queensland maps, imagery (including up-to-date satellite images) and other spatial data, including regional ecosystem mapping. To further view and explore regional ecosystems over an area of interest, access the Biota Globe (a component of the Queensland Globe). The Queensland Globe can be accessed via the following link:

http://www.dnrm.qld.gov.au/mapping-data/queensland-globe

References

Neldner, V.J., Niehus R.E., Wilson, B.A. McDonald, W.J.F., Ford, A.J. and Accad, A. (2017) The Vegetation of Queensland. Descriptions of Broad Vegetation Groups. Version 3.0. Queensland Herbarium, Department of Science, Information Technology, Innovation and the Arts.

(https://publications.qld.gov.au/dataset/redd/resource/78209e74-c7f2-4589-90c1-c33188359086)

Neldner, V.J., Wilson, B.A., Dillewaard, H.A., Ryan, T.S. and Butler, D.W. (2017) *Methodology for Survey and Mapping of Regional Ecosystems and Vegetation Communities in Queensland*. Version 4.0. Queensland Herbarium, Department of Science, Information Technology, Innovation and the Arts.

(https://publications.qld.gov.au/dataset/redd/resource/6dee78ab-c12c-4692-9842-b7257c2511e4)

Sattler, P.S. and Williams, R.D. (eds) (1999). *The Conservation Status of Queensland's Bioregional Ecosystems*. Environmental Protection Agency, Brisbane.

Appendices

Appendix 1 - Source Data

The dataset listed below is available for download from:

http://www.qld.gov.au/environment/plants-animals/plants/ecosystems/download/

- Regional Ecosystem Description Database

The datasets listed below are available for download from:

http://dds.information.qld.gov.au/dds/

- Biodiversity status of pre-clearing and 2015 remnant regional ecosystems of Queensland
- Pre-clearing Vegetation Communities and Regional Ecosystems of Queensland
- Queensland Wetland Data Version - Wetland lines
- Queensland Wetland Data Version - Wetland points
- Queensland Wetland Data Version - Wetland areas

Appendix 2 - Acronyms and Abbreviations

AOI	- Area of Interest
GDA94	- Geocentric Datum of Australia 1994
GIS	- Geographic Information System
RE	- Regional Ecosystem
REDD	- Regional Ecosystem Description Database
VMA	- *Vegetation Management Act 1999*

Queensland Government

Department of Environment and Science

Environmental Reports

Regional Ecosystems

Biodiversity Status

For the selected area of interest
Lot: 103 Plan: SP189609

Environmental Reports - General Information

The Environmental Reports portal provides for the assessment of selected matters of interest relevant to a user specified location, or area of interest (AOI). All area and derivative figures are relevant to the extent of matters of interest contained within the AOI unless otherwise stated. Please note, if a user selects an AOI via the "central coordinates" option, the resulting assessment area encompasses an area extending for a 2km radius from the input coordinates.

All area and area derived figures included in this report have been calculated via reprojecting relevant spatial features to Albers equal-area conic projection (central meridian = 146, datum Geocentric Datum of Australia 1994). As a result, area figures may differ slightly if calculated for the same features using a different co-ordinate system.

Figures in tables may be affected by rounding.

The matters of interest reported on in this document are based upon available state mapped datasets. Where the report indicates that a matter of interest is not present within the AOI (e.g. where area related calculations are equal to zero, or no values are listed), this may be due either to the fact that state mapping has not been undertaken for the AOI, that state mapping is incomplete for the AOI, or that no matters of interest have been identified within the site.

The information presented in this report should be considered as a guide only and field survey may be required to validate values on the ground.

Important Note to User

Information presented in this report is based upon the Queensland Herbarium's Regional Ecosystem framework. The Biodiversity Status has been used to depict the extent of "Endangered", "Of Concern" and "No Concern at Present" regional ecosystems in all cases, rather than the classes used for the purposes of the *Vegetation Management Act 1999* (VMA). Mapping and figures presented in this document reflect the Queensland Herbarium's Remnant and Pre-clearing Regional Ecosystem Datasets, and not the certified mapping used for the purpose of the VMA.

For matters relevant to vegetation management under the VMA, please refer to the Department of Natural Resources, Mines and Energy website

https://www.dnrme.qld.gov.au/

Please direct queries about these reports to: Queensland.Herbarium@dsiti.qld.gov.au

Disclaimer

Whilst every care is taken to ensure the accuracy of the information provided in this report, the Queensland Government makes no representations or warranties about its accuracy, reliability, completeness, or suitability, for any particular purpose and disclaims all responsibility and all liability (including without limitation, liability in negligence) for all expenses, losses, damages (including indirect or consequential damage) and costs which the user may incur as a consequence of the information being inaccurate or incomplete in any way and for any reason.

Table of Contents

Summary Information

The following table provides an overview of the AOI with respect to selected topographic and environmental themes. Refer to **Map 1** for locality information.

Table 1: Area of interest details: Lot: 103 Plan: SP189609

Size (ha)	35.84
Local Government(s)	Ipswich City
Bioregion(s)	Southeast Queensland
Subregion(s)	Moreton Basin
Catchment(s)	Brisbane

The table below summarizes the extent of remnant vegetation classed as "Endangered", "Of concern" and "No concern at present" regional ecosystems classified by Biodiversity Status within the area of interest (AOI).

Table 2: Summary table, biodiversity status of regional ecosystems within the AOI

Biodiversity Status	Area (Ha)	% of AOI
Endangered	0.0	0.0
Of concern	0.53	1.47
No concern at present	2.11	5.87
Total remnant vegetation	2.63	7.34

Refer to **Map 2** for further information.

Regional Ecosystems

1. Introduction

Regional ecosystems are vegetation communities in a bioregion that are consistently associated with particular combinations of geology, landform and soil (Sattler and Williams 1999). Descriptions of Queensland's Regional ecosystems are available online from the Regional Ecosystem Description Database (REDD). Descriptions are compiled from a broad range of information sources including vegetation, land system and geology survey and mapping and detailed vegetation site data. The regional ecosystem classification and descriptions are reviewed as new information becomes available. A number of vegetation communities may form a single regional ecosystem and are usually distinguished by differences in dominant species, frequently in the shrub or ground layers and are denoted by a letter following the regional ecosystem code (e.g. a, b, c). Vegetation communities and regional ecosystems are amalgamated into a higher level classification of broad vegetation groups (BVGs).

A published methodology for survey and mapping of regional ecosystems across Queensland (Neldner et al 2017) provides further details on regional ecosystem concepts and terminology.

This report provides information on the type, status, and extent of vegetation communities, regional ecosystems and broad vegetation groups present within a user specified area of interest. Please note, for the purpose of this report, the Biodiversity Status is used. This report has not been developed for application of the *Vegetation Management Act 1999* (VMA). Additionally, information generated in this report has been derived from the Queensland Herbarium's Regional Ecosystem Mapping, and not the regulated mapping certified for the purposes of the VMA. If your interest/matter relates to regional ecosystems and the VMA, users should refer to the Department of Natural Resources, Mines and Energy website.

https://www.dnrme.qld.gov.au/

With respect to the Queensland Biodiversity Status,

"Endangered" regional ecosystems are described as those where:

- remnant vegetation is less than 10 per cent of its pre-clearing extent across the bioregion; or 10-30% of its pre-clearing extent remains and the remnant vegetation is less than 10,000 hectares, or
- less than 10 per cent of its pre-clearing extent remains unaffected by severe degradation and/or biodiversity loss*, or
- 10-30 per cent of its pre-clearing extent remains unaffected by severe degradation and/or biodiversity loss and the remnant vegetation is less than 10,000 hectares; or
- it is a rare** regional ecosystem subject to a threatening process.***

"Of concern" regional ecosystems are described as those where:

- the degradation criteria listed above for 'Endangered' regional ecosystems are not met and,
- remnant vegetation is 10-30 per cent of its pre-clearing extent across the bioregion; or more than 20 per cent of its pre-clearing extent remains and the remnant extent is less than 10,000 hectares, or
- 10-30 percent of its pre-clearing extent remains unaffected by moderate degradation and/or biodiversity loss.****

and "No concern at present" regional ecosystems are described as those where:

- remnant vegetation is over 30 per cent of its pre-clearing extent across the bioregion, and the remnant area is greater than 10,000 hectares, and
- the degradation criteria listed above for 'Endangered' or 'Of concern' regional ecosystems are not met.

**Severe degradation and/or biodiversity loss is defined as: floristic and/or faunal diversity is greatly reduced but unlikely to recover within the next 50 years even with the removal of threatening processes; or soil surface is severely degraded, for example, by loss of A horizon, surface expression of salinity; surface compaction, loss of organic matter or sheet erosion.*

***Rare regional ecosystem: pre-clearing extent (1000 ha); or patch size (100 ha and of limited total extent across its range).*

****Threatening processes are those that are reducing or will reduce the biodiversity and ecological integrity of a regional ecosystem. For example, clearing, weed invasion, fragmentation, inappropriate fire regime or grazing pressure, or infrastructure development.*

*****Moderate degradation and/or biodiversity loss is defined as: floristic and/or faunal diversity is greatly reduced but unlikely to recover within the next 20 years even with the removal of threatening processes; or soil surface is moderately degraded.*

2. Remnant Regional Ecosystems

The following table identifies the remnant regional ecosystems and vegetation communities mapped within the AOI and provides their short descriptions, Biodiversity Status, and remnant extent within the selected AOI. Please note, where heterogeneous vegetated patches (mixed patches of remnant vegetation mapped as containing multiple regional ecosystems) occur within the AOI, they have been split and listed as individual regional ecosystems (or vegetation communities where present) for the purposes of the table below. In such instances, associated area figures have been generated based upon the estimated proportion of each regional ecosystem (or vegetation community) predicted to be present within the larger mixed patch.

Table 3: Remnant regional ecosystems, description and status within the AOI

Regional Ecosystem	Short Description	BD Status	Area (Ha)	% of AOI
12.9-10.19	Eucalyptus fibrosa subsp. fibrosa woodland on sedimentary rocks	No concern at present	0.39	1.1
12.9-10.2	Corymbia citriodora subsp. variegata +/- Eucalyptus crebra open forest on sedimentary rocks	No concern at present	1.71	4.77
12.9-10.7	Eucalyptus crebra +/- E. tereticornis, Corymbia tessellaris, Angophora spp., E. melanophloia woodland on sedimentary rocks	Of concern	0.53	1.47
non-rem	None	None	33.21	92.67

Refer to **Map 2** for further information. **Map 3** also provides a visual estimate of the distribution of regional ecosystems present before clearing.

Table 4 provides further information in regards to the remnant regional ecosystems present within the SOI. Specifically, the extent of remnant vegetation remaining within the bioregion, the 1:1,000,000 broad vegetation group (BVG) classification, whether the regional ecosystem is identified as a wetland, and extent of representation in Queensland's Protected Area Estate. For a description of the vegetation communities within the AOI and classified according to the 1:1,000,000 BVG, refer to **Table 6**.

Table 4: Remnant regional ecosystems within the AOI, additional information

Regional Ecosystem	Remnant Extent	BVG (1 Million)	Wetland	Representation in protected estate
12.9-10.19	Pre-clearing 59000 ha; Remnant 2015 42000 ha	12a	None	Medium
12.9-10.2	Pre-clearing 222000 ha; Remnant 2015 86000 ha	10b	None	Medium
12.9-10.7	Pre-clearing 248000 ha; Remnant 2015 42000 ha	13c	None	Low
non-rem	None	None	None	None

Representation in Protected Area Estate: High greater than 10% of pre-clearing extent is represented; Medium 4 - 10% is represented; Low less than 4% is represented, No representation.

The distribution of mapped wetland systems within the area of interest is displayed in **Map 6**.

The following table lists known special values associated with a regional ecosystem type.

Table 5: Remnant regional ecosystems within the AOI, special values

Regional Ecosystem	Special Values
12.9-10.19	Habitat for threatened plant species including Macrozamia parcifolia,
12.9-10.2	Habitat for threatened plant species including Notelaea lloydii, Grevillea quadricauda, Westringia sericea, Plectranthus habrophyllus
12.9-10.7	None
non-rem	None

3. Remnant Regional Ecosystems by Broad Vegetation Group

BVGs are a higher-level grouping of vegetation communities. Queensland encompasses a wide variety of landscapes across temperate, wet and dry tropics and semi-arid climatic zones. BVGs provide an overview of vegetation communities across the state or a bioregion and allow comparison with other states. There are three levels of BVGs which reflect the approximate scale at which they are designed to be used: the 1:5,000,000 (national), 1:2,000,000 (state) and 1:1,000,000 (regional) scales.

A comprehensive description of BVGs is available at:

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The following table provides a description of the 1:1,000,000 BVGs present and their associated extent within the AOI.

Table 6: Broad vegetation groups (1 million) within the AOI

BVG (1 Million)	Description	Area (Ha)	% of AOI
None	None	33.21	92.67
10b	Moist open forests to woodlands dominated by Corymbia citriodora (spotted gum). (land zones 12, 11, 9, 5, 8) (SEQ, CQC, EIU, WET)	1.71	4.77
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13c	Woodlands of Eucalyptus crebra (sens. lat.) (narrow-leaved red ironbark), E. drepanophylla (grey ironbark), E. fibrosa (dusky-leaved ironbark), E. shirleyi (shirley's silver-leaved ironbark) on granitic and metamorphic ranges (land zones 12, 11, 9, [5]) (BRB, EIU, SEQ, NET, CQC)	0.53	1.47

Refer to **Map 4** for further information. **Map 5** also provides a representation of the distribution of vegetation communities as per the 1:5,000,000 BVG believed to be present prior to European settlement.

4. Technical and BioCondition Benchmark Descriptions

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http://www.qld.gov.au/environment/plants-animals/plants/ecosystems/technical-descriptions/

The descriptions are compiled using site survey data from the Queensland Herbarium's CORVEG database. Distribution maps, representative images (if available) and the pre-clearing and remnant extent (hectares) of each vegetation community derived from the regional ecosystem mapping data are included. The technical descriptions should be used in conjunction

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Technical descriptions include data on canopy height, canopy cover and native plant species composition of the predominant layer, which are attributes relevant to assessment of the remnant status of vegetation under the *Vegetation Management Act 1999*. However, as technical descriptions reflect the full range in structure and floristic composition across the climatic, natural disturbance and geographic range of the regional ecosystem, local reference sites should be used for remnant assessment where possible (Neldner et al. 2012 (PDF)* section 3.3.1 of:

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The technical descriptions are subject to review and are updated as additional data becomes available.

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Table 7: List of remnant regional ecosystems within the AOI for which technical and biocondition benchmark descriptions are available

Regional ecosystems mapped as within the AOI	Technical Descriptions	Biocondition Benchmarks
12.9-10.19	Available	Available
12.9-10.2	Available	Available
12.9-10.7	Available	Available
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Maps

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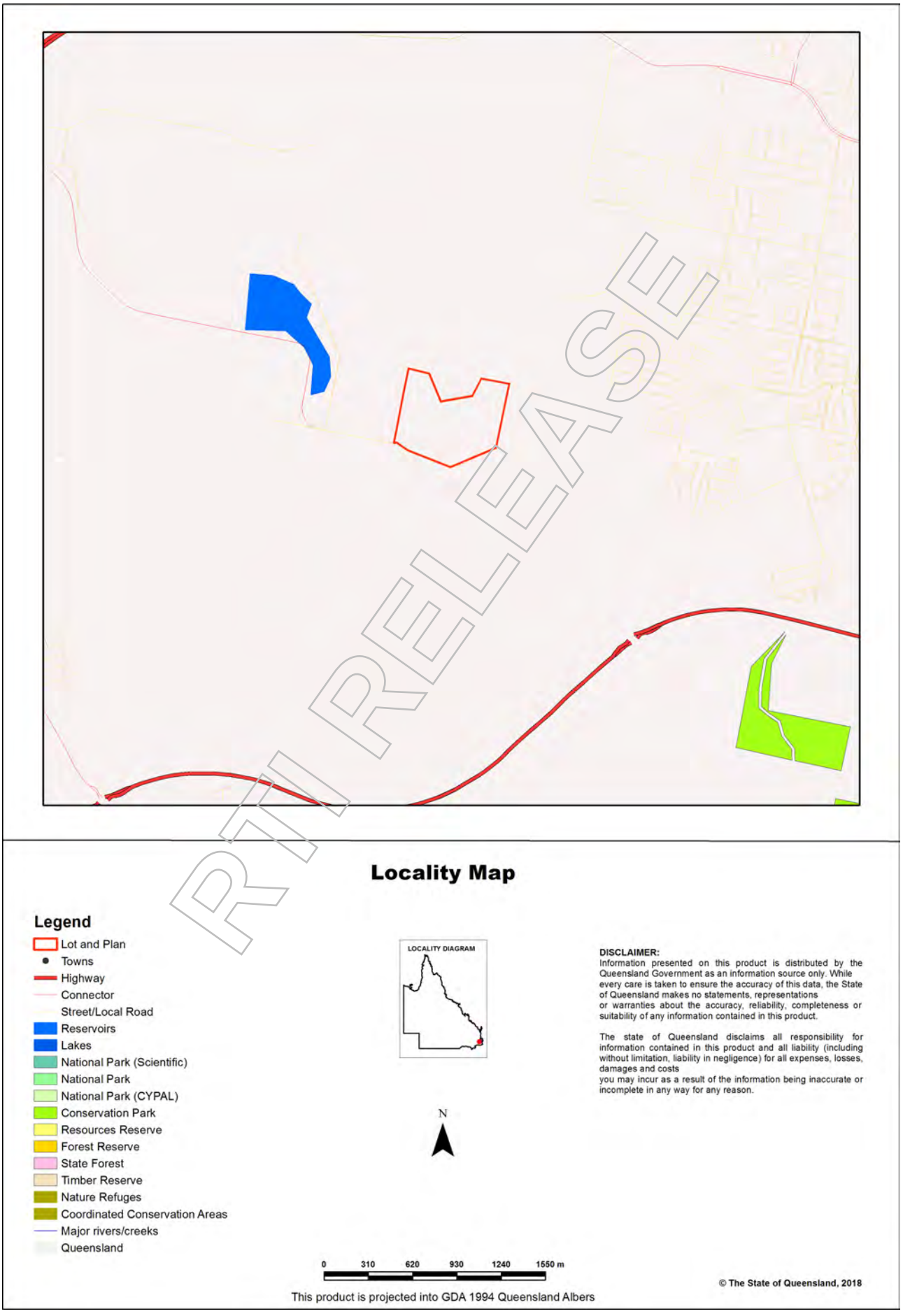
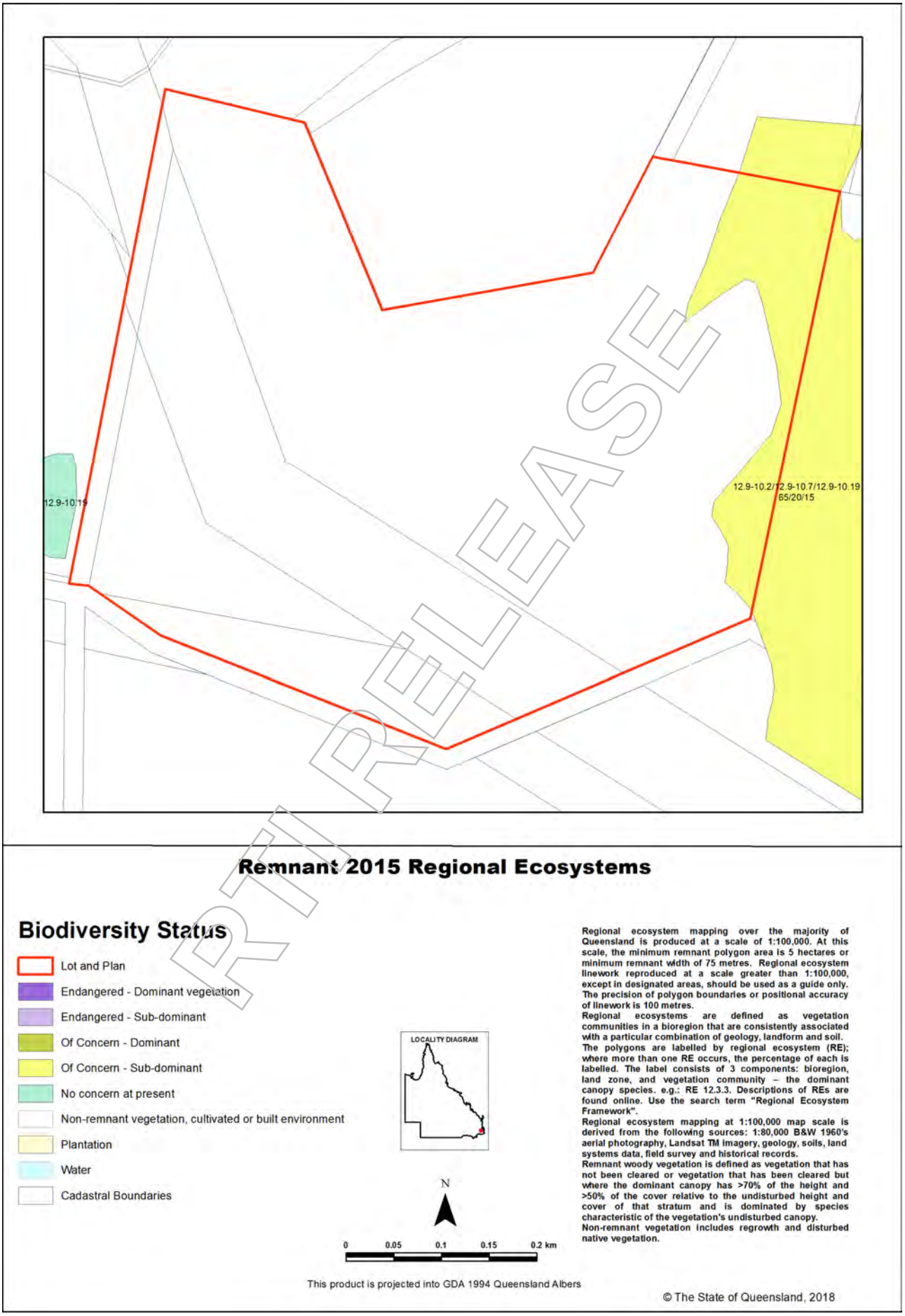
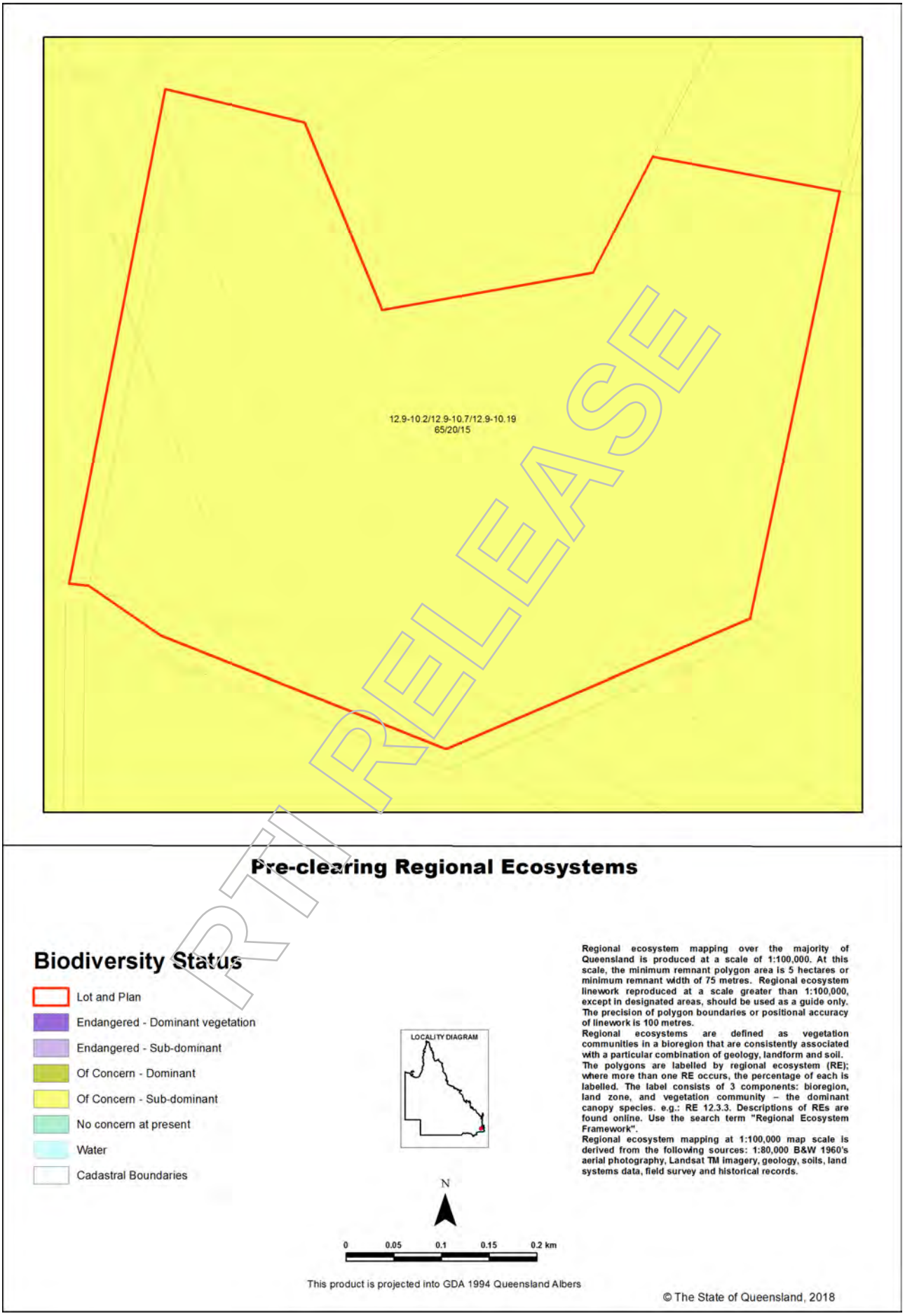


Map 2 - Remnant 2015 regional ecosystems



Map 3 - Pre-clearing regional ecosystems



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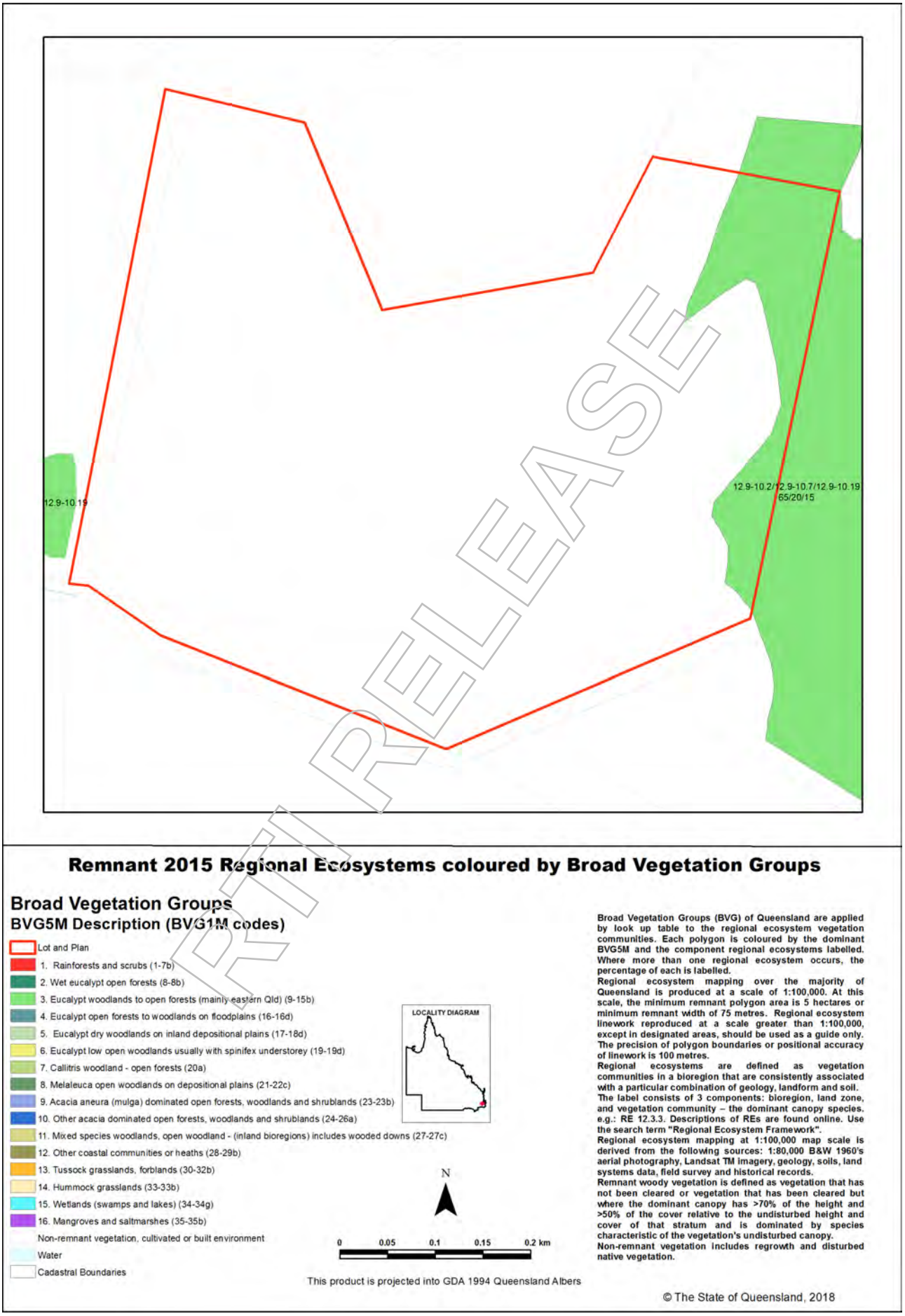
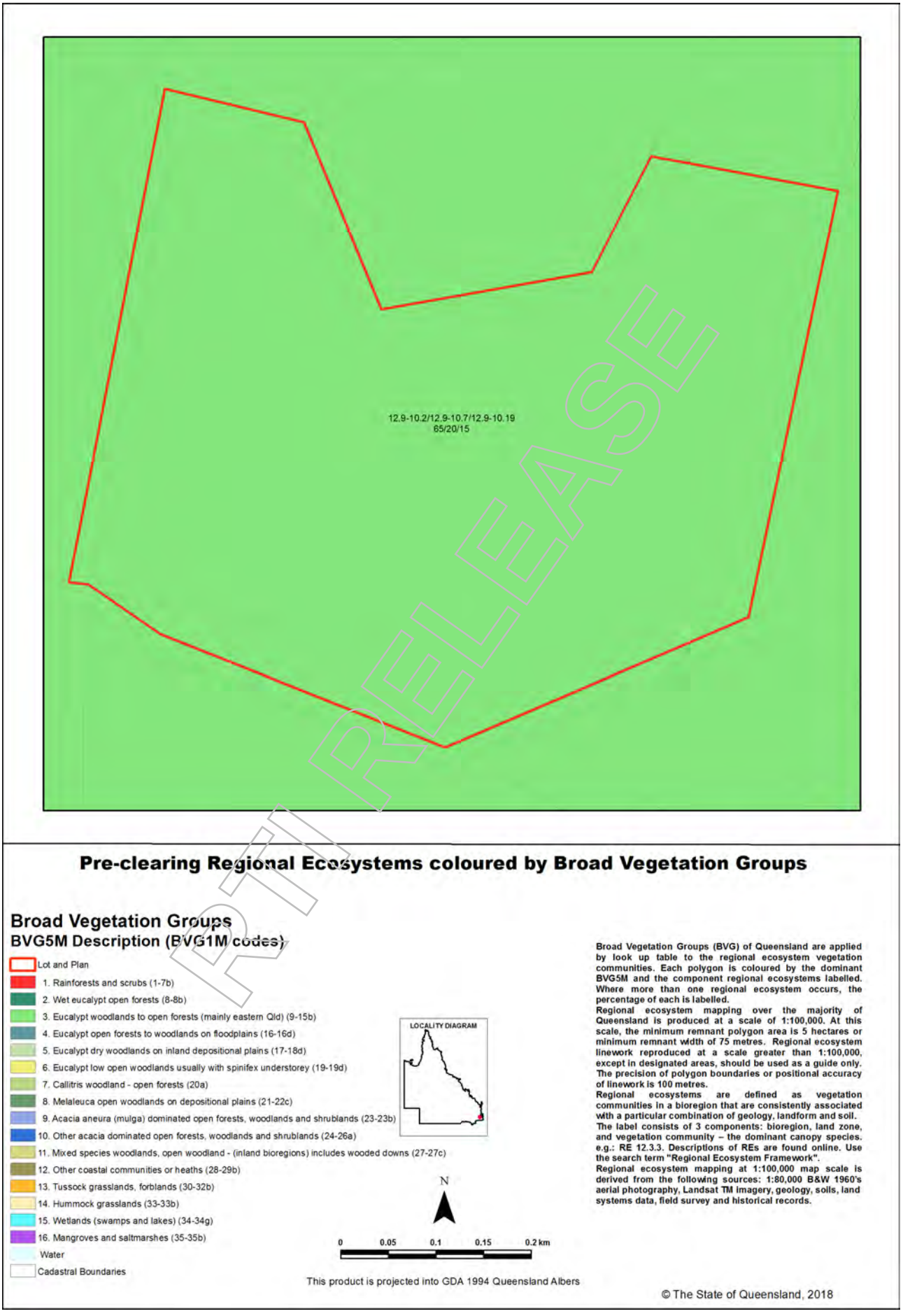


Map 5 - Pre-clearing regional ecosystems by BVG (5M)



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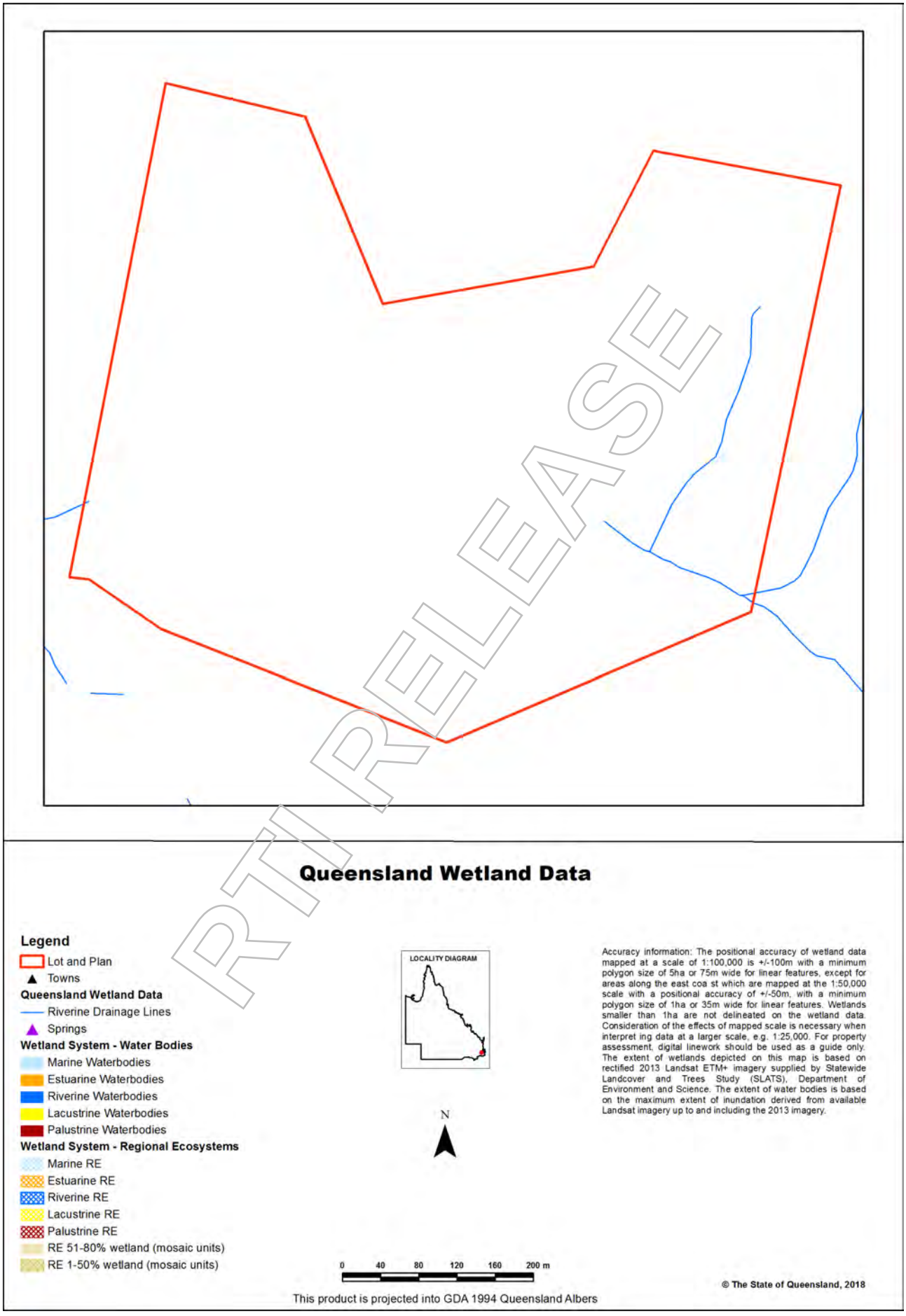

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The methodology for mapping regional ecosystems can be downloaded from:

https://publications.qld.gov.au/dataset/redd/resource/

Technical descriptions for regional ecosystems can be obtained from:

http://www.qld.gov.au/environment/plants-animals/plants/ecosystems/technical-descriptions/

Benchmarks can be obtained from:

http://www.qld.gov.au/environment/plants-animals/biodiversity/benchmarks/

For further information associated with the remnant regional ecosystem dataset used by this report, refer to the metadata associated with the Biodiversity status of pre-clearing and Remnant Regional Ecosystems of Queensland dataset (version listed in **Appendix 1**) which is available through the Queensland Government Information System portal,

http://dds.information.qld.gov.au/dds/

The Queensland Globe is a mapping and data application. As an interactive online tool, Queensland Globe allows you to view and explore Queensland maps, imagery (including up-to-date satellite images) and other spatial data, including regional ecosystem mapping. To further view and explore regional ecosystems over an area of interest, access the Biota Globe (a component of the Queensland Globe). The Queensland Globe can be accessed via the following link:

http://www.dnrm.qld.gov.au/mapping-data/queensland-globe

References

Neldner, V.J., Niehus R.E., Wilson, B.A. McDonald, W.J.F., Ford, A.J. and Accad, A. (2017) The Vegetation of Queensland. Descriptions of Broad Vegetation Groups. Version 3.0. Queensland Herbarium, Department of Science, Information Technology, Innovation and the Arts.

(https://publications.qld.gov.au/dataset/redd/resource/78209e74-c7f2-4589-90c1-c33188359086)

Neldner, V.J., Wilson, B.A., Dillewaard, H.A., Ryan, T.S. and Butler, D.W. (2017) *Methodology for Survey and Mapping of Regional Ecosystems and Vegetation Communities in Queensland*. Version 4.0. Queensland Herbarium, Department of Science, Information Technology, Innovation and the Arts.

(https://publications.qld.gov.au/dataset/redd/resource/6dee78ab-c12c-4692-9842-b7257c2511e4)

Sattler, P.S. and Williams, R.D. (eds) (1999). *The Conservation Status of Queensland's Bioregional Ecosystems*. Environmental Protection Agency, Brisbane.

Appendices

Appendix 1 - Source Data

The dataset listed below is available for download from:

http://www.qld.gov.au/environment/plants-animals/plants/ecosystems/download/

- Regional Ecosystem Description Database

The datasets listed below are available for download from:

http://dds.information.qld.gov.au/dds/

- Biodiversity status of pre-clearing and 2015 remnant regional ecosystems of Queensland
- Pre-clearing Vegetation Communities and Regional Ecosystems of Queensland
- Queensland Wetland Data Version - Wetland lines
- Queensland Wetland Data Version - Wetland points
- Queensland Wetland Data Version - Wetland areas

Appendix 2 - Acronyms and Abbreviations

AOI	- Area of Interest
GDA94	- Geocentric Datum of Australia 1994
GIS	- Geographic Information System
RE	- Regional Ecosystem
REDD	- Regional Ecosystem Description Database
VMA	- *Vegetation Management Act 1999*

Queensland Government

Department of Environment and Science

Environmental Reports

Regional Ecosystems

Biodiversity Status

For the selected area of interest
Lot: 104 Plan: RP839073

Environmental Reports - General Information

The Environmental Reports portal provides for the assessment of selected matters of interest relevant to a user specified location, or area of interest (AOI). All area and derivative figures are relevant to the extent of matters of interest contained within the AOI unless otherwise stated. Please note, if a user selects an AOI via the "central coordinates" option, the resulting assessment area encompasses an area extending for a 2km radius from the input coordinates.

All area and area derived figures included in this report have been calculated via reprojecting relevant spatial features to Albers equal-area conic projection (central meridian = 146, datum Geocentric Datum of Australia 1994). As a result, area figures may differ slightly if calculated for the same features using a different co-ordinate system.

Figures in tables may be affected by rounding.

The matters of interest reported on in this document are based upon available state mapped datasets. Where the report indicates that a matter of interest is not present within the AOI (e.g. where area related calculations are equal to zero, or no values are listed), this may be due either to the fact that state mapping has not been undertaken for the AOI, that state mapping is incomplete for the AOI, or that no matters of interest have been identified within the site.

The information presented in this report should be considered as a guide only and field survey may be required to validate values on the ground.

Important Note to User

Information presented in this report is based upon the Queensland Herbarium's Regional Ecosystem framework. The Biodiversity Status has been used to depict the extent of "Endangered", "Of Concern" and "No Concern at Present" regional ecosystems in all cases, rather than the classes used for the purposes of the *Vegetation Management Act 1999* (VMA). Mapping and figures presented in this document reflect the Queensland Herbarium's Remnant and Pre-clearing Regional Ecosystem Datasets, and not the certified mapping used for the purpose of the VMA.

For matters relevant to vegetation management under the VMA, please refer to the Department of Natural Resources, Mines and Energy website

https://www.dnrme.qld.gov.au/

Please direct queries about these reports to: Queensland.Herbarium@dsiti.qld.gov.au

Disclaimer

Whilst every care is taken to ensure the accuracy of the information provided in this report, the Queensland Government makes no representations or warranties about its accuracy, reliability, completeness, or suitability, for any particular purpose and disclaims all responsibility and all liability (including without limitation, liability in negligence) for all expenses, losses, damages (including indirect or consequential damage) and costs which the user may incur as a consequence of the information being inaccurate or incomplete in any way and for any reason.

Table of Contents

Summary Information

The following table provides an overview of the AOI with respect to selected topographic and environmental themes. Refer to **Map 1** for locality information.

Table 1: Area of interest details: Lot: 104 Plan: RP839073

Size (ha)	53.59
Local Government(s)	Ipswich City
Bioregion(s)	Southeast Queensland
Subregion(s)	Moreton Basin
Catchment(s)	Brisbane

The table below summarizes the extent of remnant vegetation classed as "Endangered", "Of concern" and "No concern at present" regional ecosystems classified by Biodiversity Status within the area of interest (AOI).

Table 2: Summary table, biodiversity status of regional ecosystems within the AOI

Biodiversity Status	Area (Ha)	% of AOI
Endangered	0.0	0.0
Of concern	0.0	0.0
No concern at present	0.0	0.0
Total remnant vegetation	0.0	0.0

Refer to **Map 2** for further information.

Regional Ecosystems

1. Introduction

Regional ecosystems are vegetation communities in a bioregion that are consistently associated with particular combinations of geology, landform and soil (Sattler and Williams 1999). Descriptions of Queensland's Regional ecosystems are available online from the Regional Ecosystem Description Database (REDD). Descriptions are compiled from a broad range of information sources including vegetation, land system and geology survey and mapping and detailed vegetation site data. The regional ecosystem classification and descriptions are reviewed as new information becomes available. A number of vegetation communities may form a single regional ecosystem and are usually distinguished by differences in dominant species, frequently in the shrub or ground layers and are denoted by a letter following the regional ecosystem code (e.g. a, b, c). Vegetation communities and regional ecosystems are amalgamated into a higher level classification of broad vegetation groups (BVGs).

A published methodology for survey and mapping of regional ecosystems across Queensland (Neldner et al 2017) provides further details on regional ecosystem concepts and terminology.

This report provides information on the type, status, and extent of vegetation communities, regional ecosystems and broad vegetation groups present within a user specified area of interest. Please note, for the purpose of this report, the Biodiversity Status is used. This report has not been developed for application of the *Vegetation Management Act 1999* (VMA). Additionally, information generated in this report has been derived from the Queensland Herbarium's Regional Ecosystem Mapping, and not the regulated mapping certified for the purposes of the VMA. If your interest/matter relates to regional ecosystems and the VMA, users should refer to the Department of Natural Resources, Mines and Energy website.

https://www.dnrme.qld.gov.au/

With respect to the Queensland Biodiversity Status,

"Endangered" regional ecosystems are described as those where:

- remnant vegetation is less than 10 per cent of its pre-clearing extent across the bioregion; or 10-30% of its pre-clearing extent remains and the remnant vegetation is less than 10,000 hectares, or
- less than 10 per cent of its pre-clearing extent remains unaffected by severe degradation and/or biodiversity loss*, or
- 10-30 per cent of its pre-clearing extent remains unaffected by severe degradation and/or biodiversity loss and the remnant vegetation is less than 10,000 hectares; or
- it is a rare** regional ecosystem subject to a threatening process.***

"Of concern" regional ecosystems are described as those where:

- the degradation criteria listed above for 'Endangered' regional ecosystems are not met and,
- remnant vegetation is 10-30 per cent of its pre-clearing extent across the bioregion; or more than 20 per cent of its pre-clearing extent remains and the remnant extent is less than 10,000 hectares, or
- 10-30 percent of its pre-clearing extent remains unaffected by moderate degradation and/or biodiversity loss.****

and "No concern at present" regional ecosystems are described as those where:

- remnant vegetation is over 30 per cent of its pre-clearing extent across the bioregion, and the remnant area is greater than 10,000 hectares, and
- the degradation criteria listed above for 'Endangered' or 'Of concern' regional ecosystems are not met.

**Severe degradation and/or biodiversity loss is defined as: floristic and/or faunal diversity is greatly reduced but unlikely to recover within the next 50 years even with the removal of threatening processes; or soil surface is severely degraded, for example, by loss of A horizon, surface expression of salinity; surface compaction, loss of organic matter or sheet erosion.*

***Rare regional ecosystem: pre-clearing extent (1000 ha); or patch size (100 ha and of limited total extent across its range).*

****Threatening processes are those that are reducing or will reduce the biodiversity and ecological integrity of a regional ecosystem. For example, clearing, weed invasion, fragmentation, inappropriate fire regime or grazing pressure, or infrastructure development.*

*****Moderate degradation and/or biodiversity loss is defined as: floristic and/or faunal diversity is greatly reduced but unlikely to recover within the next 20 years even with the removal of threatening processes; or soil surface is moderately degraded.*

2. Remnant Regional Ecosystems

The following table identifies the remnant regional ecosystems and vegetation communities mapped within the AOI and provides their short descriptions, Biodiversity Status, and remnant extent within the selected AOI. Please note, where heterogeneous vegetated patches (mixed patches of remnant vegetation mapped as containing multiple regional ecosystems) occur within the AOI, they have been split and listed as individual regional ecosystems (or vegetation communities where present) for the purposes of the table below. In such instances, associated area figures have been generated based upon the estimated proportion of each regional ecosystem (or vegetation community) predicted to be present within the larger mixed patch.

Table 3: Remnant regional ecosystems, description and status within the AOI

Regional Ecosystem	Short Description	BD Status	Area (Ha)	% of AOI
non-rem	None	None	53.59	100.0

Refer to **Map 2** for further information. **Map 3** also provides a visual estimate of the distribution of regional ecosystems present before clearing.

Table 4 provides further information in regards to the remnant regional ecosystems present within the SOI. Specifically, the extent of remnant vegetation remaining within the bioregion, the 1:1,000,000 broad vegetation group (BVG) classification, whether the regional ecosystem is identified as a wetland, and extent of representation in Queensland's Protected Area Estate. For a description of the vegetation communities within the AOI and classified according to the 1:1,000,000 BVG, refer to **Table 6**.

Table 4: Remnant regional ecosystems within the AOI, additional information

Regional Ecosystem	Remnant Extent	BVG (1 Million)	Wetland	Representation in protected estate
non-rem	None	None	None	None

Representation in Protected Area Estate: High greater than 10% of pre-clearing extent is represented; Medium 4 - 10% is represented; Low less than 4% is represented, No representation.

The distribution of mapped wetland systems within the area of interest is displayed in **Map 6**.

The following table lists known special values associated with a regional ecosystem type.

Table 5: Remnant regional ecosystems within the AOI, special values

Regional Ecosystem	Special Values
non-rem	None

3. Remnant Regional Ecosystems by Broad Vegetation Group

BVGs are a higher-level grouping of vegetation communities. Queensland encompasses a wide variety of landscapes across temperate, wet and dry tropics and semi-arid climatic zones. BVGs provide an overview of vegetation communities across the state or a bioregion and allow comparison with other states. There are three levels of BVGs which reflect the approximate scale at which they are designed to be used: the 1:5,000,000 (national), 1:2,000,000 (state) and 1:1,000,000 (regional) scales.

A comprehensive description of BVGs is available at:

https://publications.qld.gov.au/dataset/redd/resource/

The following table provides a description of the 1:1,000,000 BVGs present and their associated extent within the AOI.

Table 6: Broad vegetation groups (1 million) within the AOI

BVG (1 Million)	Description	Area (Ha)	% of AOI
None	None	53.59	100.0

Refer to **Map 4** for further information. **Map 5** also provides a representation of the distribution of vegetation communities as per the 1:5,000,000 BVG believed to be present prior to European settlement.

4. Technical and BioCondition Benchmark Descriptions

Technical descriptions provide a detailed description of the full range in structure and floristic composition of regional ecosystems (e.g. 11.3.1) and their component vegetation communities (e.g. 11.3.1a, 11.3.1b). See:

http://www.qld.gov.au/environment/plants-animals/plants/ecosystems/technical-descriptions/

The descriptions are compiled using site survey data from the Queensland Herbarium's CORVEG database. Distribution maps, representative images (if available) and the pre-clearing and remnant extent (hectares) of each vegetation community derived from the regional ecosystem mapping data are included. The technical descriptions should be used in conjunction with the fields from the regional ecosystem description database (REDD) for a full description of the regional ecosystem.

Technical descriptions include data on canopy height, canopy cover and native plant species composition of the predominant layer, which are attributes relevant to assessment of the remnant status of vegetation under the *Vegetation Management Act 1999*. However, as technical descriptions reflect the full range in structure and floristic composition across the climatic, natural disturbance and geographic range of the regional ecosystem, local reference sites should be used for remnant assessment where possible (Neldner et al. 2012 (PDF)* section 3.3.1 of:

https://publications.qld.gov.au/dataset/redd/resource/

The technical descriptions are subject to review and are updated as additional data becomes available.

When conducting a BioCondition assessment, these technical descriptions should be used in conjunction with BioCondition benchmarks for the specific regional ecosystem, or component vegetation community.

http://www.qld.gov.au/environment/plants-animals/biodiversity/benchmarks/

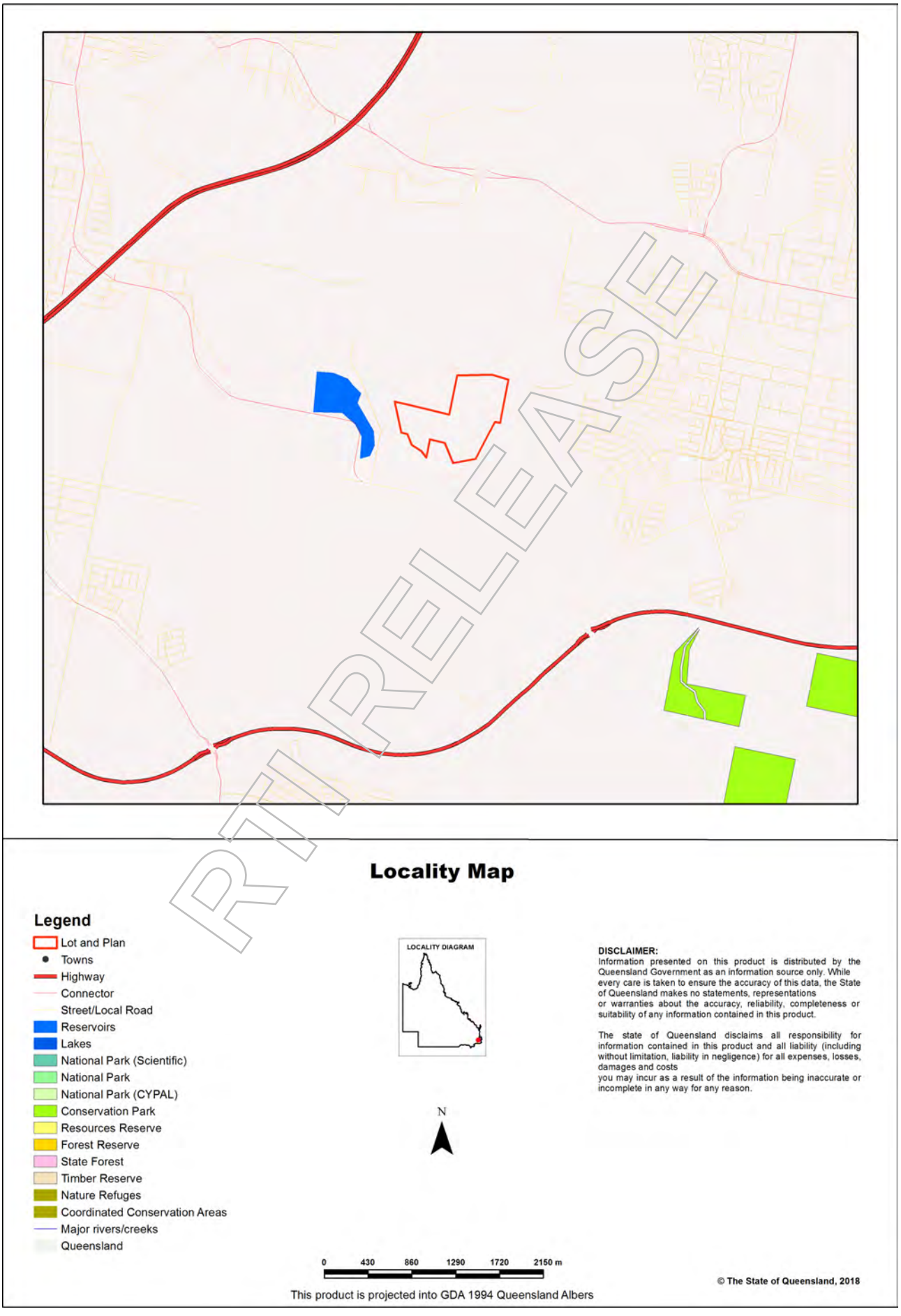
Benchmarks are based on a combination of quantitative and qualitative information and should be used as a guide only. Benchmarks are specific to one regional ecosystem vegetation community, however, the natural variability in structure and floristic composition under a range of climatic and natural disturbance regimes has been considered throughout the geographic extent of the regional ecosystem. Local reference sites should be used for this spatial and temporal (seasonal and annual) variability.

Table 7: List of remnant regional ecosystems within the AOI for which technical and biocondition benchmark descriptions are available

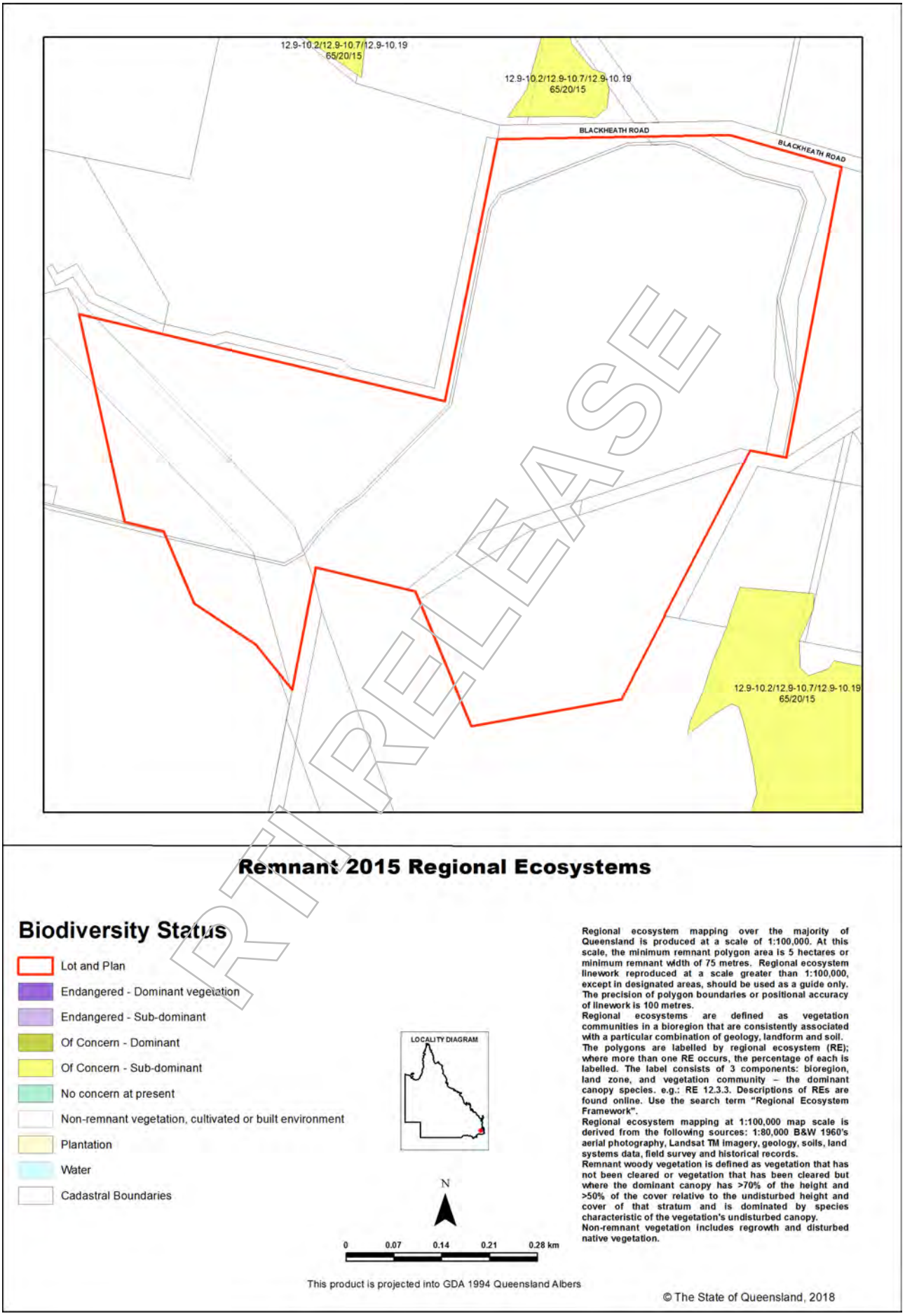
Regional ecosystems mapped as within the AOI	Technical Descriptions	Biocondition Benchmarks
non-rem	Not currently available	Not currently available

Maps

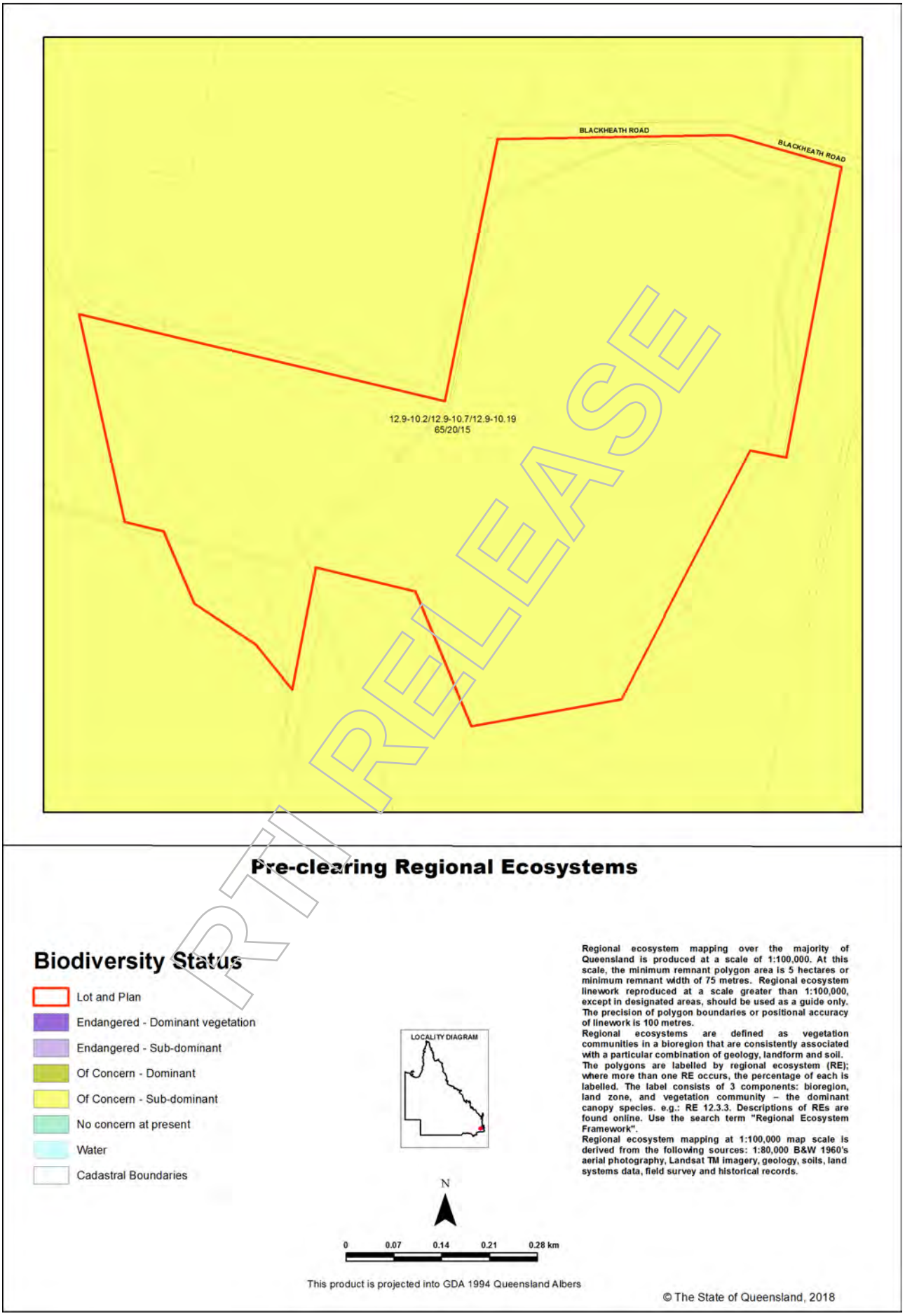
Map 1 - Location



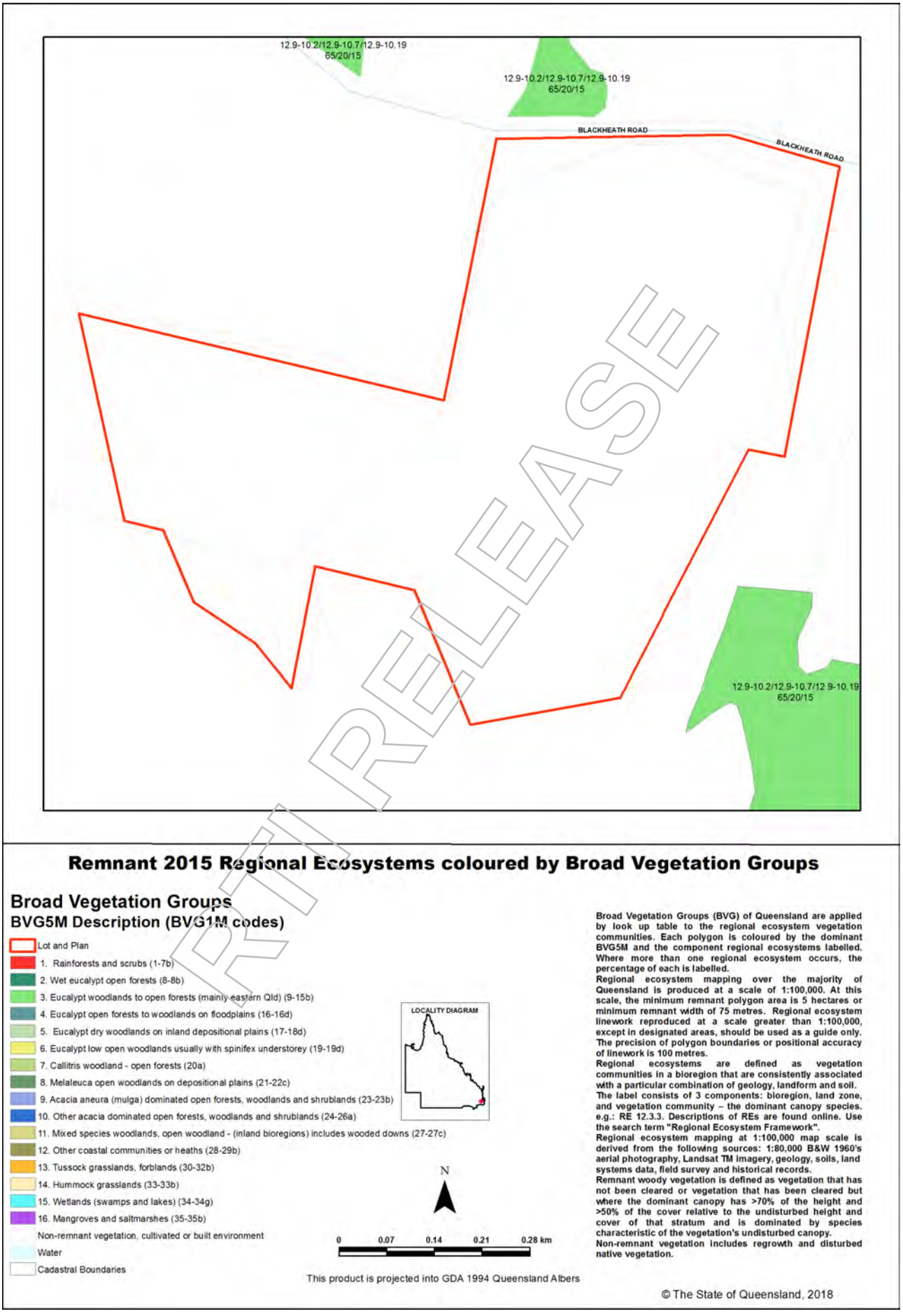
Map 2 - Remnant 2015 regional ecosystems



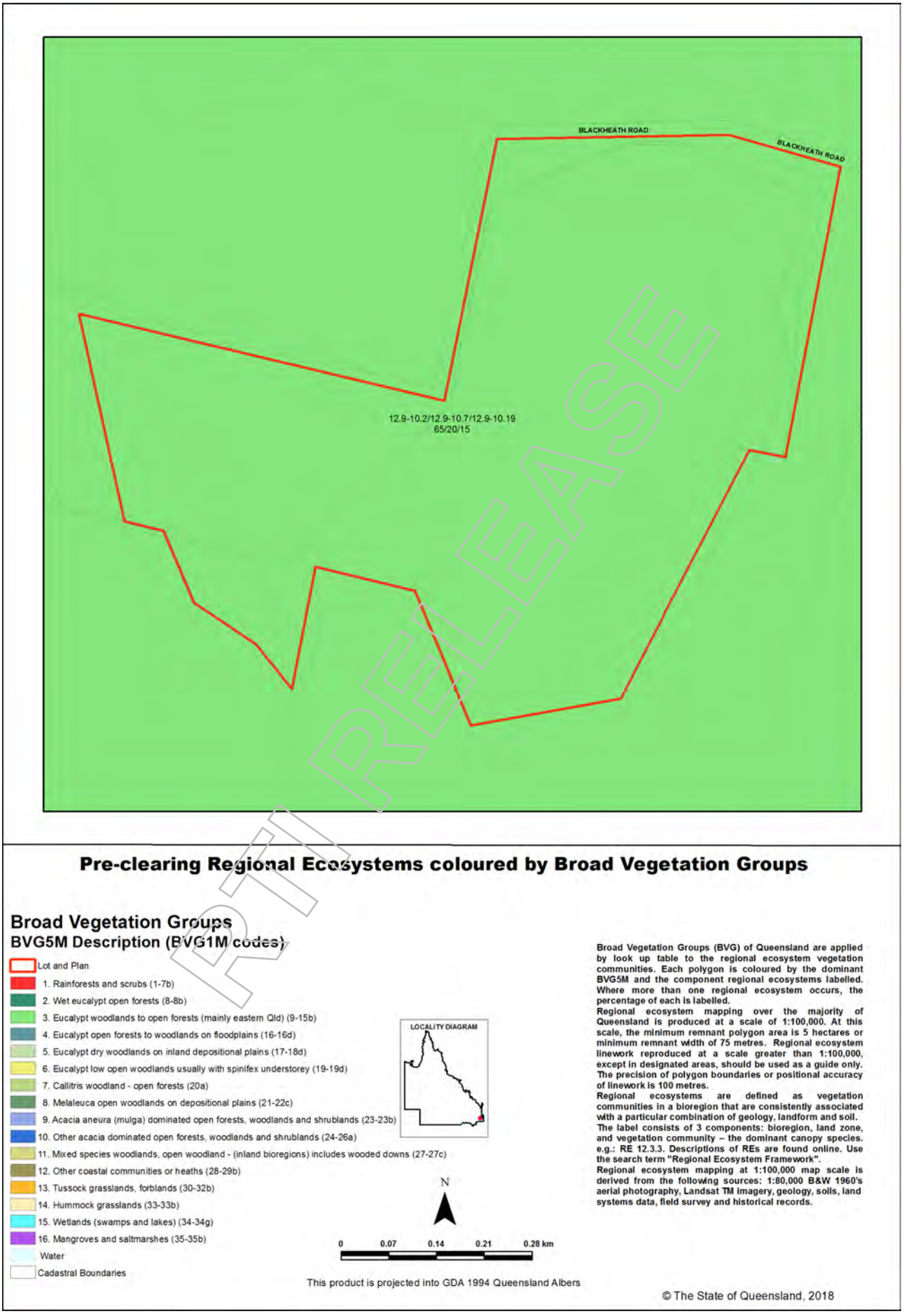
Map 3 - Pre-clearing regional ecosystems



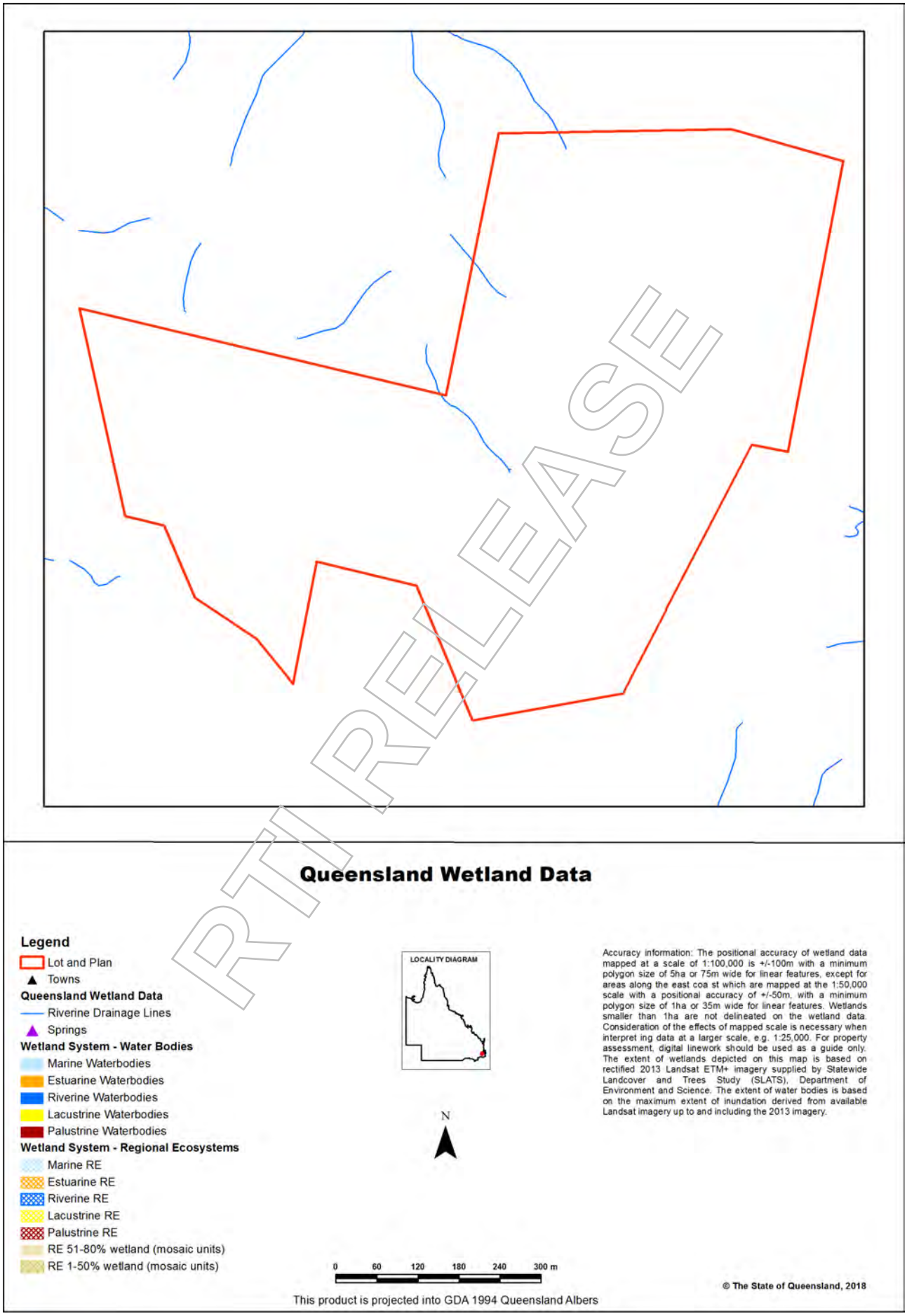
Map 4 - Remnant 2015 regional ecosystems by BVG (5M)



Map 5 - Pre-clearing regional ecosystems by BVG (5M)



Map 6 - Wetlands and waterways



Links and Other Information Sources

The Department of Environment and Science's Website -

http://www.qld.gov.au/environment/plants-animals/plants/ecosystems/

provides further information on the regional ecosystem framework, including access to links to the Regional Ecosystem Database, Broad Vegetation Group Definitions, Regional Ecosystem and Land zone descriptions.

Descriptions of the broad vegetation groups of Queensland can be downloaded from:

https://publications.qld.gov.au/dataset/redd/resource/

The methodology for mapping regional ecosystems can be downloaded from:

https://publications.qld.gov.au/dataset/redd/resource/

Technical descriptions for regional ecosystems can be obtained from:

http://www.qld.gov.au/environment/plants-animals/plants/ecosystems/technical-descriptions/

Benchmarks can be obtained from:

http://www.qld.gov.au/environment/plants-animals/biodiversity/benchmarks/

For further information associated with the remnant regional ecosystem dataset used by this report, refer to the metadata associated with the Biodiversity status of pre-clearing and Remnant Regional Ecosystems of Queensland dataset (version listed in **Appendix 1**) which is available through the Queensland Government Information System portal,

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References

Neldner, V.J., Niehus R.E., Wilson, B.A. McDonald, W.J.F., Ford, A.J. and Accad, A. (2017) The Vegetation of Queensland. Descriptions of Broad Vegetation Groups. Version 3.0. Queensland Herbarium, Department of Science, Information Technology, Innovation and the Arts.

(https://publications.qld.gov.au/dataset/redd/resource/78209e74-c7f2-4589-90c1-c33188359086)

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(https://publications.qld.gov.au/dataset/redd/resource/6dee78ab-c12c-4692-9842-b7257c2511e4)

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Appendices

Appendix 1 - Source Data

The dataset listed below is available for download from:

http://www.qld.gov.au/environment/plants-animals/plants/ecosystems/download/

- Regional Ecosystem Description Database

The datasets listed below are available for download from:

http://dds.information.qld.gov.au/dds/

- Biodiversity status of pre-clearing and 2015 remnant regional ecosystems of Queensland
- Pre-clearing Vegetation Communities and Regional Ecosystems of Queensland
- Queensland Wetland Data Version - Wetland lines
- Queensland Wetland Data Version - Wetland points
- Queensland Wetland Data Version - Wetland areas

Appendix 2 - Acronyms and Abbreviations

AOI	- Area of Interest
GDA94	- Geocentric Datum of Australia 1994
GIS	- Geographic Information System
RE	- Regional Ecosystem
REDD	- Regional Ecosystem Description Database
VMA	- *Vegetation Management Act 1999*

State Assessment and Referral Agency

Date: 26/09/2018

Department of State Development
Manufacturing, Infrastructure
and Planning

Matters of Interest for all selected Lot Plans

SEQ Regional Plan land use categories
Water resource planning area boundaries
Queensland waterways for waterway barrier works
Regulated vegetation management map (Category A and B extract)

Matters of Interest by Lot Plan

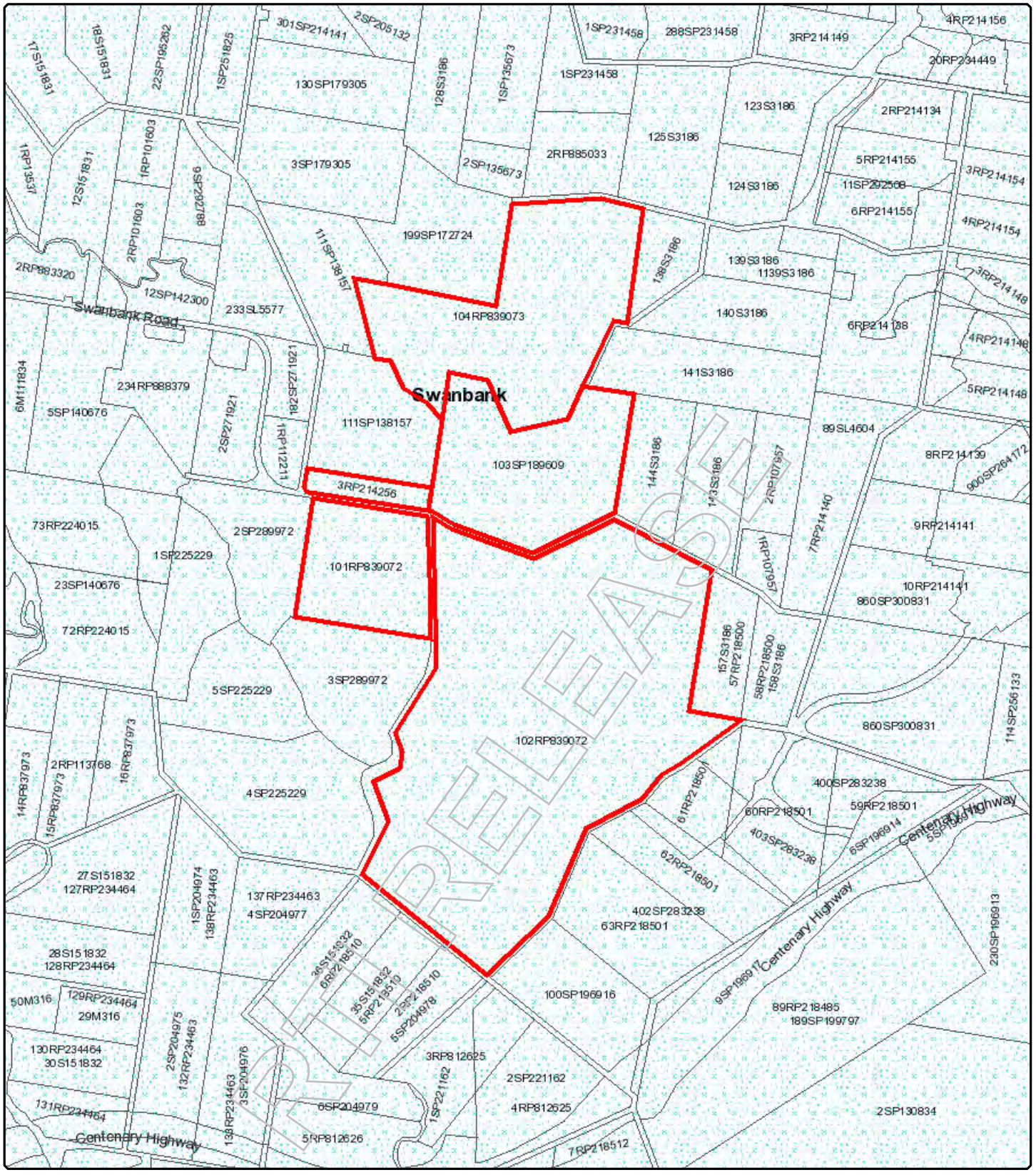
Lot Plan: 101RP839072 (Area: 218900 m^2)
SEQ Regional Plan land use categories
Queensland waterways for waterway barrier works
Water resource planning area boundaries

Lot Plan: 3RP214256 (Area: 42980 m^2)
SEQ Regional Plan land use categories
Queensland waterways for waterway barrier works
Water resource planning area boundaries
Regulated vegetation management map (Category A and B extract)

Lot Plan: 103SP189609 (Area: 359800 m^2)
SEQ Regional Plan land use categories
Queensland waterways for waterway barrier works
Water resource planning area boundaries
Regulated vegetation management map (Category A and B extract)

Lot Plan: 102RP839072 (Area: 1437000 m^2)
SEQ Regional Plan land use categories
Queensland waterways for waterway barrier works
Water resource planning area boundaries
Regulated vegetation management map (Category A and B extract)

Lot Plan: 104RP839073 (Area: 533100 m^2)
SEQ Regional Plan land use categories
Water resource planning area boundaries



State Assessment and Referral Agency

Date: 26/09/2018

Department of State Development
Manufacturing, Infrastructure
and Planning

Queensland Government

N

Legend

Water resource planning area boundaries

Water resource planning area boundaries

0 410 820 1,230 1,640

Metres

Disclaimer:
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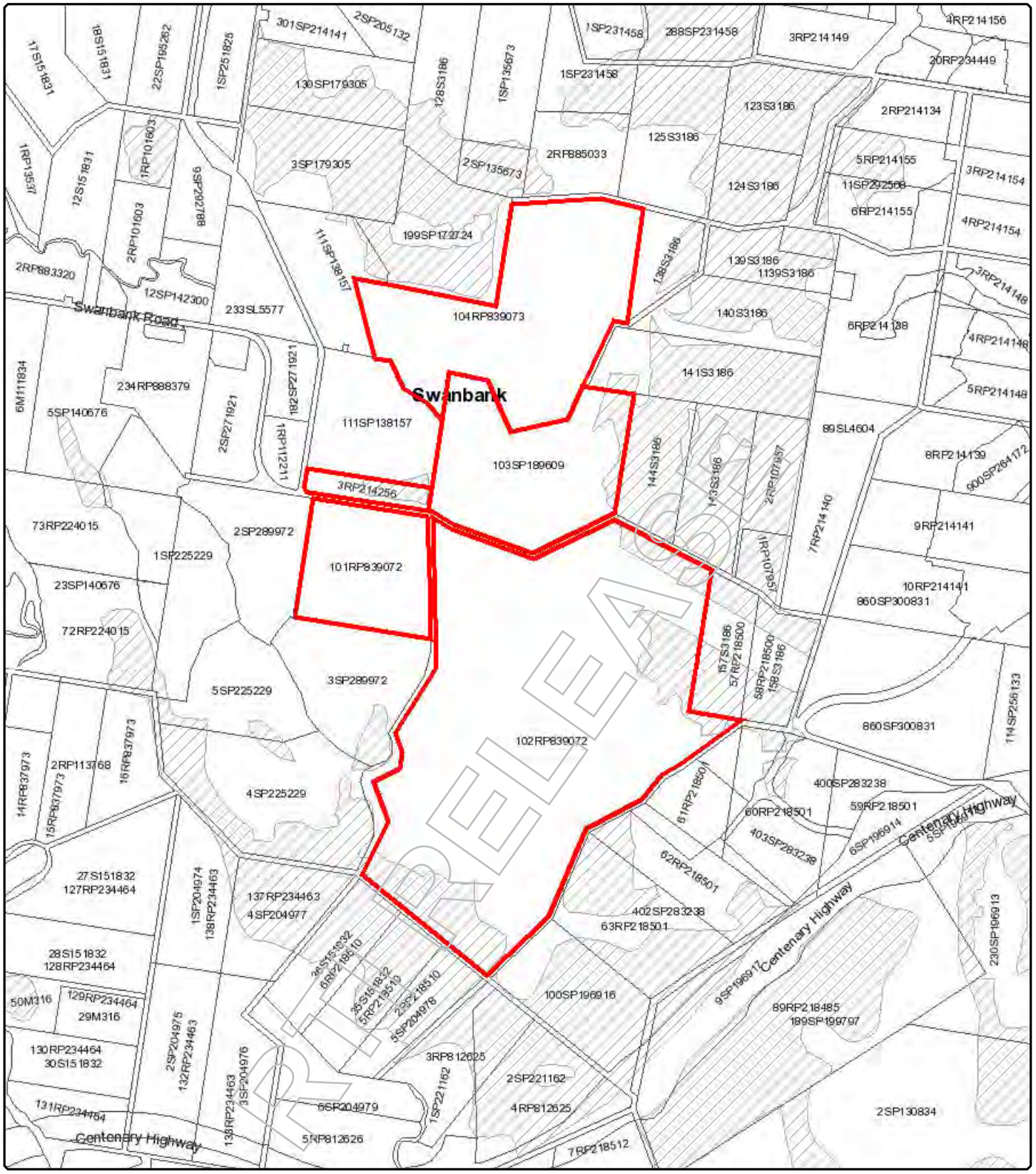


State Assessment and Referral Agency

Date: 26/09/2018

Department of State Development
Manufacturing, Infrastructure
and Planning

Queensland Government

N

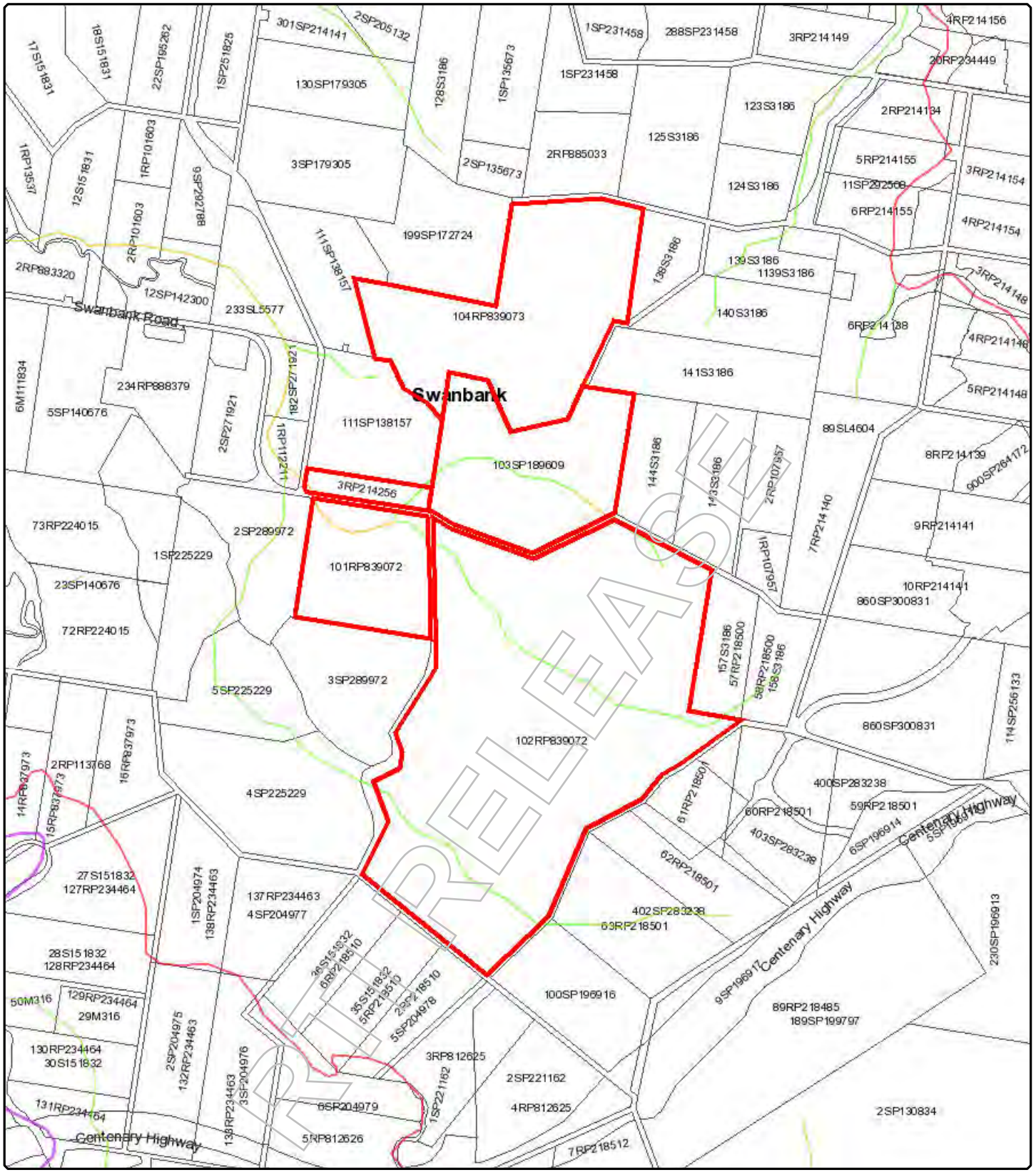
0 410 820 1,230 1,640

Metres

Legend

Regulated vegetation management map (Category A and B extract)

- Category A on the regulated vegetation management map
- Category B on the regulated vegetation management map



State Assessment and Referral Agency

Date: 26/09/2018

Department of State Development
Manufacturing, Infrastructure
and Planning

Queensland Government

N

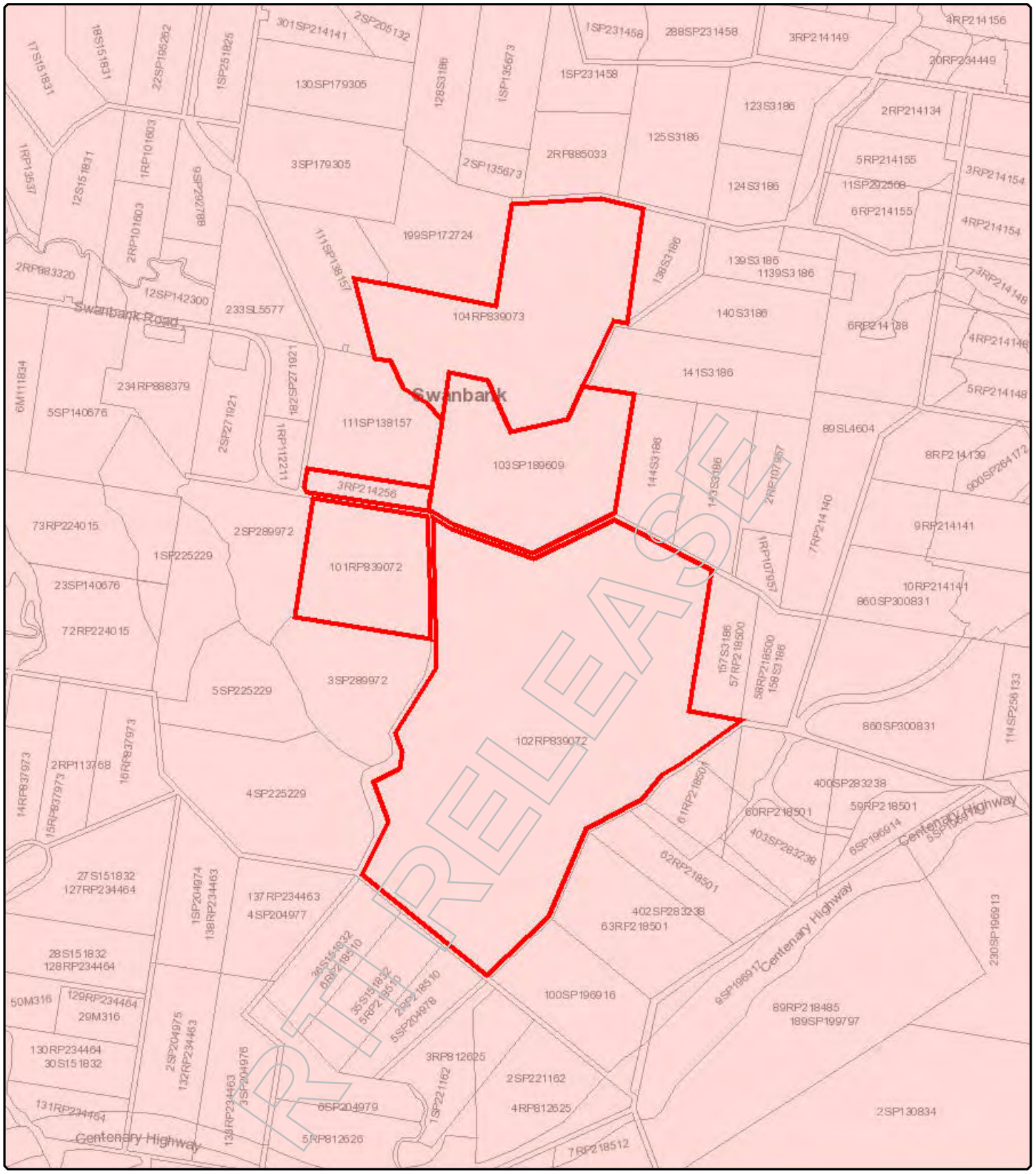
0 410 820 1,230 1,640

Metres

Legend

Queensland waterways for waterway barrier works

- 1 - Low
- 2 - Moderate
- 3 - High
- 4 - Major



State Assessment and Referral Agency

Date: 26/09/2018

Department of State Development
Manufacturing, Infrastructure
and Planning

Queensland Government

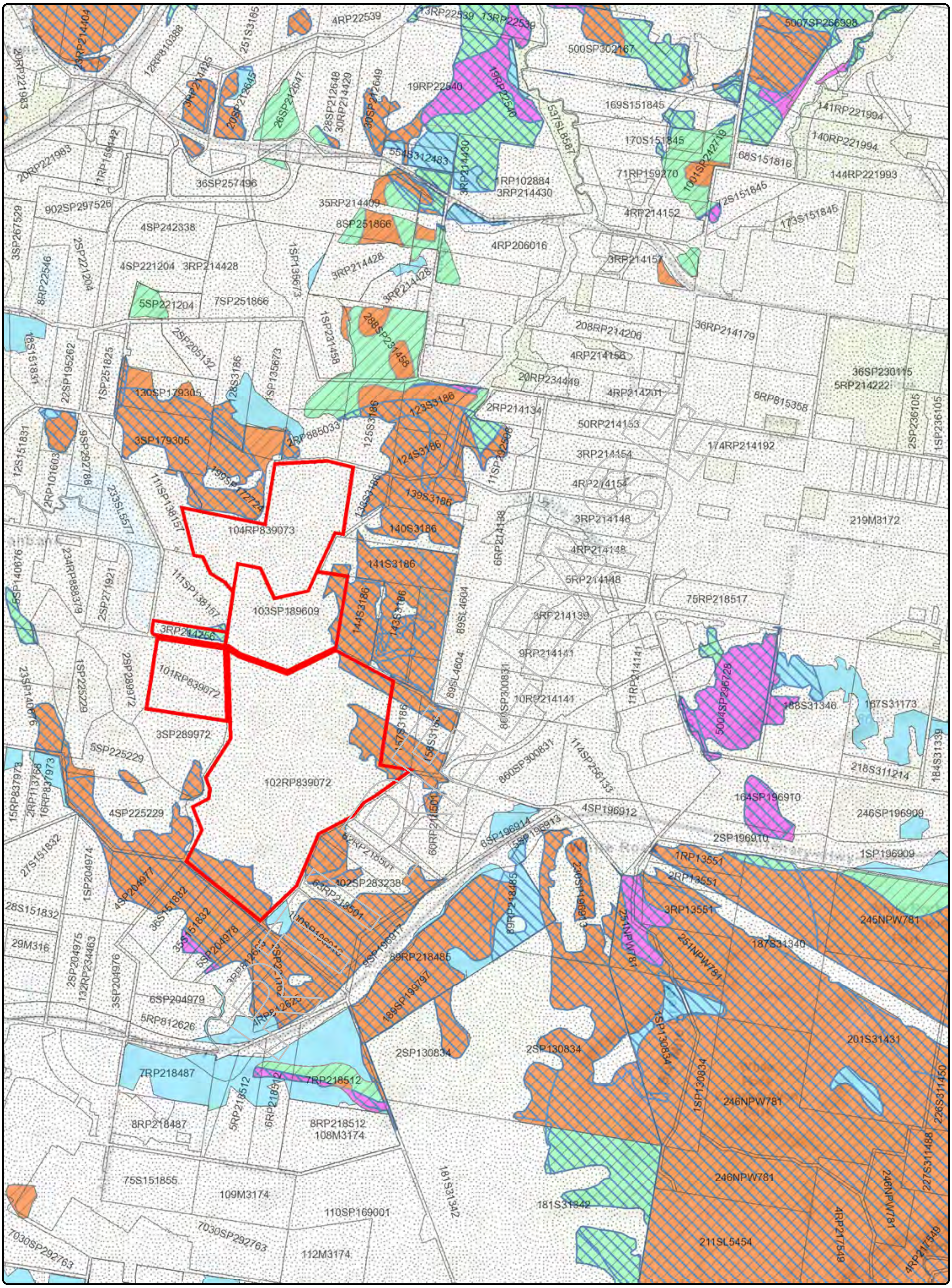
0 410 820 1,230 1,640

Metres

Legend

SEQ Regional Plan land use categories

- Regional Landscape and Rural Production Area
- Urban Footprint
- Rural Living Area



DA Mapping System – Print Screen

Date: 26/09/2018

0 | 580 | 1,160 | 1,740 | 2,320

Metres

Department of State Development, Manufacturing, Infrastructure and Planning

Legend

Drawn Polygon Layer

Override 1

Cadastre (50k)

Cadastre (50k)

Regulated vegetation management map (Category A and B extract)

Category A on the regulated vegetation management map

Category B on the regulated vegetation management map

Essential habitat

Essential habitat

Regulated vegetation management map (other vegetation categories)

Category C on the regulated vegetation managment map

Category R on the regulated vegetation management map

Category X on the regulated vegetation management map

Vegetation management regional ecosystem map

Category A or B area containing endangered regional ecosystems

Category A or B area containing of concern regional ecosystems

Category A or B area that is a least concern regional ecosystem

Non remnant

Water

Vegetation management coastal and non-coastal bioregions and sub-regions

Coastal bioregions and sub-regions

Non coastal bioregions and sub-regions

DA Mapping System – Print Screen

Queensland Government

Department of State Development, Manufacturing, Infrastructure and Planning

Date: 26/09/2018

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Queensland Government

Wildlife Online Extract

Search Criteria: Species List for a Specified Point
Species: All
Type: All
Status: All
Records: All
Date: All
Latitude: -27.6632
Longitude: 152.8280
Distance: 1
Email: Sch. 4(4)(6) - @ethosurban.com
Date submitted: Wednesday 26 Sep 2018 11:15:37
Date extracted: Wednesday 26 Sep 2018 11:20:09

The number of records retrieved = 114

Disclaimer

As the DSITIA is still in a process of collating and vetting data, it is possible the information given is not complete. The information provided should only be used for the project for which it was requested and it should be appropriately acknowledged as being derived from Wildlife Online when it is used.

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Kingdom	Class	Family	Scientific Name	Common Name	I	Q	A	Records
animals	birds	Acanthizidae	*Chthonicola sagittata*	speckled warbler		C		5
animals	birds	Acanthizidae	*Smicrornis brevirostris*	weebill		C		4
animals	birds	Acanthizidae	*Acanthiza reguloides*	buff-rumped thornbill		C		4
animals	birds	Acanthizidae	*Gerygone mouki*	brown gerygone		C		1
animals	birds	Acanthizidae	*Acanthiza chrysorrhoa*	yellow-rumped thornbill		C		2
animals	birds	Acanthizidae	*Gerygone olivacea*	white-throated gerygone		C		4
animals	birds	Accipitridae	*Aquila audax*	wedge-tailed eagle		C		2
animals	birds	Accipitridae	*Haliaeetus leucogaster*	white-bellied sea-eagle		C		1
animals	birds	Accipitridae	*Elanus axillaris*	black-shouldered kite		C		1
animals	birds	Anatidae	*Anas superciliosa*	Pacific black duck		C		1
animals	birds	Anatidae	*Aythya australis*	hardhead		C		1
animals	birds	Anatidae	*Anas castanea*	chestnut teal		C		1
animals	birds	Anatidae	*Anas gracilis*	grey teal		C		1
animals	birds	Anseranatidae	*Anseranas semipalmata*	magpie goose		C		2
animals	birds	Ardeidae	*Egretta novaehollandiae*	white-faced heron		C		2
animals	birds	Artamidae	*Cracticus nigrogularis*	pied butcherbird		C		4
animals	birds	Artamidae	*Cracticus torquatus*	grey butcherbird		C		2
animals	birds	Artamidae	*Artamus cyanopterus*	dusky woodswallow		C		1
animals	birds	Artamidae	*Strepera graculina*	pied currawong		C		3
animals	birds	Artamidae	*Cracticus tibicen*	Australian magpie		C		4
animals	birds	Campephagidae	*Coracina tenuirostris*	cicadabird		C		1
animals	birds	Campephagidae	*Coracina novaehollandiae*	black-faced cuckoo-shrike		C		3
animals	birds	Charadriidae	*Elseyornis melanops*	black-fronted dotterel		C		1
animals	birds	Charadriidae	*Vanellus miles novaehollandiae*	masked lapwing (southern subspecies)		C		2
animals	birds	Ciconiidae	*Ephippiorhynchus asiaticus*	black-necked stork		C		2
animals	birds	Cisticolidae	*Cisticola exilis*	golden-headed cisticola		C		2
animals	birds	Climacteridae	*Cormobates leucophaea metastasis*	white-throated treecreeper (southern)		C		4
animals	birds	Columbidae	*Macropygia amboinensis*	brown cuckoo-dove		C		1
animals	birds	Columbidae	*Geopelia humeralis*	bar-shouldered dove		C		1
animals	birds	Columbidae	*Phaps chalcoptera*	common bronzewing		C		2
animals	birds	Columbidae	*Ocyphaps lophotes*	crested pigeon		C		3
animals	birds	Columbidae	*Geopelia striata*	peaceful dove		C		2
animals	birds	Corvidae	*Corvus orru*	Torresian crow		C		5
animals	birds	Cuculidae	*Cacomantis flabelliformis*	fan-tailed cuckoo		C		3
animals	birds	Cuculidae	*Chalcites lucidus*	shining bronze-cuckoo		C		1
animals	birds	Cuculidae	*Chalcites basalis*	Horsfield's bronze-cuckoo		C		2
animals	birds	Dicruridae	*Dicrurus bracteatus*	spangled drongo		C		1
animals	birds	Estrildidae	*Neochmia temporalis*	red-browed finch		C		4
animals	birds	Estrildidae	*Taeniopygia bichenovii*	double-barred finch		C		3
animals	birds	Eurostopodidae	*Eurostopodus mystacalis*	white-throated nightjar		C		1
animals	birds	Falconidae	*Falco peregrinus*	peregrine falcon		C		2
animals	birds	Falconidae	*Falco cenchroides*	nankeen kestrel		C		3
animals	birds	Halcyonidae	*Todiramphus sanctus*	sacred kingfisher		C		1
animals	birds	Halcyonidae	*Dacelo novaeguineae*	laughing kookaburra		C		4
animals	birds	Hirundinidae	*Cheramoeca leucosterna*	white-backed swallow		C		1
animals	birds	Hirundinidae	*Hirundo neoxena*	welcome swallow		C		2

Kingdom	Class	Family	Scientific Name	Common Name	I	Q	A	Records
animals	birds	Hirundinidae	*Petrochelidon ariel*	fairy martin		C		1
animals	birds	Maluridae	*Malurus lamberti*	variegated fairy-wren		C		4
animals	birds	Maluridae	*Malurus melanocephalus*	red-backed fairy-wren		C		5
animals	birds	Maluridae	*Malurus cyaneus*	superb fairy-wren		C		2
animals	birds	Meliphagidae	*Melithreptus gularis*	black-chinned honeyeater		C		2
animals	birds	Meliphagidae	*Philemon corniculatus*	noisy friarbird		C		3
animals	birds	Meliphagidae	*Acanthorhynchus tenuirostris*	eastern spinebill		C		1
animals	birds	Meliphagidae	*Melithreptus albogularis*	white-throated honeyeater		C		4
animals	birds	Meliphagidae	*Anthochaera chrysoptera*	little wattlebird		C		1
animals	birds	Meliphagidae	*Philemon citreogularis*	little friarbird		C		2
animals	birds	Meliphagidae	*Myzomela sanguinolenta*	scarlet honeyeater		C		4
animals	birds	Meliphagidae	*Lichmera indistincta*	brown honeyeater		C		5
animals	birds	Meliphagidae	*Entomyzon cyanotis*	blue-faced honeyeater		C		2
animals	birds	Meliphagidae	*Caligavis chrysops*	yellow-faced honeyeater		C		4
animals	birds	Meliphagidae	*Manorina melanocephala*	noisy miner		C		3
animals	birds	Meropidae	*Merops ornatus*	rainbow bee-eater		C		4
animals	birds	Monarchidae	*Monarcha melanopsis*	black-faced monarch		SL		1
animals	birds	Monarchidae	*Grallina cyanoleuca*	magpie-lark		C		3
animals	birds	Monarchidae	*Myiagra rubecula*	leaden flycatcher		C		1
animals	birds	Motacillidae	*Anthus novaeseelandiae*	Australasian pipit		C		3
animals	birds	Nectariniidae	*Dicaeum hirundinaceum*	mistletoebird		C		3
animals	birds	Neosittidae	*Daphoenositta chrysoptera*	varied sittella		C		3
animals	birds	Oriolidae	*Oriolus sagittatus*	olive-backed oriole		C		1
animals	birds	Pachycephalidae	*Pachycephala pectoralis*	golden whistler		C		4
animals	birds	Pachycephalidae	*Pachycephala rufiventris*	rufous whistler		C		4
animals	birds	Pachycephalidae	*Colluricincla harmonica*	grey shrike-thrush		C		3
animals	birds	Pardalotidae	*Pardalotus punctatus*	spotted pardalote		C		3
animals	birds	Pardalotidae	*Pardalotus striatus*	striated pardalote		C		5
animals	birds	Pelecanidae	*Pelecanus conspicillatus*	Australian pelican		C		1
animals	birds	Petroicidae	*Eopsaltria australis*	eastern yellow robin		C		3
animals	birds	Petroicidae	*Petroica rosea*	rose robin		C		3
animals	birds	Petroicidae	*Microeca fascinans*	jacky winter		C		3
animals	birds	Phalacrocoracidae	*Microcarbo melanoleucos*	little pied cormorant		C		2
animals	birds	Phalacrocoracidae	*Phalacrocorax sulcirostris*	little black cormorant		C		1
animals	birds	Phasianidae	*Coturnix ypsilophora*	brown quail		C		1
animals	birds	Podargidae	*Podargus strigoides*	tawny frogmouth		C		1
animals	birds	Podicipedidae	*Tachybaptus novaehollandiae*	Australasian grebe		C		2
animals	birds	Pomatostomidae	*Pomatostomus temporalis*	grey-crowned babbler		C		2
animals	birds	Psittacidae	*Parvipsitta pusilla*	little lorikeet		C		3
animals	birds	Psittacidae	*Trichoglossus chlorolepidotus*	scaly-breasted lorikeet		C		2
animals	birds	Psittacidae	*Platycercus adscitus*	pale-headed rosella		C		3
animals	birds	Psittacidae	*Trichoglossus haematodus moluccanus*	rainbow lorikeet		C		2
animals	birds	Psophodidae	*Cinclosoma punctatum*	spotted quail-thrush		C		3
animals	birds	Psophodidae	*Psophodes olivaceus*	eastern whipbird		C		1
animals	birds	Rallidae	*Porphyrio melanotus*	purple swamphen		C		1
animals	birds	Rallidae	*Gallinula tenebrosa*	dusky moorhen		C		2

Kingdom	Class	Family	Scientific Name	Common Name	I	Q	A	Records
animals	birds	Rallidae	*Lewinia pectoralis*	Lewin's rail		C		3
animals	birds	Rallidae	*Porzana tabuensis*	spotless crake		C		2
animals	birds	Rallidae	*Porzana fluminea*	Australian spotted crake		C		2
animals	birds	Rallidae	*Porzana pusilla*	Baillon's crake		C		9
animals	birds	Rallidae	*Fulica atra*	Eurasian coot		C		1
animals	birds	Rallidae	*Amaurornis moluccana*	pale-vented bush-hen		C		1
animals	birds	Recurvirostridae	*Himantopus himantopus*	black-winged stilt		C		1
animals	birds	Rhipiduridae	*Rhipidura leucophrys*	willie wagtail		C		4
animals	birds	Rhipiduridae	*Rhipidura albiscapa*	grey fantail		C		4
animals	birds	Rhipiduridae	*Rhipidura rufifrons*	rufous fantail		SL		1
animals	birds	Rostratulidae	*Rostratula australis*	Australian painted snipe		V	E	4
animals	birds	Scolopacidae	*Limosa limosa*	black-tailed godwit		SL		2
animals	birds	Scolopacidae	*Actitis hypoleucos*	common sandpiper		SL		6
animals	birds	Scolopacidae	*Gallinago hardwickii*	Latham's snipe		SL		2
animals	birds	Sturnidae	*Sturnus vulgaris*	common starling	Y			1
animals	birds	Threskiornithidae	*Platalea regia*	royal spoonbill		C		1
animals	birds	Timaliidae	*Zosterops lateralis*	silvereye		C		5
animals	birds	Turnicidae	*Turnix maculosus*	red-backed button-quail		C		1
animals	birds	Turnicidae	*Turnix varius*	painted button-quail		C		2
animals	mammals	Phascolarctidae	*Phascolarctos cinereus*	koala		V	V	3
plants	higher dicots	Rhamnaceae	*Cryptandra longistaminea*			C		1/1
plants	lower dicots	Apocynaceae	*Marsdenia coronata*	slender milkvine		V		1/1

CODES

I - Y indicates that the taxon is introduced to Queensland and has naturalised.

Q - Indicates the Queensland conservation status of each taxon under the *Nature Conservation Act 1992.* The codes are Extinct in the Wild (PE), Endangered (E), Vulnerable (V), Near Threatened (NT), Least Concern (C) or Not Protected ( ).

A - Indicates the Australian conservation status of each taxon under the *Environment Protection and Biodiversity Conservation Act 1999.* The values of EPBC are Conservation Dependent (CD), Critically Endangered (CE), Endangered (E), Extinct (EX), Extinct in the Wild (XW) and Vulnerable (V).

Records – The first number indicates the total number of records of the taxon for the record option selected (i.e. All, Confirmed or Specimens).
This number is output as 99999 if it equals or exceeds this value. The second number located after the / indicates the number of specimen records for the taxon.
This number is output as 999 if it equals or exceeds this value.

Sch. 4(4)(6) - Disclosing pe

From: Sch. 4(4)(6) - Disclosing @remondis.com.au>
Sent: Thursday, 22 November 2018 5:11 PM
To: Steven Tarte
Cc: Sch. 4(4)(6) - Disclosing personal information Paul Byrne
Subject: RE: DRAFT REMONDIS WtE IAS Document

Hi Steven

We have completed a revised DRAFT of the IAS. A copy of the file is available from the following:

http://publish.remondis.com.au/download.php?intro=7VouKXlMuqUYABhwUuqg

We would greatly appreciate another review of the DRAFT IAS by the Department. We expect to make a final submission after receiving the Department's feedback.

Please feel free to contact me to discuss further.

Thanks.

Kind Regards
REMONDIS Australia Pty Ltd

Sch. 4(4)(6) -
Manager – Landfills, Transfer Stations and Transport
Queensland Waste

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WORKING FOR THE FUTURE

From: Steven Tarte [mailto:Steven.Tarte@coordinatorgeneral.qld.gov.au]
Sent: Wednesday, 24 October 2018 6:02 PM
To: Sch. 4(4)(6) - Disclosing personal information
Cc: Paul Byrne
Subject: RE: DRAFT REMONDIS WtE IAS Document

Hi Sch. 4(4)

Please find attached our comments on the draft Initial Advise Statement (IAS). We did not identify any significant omissions. Therefore, our comments identify where additional information would further support the Coordinator-General's consideration of your project, noting the areas that you indicated required additional focus.

In addition, we recommend early engagement with the Commonwealth Department of Environment and Energy regarding the project, noting section 6.5 of the IAS that indicates that the proposed development is not considered to be a 'controlled action' pursuant to the *Environment Protection and Biodiversity Conservation Act 1999*.

Please contact Paul or myself if you have any questions, otherwise we can further discuss the comments at our meeting on Friday.

Regards,

Steven

Steven Tarte
A/Director
Office of the Coordinator-General
Department of State Development,
Manufacturing, Infrastructure and Planning
Queensland Government
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From: Sch. 4(4)(6) -
Sent: Tuesday, 16 October 2018 4:40 PM
To: 'Steven.Tarte@coordinatorgeneral.qld.gov.au' <Steven.Tarte@coordinatorgeneral.qld.gov.au>
Cc: Sch. 4(4)(6) - Disclosing person@remondis.com.au>; Sch. 4(4)(6) - Disclosing personal@remondis.com.au>; Sch. 4(4)(6) - Dis
Sch. 4(4)(6) - Discl remondis.com.au>
Subject: DRAFT REMONDIS WtE IAS Document

Hi Steven

Thank you for providing us with the opportunity to submit a draft IAS document for review by the Department. An **early** DRAFT of the IAS for the Swanbank WtE Project is available from the following link:

http://publish.remondis.com.au/download.php?intro=7VouKXIMuqUYABhwUuqg

We look forward to receiving your feedback / comments on the draft document. We would also welcome a meeting to discuss the DRAFT document further.

We have identified that key areas that may require additional focus is Chapters 6 and 7. In particular, the sections addressing air quality, odour and social / economic benefits. We look forward to discussing the correct balance between data required for the IAS versus an IAR/EIS Report.

Please feel free to contact me with any queries.

Thanks.

Kind Regards
REMONDIS Australia Pty Ltd

Sch. 4(4)(6) - D
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ETHOS URBAN

Initial Advice Statement

Swanbank Road, Swanbank
Waste to Energy Facility

Submitted to Office of Coordinator-General
On behalf of REMONDIS Australia Pty Ltd

22 November 2018 | 18-6636

CONTACT

Sch. 4(4)(6) - Director Sch. 4(4 ethosurban.com 07 3852 1822

This document has been prepared by:

"Double click to insert sig"

Sch. 4(4)(6) 11 October 2018

This document has been reviewed by:

"Double click to insert sig"

Sch. 4(4)(6) 11 October 2018

VERSION NO.	DATE OF ISSUE	REVISION BY	APPROVED BY

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Contents

Contents

Figures

Contents

Tables

Contents

Abbreviations

Abbreviation	Descriptions
AADT	Annual average daily traffic
AHD	Australian Height Datum
BGL	Below Ground Level
CEMP	Construction Environmental Management Plan
Cth	Commonwealth
IAR	Impact Assessment Report
IED	Industrial Emissions Directive
IPS	Ipswich Planning Scheme
EIS	Environmental Impact Statement
EPBC	Environmental Protection and Biodiversity Act 1999 (Cth)
EPP (Noise)	Environmental Protection (Noise)Policy 2008
EPP (Air)	Environmental Protection (Air) Policy 2008
GHG	Greenhouse Gas
LGA	Local Government Area
NC Act	Nature Conservation Act 1992
Planning Act	Planning Act 2016
PDA	Priority Development Area
REMONDIS	REMONDIS Australia Pty Ltd
SREWMF	Swanbank Renewable Energy and Waste Management Facility
The Site	The location of the proposed development including the proposed WtE facility referred to as the 'Site'.
WtE	Waste to Energy
VM Act	Vegetation Management Act 1999 (Qld)

Appendices

Executive Summary

REMONDIS proposes to build Resource Recovery Infrastructure and Waste to Energy (WtE) facility on its landfill site at Swanbank, in area zoned for heavy industry (under the Ipswich City Plan) and adjacent to the Swanbank E gas-fired power station.

Swanbank has been used by REMONDIS since 2007 to supply 12,000 MWh per annum of renewable energy to the Queensland electricity grid through a methane capture and electricity generation project.

This development will include processes to allow for the recovery of a range of recyclable products for processing and recycling and residuals being utilised for WtE activities rather than landfill. The proposed WtE facility will form a single component of the wider 'Swanbank Recycling Park' and REMONDIS is committed to ensuring that existing waste feedstock that is currently being transported to site will be separated that firstly, higher order waste management opportunities (reduce, re-use and recycle) will be prioritised and that the processing of waste through the proposed technology will only occur when all alternative recovery opportunities are exhausted.

A WtE facility which is synergistic with an existing waste disposal and recycling facility will be able to use the power and heat generated to provide a level of energy self-sufficiency within the immediate business precinct and to attract investment, development and employment generating activities.

The WtE facility will use safe, reliable, tried and proven technology to create green energy from residual waste fuel that would otherwise go straight to landfill.

The WtE facility is proven technology in the proposed configuration of the facility. This technology currently operates reliably in the Europe and has a successful track record in treating the same waste streams proposed as fuel as part of this application.

REMONDIS is targeting 20% of the Queensland suitable waste streams for its WtE facility. By capturing between 300,000 and 500,000 tonnes of suitable waste per year, REMONDIS can generate up to 50MW of baseload renewable electricity for Queensland households and businesses.

If Queensland maintains a "business as usual" approach to refuse disposal and waste recycling, most of South East Queensland's landfills will have no capacity by 2040.

Diverting thousands of tonnes of suitable waste away from landfill and into a best-practice WtE facility will extend the life of South East Queensland's constrained landfills and also provide an additional, baseload electricity source for Queensland residents and businesses.

Queensland has the opportunity to benefit from successful European and UK experiences and incorporate WtE technology as part of the solution to sustainable, best practice waste management.

This Initial Advice Statement (IAS) demonstrates the suitability for 'coordinated project' determination as set out in section 26 (2), 27 and 27 (AC) of the *State Development and Public Works Organisation Act 1971* (SDPWO Act).

This document has been developed to demonstrate that the project is of strategic significance to the City of Ipswich Local Government Area and wider South East Queensland with regard to economic and social benefits, capital investment and employment opportunities.

This IAS outlines the projected benefits of this project to the region, with an estimated 200 Full Time Equivalent jobs during construction and up to 80 Full Time Equivalent jobs during operation, and an estimated Capital Investment of $400 million into the Swanbank locality.

An aerial map of the Swanbank Renewable Energy and Waste Management Facility (SREWMF) is shown at **Figure 1**.

This proposed WtE facility presents an opportunity for Queensland to benefit from REMONDIS' global experience, and other successful European and UK facilities, and incorporate WtE as part of the solution to sustainable, best practice waste management.

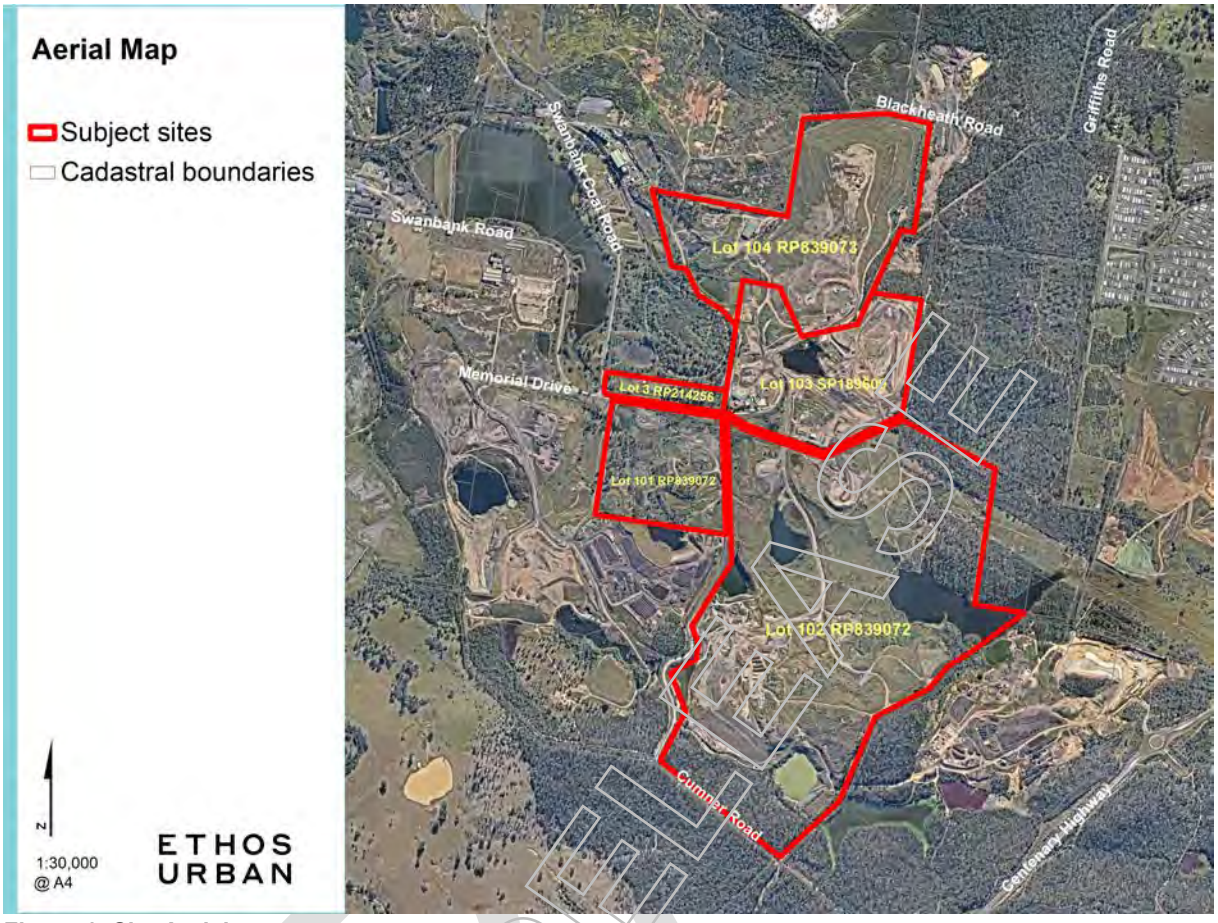

Figure 1: Site Aerial

1.0 Introduction

1.1 Background

REMONDIS Australia (REMONDIS) is committed to diverting waste from landfill and revolutionising recycling and resource recovery at its Swanbank Renewable Energy and Waste Management Facility (SREWMF).

Waste disposal at SREWMF (Stage 1) commenced in 1998 and the landfill currently comprises seven cells, which were constructed progressively between 1997 and 2018. Although the site has operated as a landfill for many years, the subject site was previously used for open cut mining activities and is surrounded primarily by extractive industries and other waste management operations.

REMONDIS has identified that the biggest waste management issue for South East Queensland Councils is the cost of cheap landfill, which results in little incentive to look for other waste management options. Further, a business as usual approach to waste management may see most of South East Queensland's landfills with no capacity by 2040.

Waste-to-energy technology is used across the world, with countries including Germany, Japan, China and Finland using waste to generate electricity. Diverting thousands of tonnes of suitable waste away from landfill and into a best-practice WtE facility will extend the life of South East Queensland's constrained landfills and also provide an additional, baseload electricity source for Queensland residents and businesses.

Queensland has the opportunity to benefit from successful European and UK experiences and incorporate Waste to Energy as part of the solution to sustainable, best practice waste management.

1.1.1 Site Details

The SREWMF is located at 66-114 Blackheath Road SWANBANK QLD 4306 and is legally described as:

- Lot 101 on RP839072
- Lot 102 on RP839072
- Lot 103 on SP189609
- Lot 104 on RP839073
- Lot 3 on RP214256

The SREWMF includes the approved landfill footprints identified as Stage 1 and 2:

- Stage 1 is made up of Lot 103 on SP189609 and Lot 104 on RP 839073.
- Stage 2 is identified as Lot 101 and 102 on RP 839072 and Lot 3 on RP 214256.
- Stage 1 of the landfill operation comprises a number of approved individual landfill cells along with a major power easement which runs along the western and southern boundary of Stage 1B on SP 152158 and SP 127335.

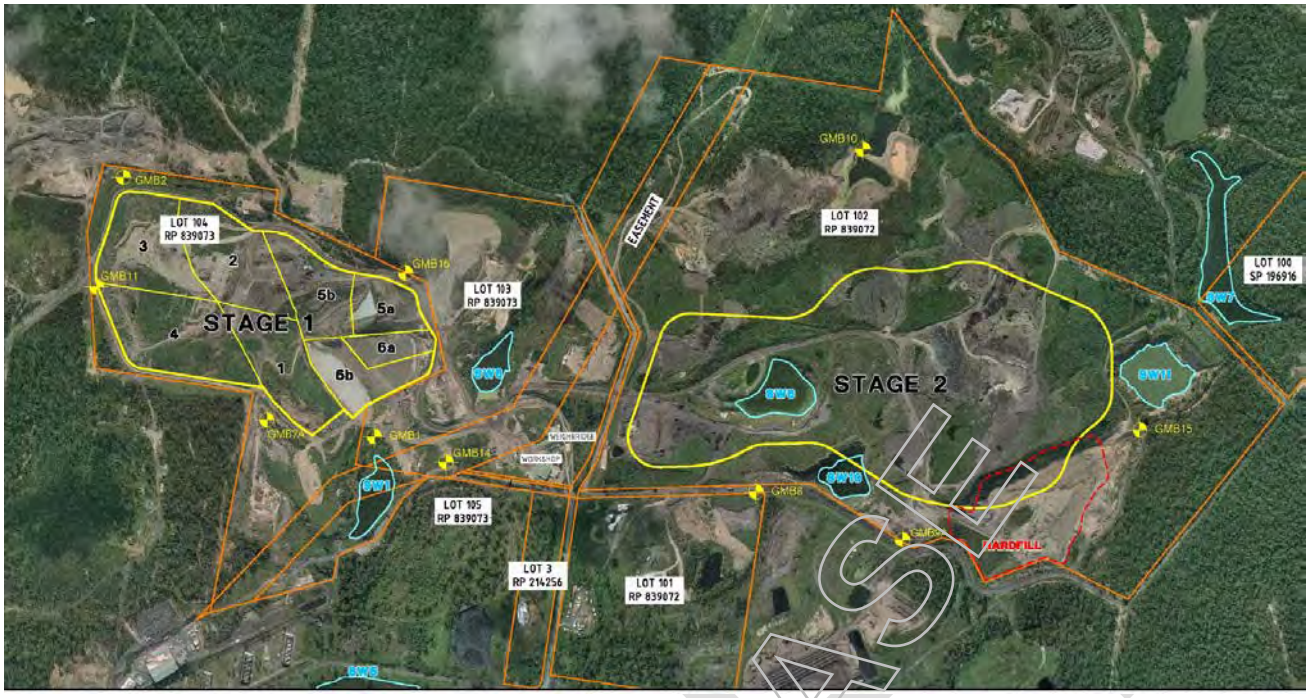

Figure 2: Swanbank Landfill – Approved Landfill Footprints – Stage 1 and 2

As identified in **Figure 3** below, the site falls within the Swanbank Approved Land Use Precincts (3 and 4) under the Ipswich City Plan for the following purposes:

1. Waste Processing, Treatment and Disposal (in accordance with Plan of Development No. 10556/001C).
2. Waste Recycling, Composting and Disposal, Land Rehabilitation, Truck Depot and Park with ancillary uses of Leachate Collection, Landfill, Gas Collection, Treatment, Storage and Disposal, Crushing of Spoil Pile Material, Vegetation Propagation for Rehabilitation and Caretakers Flat (Generally in Accordance with Plan of Development TP-61/90).

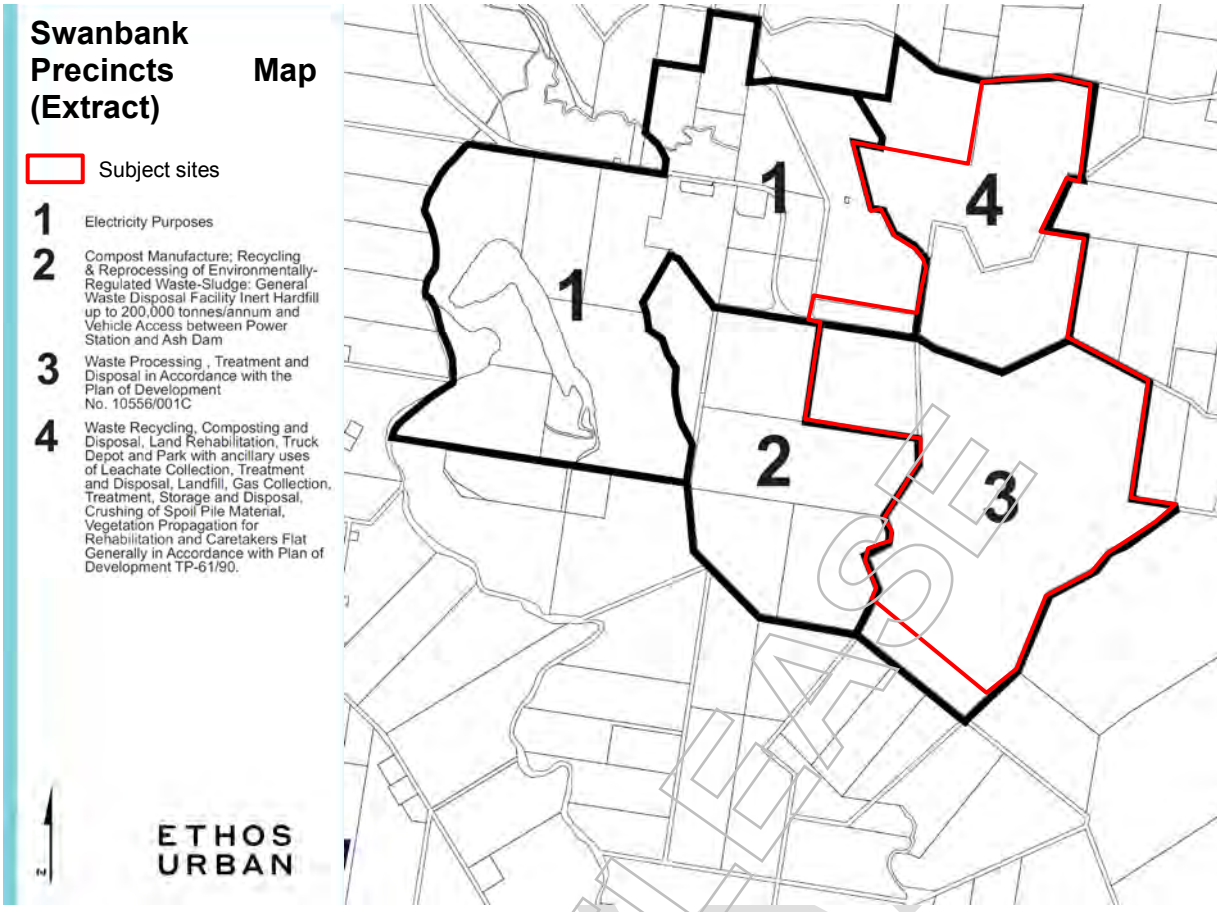

Figure 3: Swanbank Approved Land Use Precincts (Ipswich Planning Scheme)

1.2 Site Approvals

In 1990, the former Moreton Shire local government agency issued an approval for the rezoning of land identified as Stage 1 of the Swanbank site under the Moreton Shire Planning Scheme (TP-61/90).

Although subsequent planning schemes have changed zoning regimes, the wording of the original rezoning continues to be reflected in the current planning scheme. This wording indicates appropriate activities on the land as including:

- Waste recycling, composting and disposal;
- Leachate collection, treatment and disposal;
- Landfill gas collection, treatment and disposal; and
- Crushing of spoil pile material.

Land comprising of the Stage 2 of SREWMF area was granted zoning and development approval in 1990 by Ipswich City Council for activities of waste processing, treatment and disposal in accordance with plan of development 10556/001C.

The current environmentally relevant activities (ERA) approvals over the SREWMF site allow for a wide range of activities, including the following:

- Waste disposal;
- Soil conditioner manufacturing;
- Composting;
- Regulated waste storage;
- Regulated waste treatment; and
- Fuel burning.

The site has been subject to a number of planning approvals since it commenced operation as a Renewable Energy and Waste Management Facility with each extension, expansion and construction of the landfill cells requiring a subsequent approval.

It is noted that the proposed WtE facility will be located on Lot 101 on RP 839072 that forms Stage 2 of the SREWMF.

The subject site is identified within the Swanbank New Chum Land Use Concept Master Plan as shown in **Figure 5** below. The Swanbank New Chum master plan (as described within the ICC Planning Scheme Part 6.7D) is an indicative footprint for future development and is not intended to prescribe the precise boundaries of the indicative land use designations and structural elements.

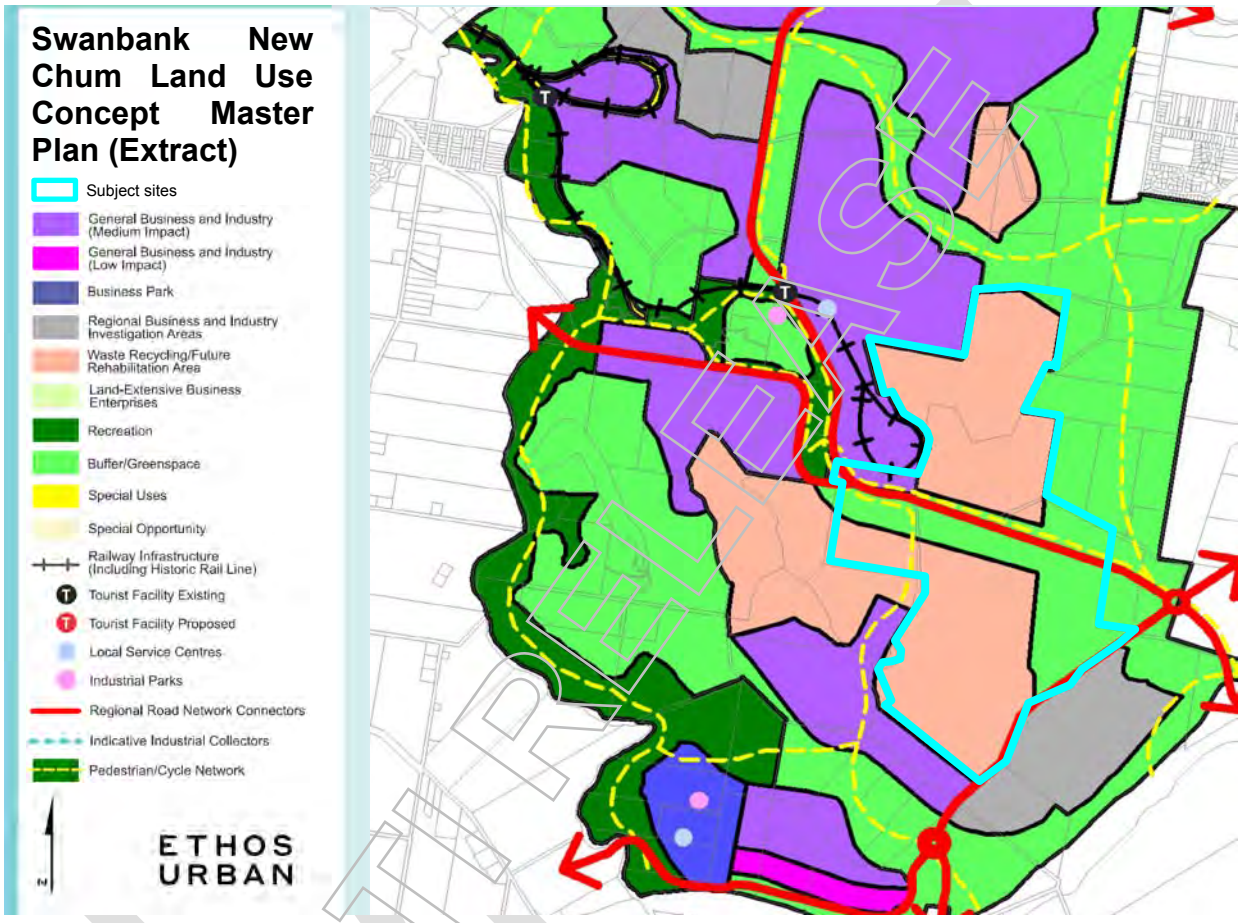

Figure 4: Swanbank New Chum Land Use Concept Master Plan (Extract)

1.3 Purpose and scope of Initial Advice Statement

The purpose of this Initial Advice Statement (IAS) is to assist the Coordinator-General in determining whether the project should be declared a 'coordinated project' under Part 4 of the *State Development and Public Works Organisation Act 1971* (SDPWO Act) and the level of assessment required. The IAS identifies the potential Project impacts (positive and negative) to be investigated in detail in either the Project Impact Assessment Report (IAR) or Environmental Impact Statement (EIS).

Accordingly, the IAS provides the Project information to interested and affected stakeholders and the general public. It identifies additional approvals that may be required for the implementation of the Project once the Coordinator-General assessment is complete.

1.4 Coordinated project declaration

Due to the importance of the Project, the need for a viable long term solution to waste management in South East Queensland and an alternative to traditional landfill waste management, REMONDIS believes the Project would benefit from declaration as a Coordinated Project by the Coordinator-General under Part 4 of the SDPWO Act.

The proposed approach to build and operate the resource recovery WtE facility within the existing SREWMF site is expected to significantly reduce the environmental, social and economic impacts of the Project.

REMONDIS seeks confirmation from the Office of Coordinator-General that the proposal's declaration as a 'Coordinated Project' is appropriate under section 27(2)(b) of the SDPWO Act as the IAS confirms that the Project will:

Require complex State or Commonwealth government approval requirements

A number of approvals from or referrals to local, State and the Commonwealth government will be required for the Project. This will require coordination of the input of a number of regulatory agencies, which are likely to include:

- Department of Natural Resources, Mines and Energy (DNRME);
- Department of Environment and Science (DES);
- Workplace Health and Safety, Queensland (WHSQ);
- Department of Transport and Main Roads (DTMR);
- Hazardous Industries and Chemicals Branch (HICB);
- Ipswich City Council (ICC); and
- Department of Environment and Energy (DoEE).

Further, SREWMF holds a current Environmental Authority (EA) granted in December 2016 for a number of Environmentally Relevant Activities (ERA's). The operation of a WtE facility at SREWMF (Lot 101) will require an application to amend an EA to include the following ERA's:

- ERA 14 – Electricity Generation (for all WtE technology operations);
- ERA 15 – Fuel Burning (for all WtE technology operations);
- ERA 55 – Regulated Waste Recycling or Reprocessing.

Be of Strategic significance to the locality, region or the State

As a major Resource Recovery Infrastructure and Energy project requiring an investment of approximately A$400 million, the Project is expected to deliver a range of positive socio-economic impacts targeting the region but extending to other population centres in South East Queensland. These include:

- Creation of employment opportunities during the planning, design, construction and operation of the Project – with current estimates of 200 Full Time Equivalent jobs during construction and up to 70 Full Time Equivalent jobs during operation;
- Project will assist the retention of jobs in the Ipswich LGA as a result of new investment and economic activity;
- Project is a strategically significant development for Ipswich in terms of supporting the city's industrial diversification;
- Facilitation of critical infrastructure to the State in advancing the resource recovery, recycling and waste management strategy;
- Assist to achieve the Queensland State Government target for 50 per cent renewable energy by 2030;
- Project adopts technology to ensure that wastes with recoverable value are not sent to landfill and, instead, are put to beneficial use; and
- Supply base load power to the domestic market.

There will be several key environmental matters that require focused assessment to fully identify impacts and develop appropriate mitigation measures.

On the basis that the Project's scale and extent is anticipated to have known environmental impacts that are able to be managed through well understood environmental risk mitigation measures, the use of an Impact

Assessment Report (IAR) process under the SDPWO Act is requested as the prudent coordinated project pathway.

Given the existing approval of the wider SREWMF, the current site operations, the infrastructure that currently caters to waste storage and treatment (both on site and within the locality) and the industrial nature of the Swanbank precinct, the proposal is well suited to progress under an IAR pathway.

The IAR pathway is also consistent with the assessment category that would be applicable to the proposal if approval were to be sought through the normal pathway under the Planning Act 2016. Under normal circumstances, the proposal would require only a code assessable application to Ipswich City Council - although that application would involve a number or referral triggers to the State as indicated above.

This code assessable status is established by Part 6, Division 5 of the Ipswich Planning Scheme, which contains the Assessment Categories and Relevant Assessment Criteria for Regional Business and Industry Investigation Zone (Table 6.4 – Making a Material Change of Use).

Table 6.4 identifies that any specified use listed in Table 6.1 for the specified precincts within Sub Area RBIA2, Swanbank New Chum have the following assessment category:

- Exempt, if located within an existing building approved or lawfully used for a specified use listed in Table 6.2 for the specified Sub Area.
- Code Assessable otherwise.

The site falls within the Swanbank Approved Land Use Precincts (3 and 4) under the Ipswich City Plan for the following purposes (as per Table 6.1 of the Ipswich Planning Scheme):

3. *Waste Processing, Treatment and Disposal (in accordance with Plan of Development No. 10556/001C).*
4. *Waste Recycling, Composting and Disposal, Land Rehabilitation, Truck Depot and Park with ancillary uses of Leachate Collection, Landfill, Gas Collection, Treatment, Storage and Disposal, Crushing of Spoil Pile Material, Vegetation Propagation for Rehabilitation and Caretakers Flat (Generally in Accordance with Plan of Development TP-61/90).*

This wording in the Ipswich Planning Scheme reflects longstanding approvals over the REMONDIS land at Swanbank which envisage a wide range of waste related activities.

Drawing upon their extensive international experience in building and operating waste to energy plants (described in greater detail in Section 2 of this report), REMONDIS can provide the Co-ordinator-General with comfort that the WtE process is tried and tested technology with limited environmental effects and should therefore default to the Impact Assessment Report pathway.

Although the proposed technology in new in the context of Queensland, based on existing operational experience, REMONDIS is in a unique position to be able to provide the Co-ordinator-General with certainty regarding the concentrations and mixes of emissions associated with the technology to provide assurance that the performance of the facility will meet Industrial Emissions Directive (IED) emissions limits and nearby sensitive receivers will not be at any risk in terms of human health.

The proposal will be in a position to provide direct reference to fully operational facilities that incorporate the thermal treatment of the same waste feedstock proposed at Swanbank to provide the Co-ordinator-General with certainty with regard to potential environmental impacts (such as air quality impacts and human risk estimates).

REMONDIS can demonstrate that the nominated waste streams will be separated. Higher order waste management opportunities (reduce, re-use and recycle) will be prioritised and that the processing of waste through the proposed technology will only occur when all alternative recovery opportunities are exhausted.

REMONDIS has a proven track record in the Ipswich region in relation to resource recovery and waste management. When the proposal is considered in the context of the existing operation and the fact that REMONDIS is Europe's second largest operator of WtE plants, operating 52 facilities that produce fuels and generate electricity and currently treat more than 4.2 million tonnes of waste per annum in Europe to convert to electricity to the grid, it is demonstrated that the proposal is a well-defined, low to medium risk project where the likely impacts are highly predictable. REMONDIS has a well-defined proposal to avoid, minimise, mitigate

and/or offset those impacts that are accepted best-practice in the WtE industry. The proposal is therefore well suited to progress via the IAR pathway.

Justification for using the more targeted IAR process is summarised in Section 7.1 (potential project impacts) and Section 8.1 (Environmental Management and Mitigation Measures).

2.0 The proponent

REMONDIS is one of the world's largest waste, water and environmental management organisations, managing recyclable material, general waste, organic matter, liquids and more problematic wastes. It has been operating since 1934.

The company employs more than 34,000 staff in over 800 business locations across 39 countries and turns over approximately AUD$8 billion per annum.

REMONDIS has a network of more than 500 sorting, treatment and processing facilities that service more than 200 million residents and collect, process and market more than 25 million tonnes of recyclable materials every year.

Sustainability and the conservation of natural resources are the central features of the company's philosophy and directly influence all of REMONDIS' business activities. Across the world, REMONDIS promotes and advances efforts to sustainably improve living conditions.

REMONDIS Australia was founded in 1982 with its first operation in Penrith, NSW. Since then, REMONDIS Australia has grown steadily, with operations in Sydney, Melbourne, Brisbane, Adelaide, Perth and in regional Australia.

In Queensland, REMONDIS employs approximately 180 people, servicing more than 7,000 commercial customers, including 9 councils, and working with a network of domestic customers.

REMONDIS is Europe's second largest operator of WtE facilities and operates 52 facilities that produce fuels and generate energy. REMONDIS treats more than 4.2 million tonnes of waste per annum and sells electricity into the European grid.

REMONDIS has extensive international experience in building and operating waste to energy plants. They own and/or operate a total of 11 large plants that utilise various types of fuel including municipal waste, refused derived fuel and biomass. Examples of some of these plants include:

Oberhausen, Germany
The 720,000 tonnes per year WtE plant in Oberhausen Germany which produces up to 262 MW of thermal power in the form of electricity and additional heat production for heat supply from municipal solid waste.

Environmental control systems include SNCR, HCL Scrubber, SO2 scrubber, entrained flow absorber.

EVZA Staßfurt, Germany
The 300,000 tonnes per year WtE plant in Oberhausen Germany which produces up to 111 MW of thermal power in the form of electricity and additional heat production for heat supply from municipal solid waste.

Environmental controls include SNCR, semi-dry turbo reactor, fabric filter.

Cologne, Germany
The 700,000 tonnes per year WtE plant in Oberhausen Germany which produces up to 264 MW of thermal power in the form of electricity and additional heat production for heat supply from municipal solid waste.

Environmental control systems include spray drier, fabric filter, SNCR, HCL Scrubber, SO2 scrubber, HOK filter.

BMK Biomass Plant in Lunen, Germany
A 150,000 tonnes per year biomass plant which produces 46 MW of thermal power primarily from wood waste.

Frankfurt, Germany
525,000 tonnes per year WtE plant in Frankfurt City. The plant produces 250 MW of thermal power in the form of steam for district heating and power production for Frankfurt.

Environmental control systems include SNCR, spray drier, Entrained flow adsorption, HCL Scrubber, SO2 scrubber, fabric filter.

Bremerhaven
300,000 tonnes per year plant treating MSW located near Bremerhaven, Germany. The plant produces up to 139 MW of thermal power for electricity and district heating.

Environmental control systems include SNCR, EP, quench, Entrained flow adsorption, HCL Scrubber, SO2 scrubber, fabric filter.

In Germany, REMONDIS' Lippe Plant is the focal point and the hub of its recycling activities, where 410,000MWh of energy (electricity and heat) is produced each year, including 157,000MWh from a biomass-fired power plant. The Lippe Plant is Europe's largest recycling site, where annually more than one million tonnes of waste is recycled/recovered and converted into recycled raw materials, other products or energy. Along with exporting a large amount of energy, the Lippe Plant creates sufficient energy to power the whole site. Details of the Lippe Plant can be found at https://www.remondis-lippe-plant.com/en/main-administration-buildings/

The proponent's Queensland head office is located in Rocklea at the following address:

69 Grindle Road,
Rocklea QLD 4106

3.0 Nature of the proposal

3.1 Scope of the project

The project is proposed to comprise of an integrated waste receiving, processing, recovery, and power generation facility which includes a Waste to Energy (WtE) facility. WtE plants recover energy through the combustion of waste as the fuel for generating power – just as other power plants use coal or natural gas. The burning fuel creates steam to drive a turbine to create electricity. Unlike wind and solar systems, WtE plants can generate renewable baseload electricity for households and businesses irrespective of weather patterns.

At Swanbank, diverting suitable waste away from landfill (as shown in **Figure 2** below) and into a best-practice WtE facility, REMONDIS can generate up to 50MW of electricity and extend the life of constrained landfills.

REMONDIS' existing Swanbank landfill does not take any of the NSW waste streams that has been the subject of recent media coverage and public interest, and REMONDIS' WtE proposal does not rely on additional waste streams coming to the Swanbank site, instead it will divert existing waste streams to a beneficial use (recovered energy).

Waste will be received to the facility either for recovery and recycling, or directly for use of suitable materials as a fuel source in a WtE plant. Residues from plant emission controls systems and the boiler will be processed in an on-site facility or disposed to a suitable landfill. Resulting bottom ash from the plant will be processed through a recovery facility to extract resources such as metals and reused potentially as a construction material or disposed to a suitable landfill.

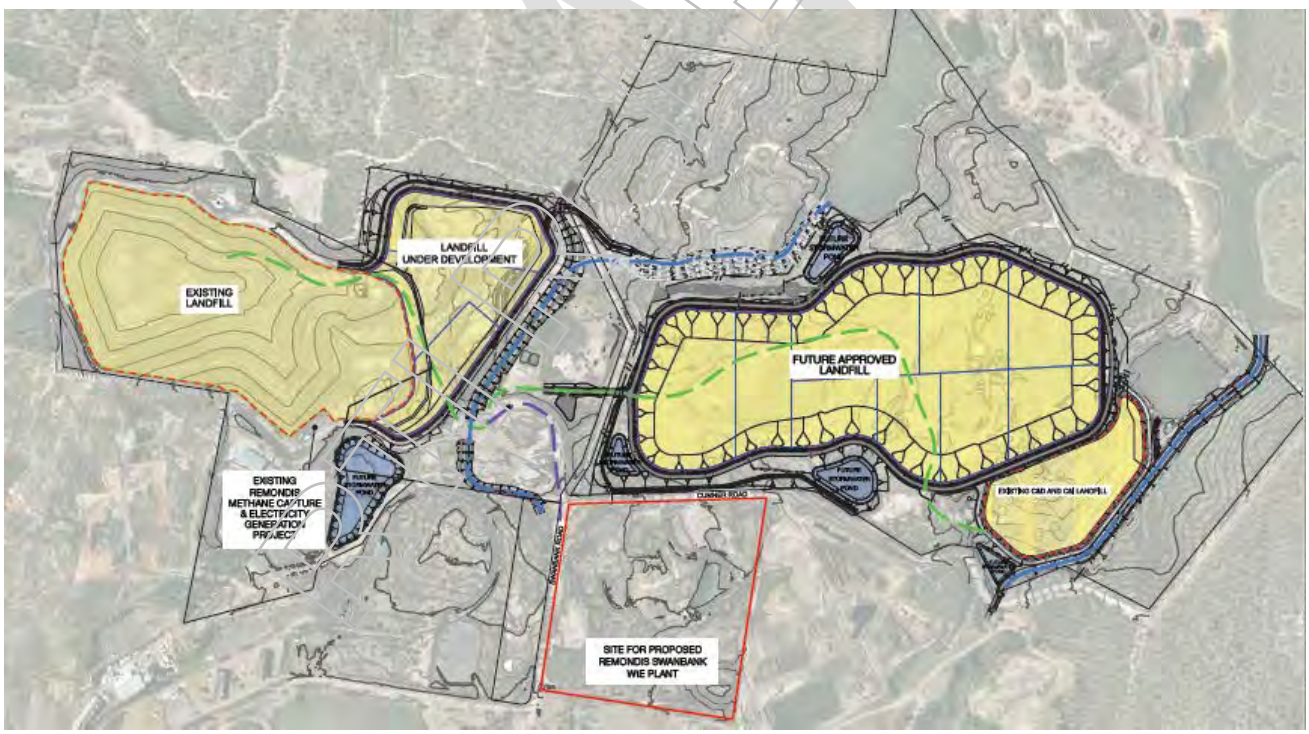

Figure 5: Swanbank landfill with proposed site for REMONDIS WtE facility shown in red

Figure 6: Artist's impression of the Waste to Energy Facility at Swanbank, Ipswich. Main building cut away to show major internal components.

Figure 7: Artist's impression of the Waste to Energy Facility. Main building cut away to show major internal components.

3.2 Land uses

Activities currently approved on the Stage 1 and 2 of the subject land include the following:

- Landfilling;
- Resource recovery and recycling of waste;
- Waste volume reduction and separation;
- Biological treatment processing;
- Chemical waste treatment (including sewerage sludge treatment);
- Thermal treatment technologies; and
- Composting and organic processing.

3.3 Project need, justification and alternatives considered

The main objectives of the proposed facility are as follows:

- To help solve the energy and waste needs of South East Queensland;
- To improve resource recovery from waste and to divert recyclables away from landfill;
- To manage or reduce the need/dependency for landfill in South East Queensland.

South East Queensland faces a significant existing landfill challenge, with landfill disposal accounting for about 40% of total waste management in Australia. There are 11 landfills in South East Queensland which receive nearly 4 million tonnes of household rubbish, commercial and industrial waste, and construction and demolition waste a year.

The diversion of waste from landfill, reducing the potential for methane emissions, while also providing a form of low carbon, renewable energy, is now recognised by Government as making an important contribution to the targets for dealing with waste.

It is therefore considered that the 'Do Nothing' scenario is not appropriate given the established need for new energy generation, including a need for low carbon generation. The alternative to the proposed Development proceeding would be continued operation of traditional landfill waste management operations which have been found to be inefficient as a long term sustainable solution to South East Queensland's expanding population and waste generation.

The selection of the site for the proposed Development is directly related to its proximity to the Cunningham Highway, local electricity grid, and the direct synergies between the proposed Development and the adjoining REMONDIS SREWMF currently in operation which will provide a high percentage of the waste fuels.

The WtE facility does not rely on additional waste streams coming to the Swanbank site, instead it will divert existing waste streams to a beneficial use. REMONDIS does not take any of the NSW waste streams that were the subject of recent media coverage and public interest.

The Swanbank area is designated and zoned as a significant business and industrial area of the city of Ipswich and is identified as having preferred development outcomes of industry with high energy uses which will allow synergies with future industrial development in the surrounding area.

Waste to Energy technology is used across the world, with countries including Germany, Japan, China and Finland using waste to generate electricity. Diverting thousands of tonnes of suitable waste away from landfill and into a best-practice WtE facility will extend the life of South East Queensland's constrained landfills and also provide an additional, baseload electricity source for Queensland residents and businesses. Queensland has the opportunity to benefit from successful European and UK experiences and incorporate Waste to Energy as part of the solution to sustainable, best practice waste management. Examples of plants operated by REMONDIS are provided in Section 2.0.

It should also be noted that other Australian States have approved WtE to facilities, some of which are well progressed to being operational within the next few years. Examples of Australian facilities include:

Australian Paper
- Location: Latrobe Valley Victoria
- Proposal: 225MW thermal energy from waste
- Input: 650,000 tonnes per annum of MSW and C&I waste
- Status: Works approval application submitted with EPA Victoria.

Recovered Energy Australia
- Location: Laverton North, Victoria
- Proposal: 10MW gasification to energy plant
- Input: 200,000 tonnes per annum of MSW
- Status: Design and application stage.

Mt. Piper (Energy Australia and RE Group)
- Location: Portland, New South Wales
- Proposal: 27MW energy from waste
- Input: 200,000 tonnes per annum of waste
- Status: Planning / EPA decision pending. Expected 2019.

Phoenix Energy Australia
- Location: Naval Base, Western Australia
- Proposal: 36MW energy from waste
- Input: 400,000 tonnes per annum
- Status: Approved. Expected to be operational by 2021

New Energy Corporation Pty Ltd
- Location: East Rockingham, Western Australia
- Proposal: 27.8MW energy from waste
- Input: 300,000 tonnes per annum from MSW, C&I and C&D waste
- Status: Currently awaiting approval

New Energy Corporation Pty Ltd
- Location: Port Headland, Western Australia
- Proposal: 18.5MW energy from waste
- Input: 70,000-130,000 tonnes per annum
- Status: Approved. Operational 2019.

3.4 Components, developments, activities, and infrastructure that constitute the project to be declared coordinated

The proposed development involves the construction and operation of resource recovery infrastructure and Waste to Energy Facility on the REMONDIS SREWMF, in an area appropriately zoned for heavy industry and adjacent to the Swanbank power station and with the infrastructure in place to operate a power station.

WtE plants recover energy through the combustion of waste as the fuel for generating power, as shown in a simple process diagram in **Figure 9** below.

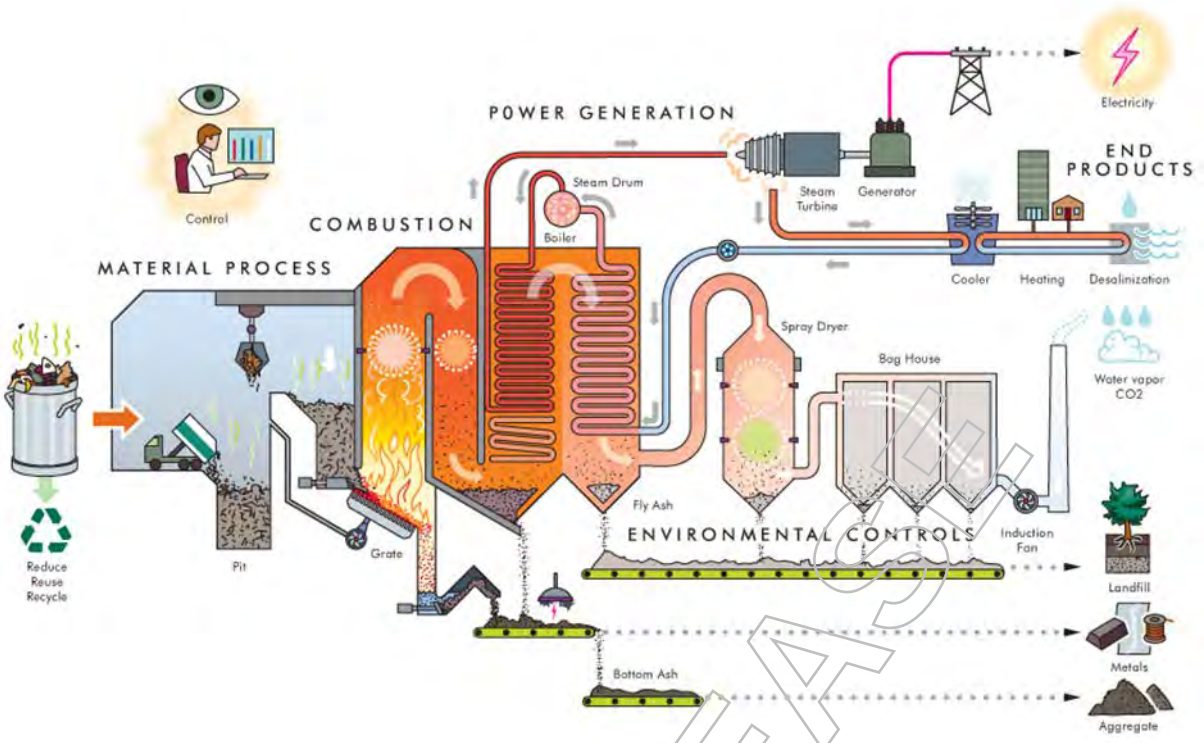

Figure 8: Simple Waste to Energy process

3.5 Scope of the Project

As previously established, REMONDIS Australia are the owners and operators of the Swanbank Renewable Energy and Waste Management Facility located at the Swanbank Industrial Estate, Ipswich with approval for a range of activities on Stage 1 and 2 of the subject land including, waste volume reduction and separation, resource recovery, recycling of waste and landfilling (among other activities described above). The next phase of the SREWMP consist of the introduction of the proposed Waste to Energy facility that will tie in with the existing approved uses and activities and provide a critical component of the wider 'Swanbank Recycling Park'.

Where existing waste streams transported to the SREWMF where initially sorted, separated, recycled and the balance of the waste that could not be captured was transferred to landfill, the introduction of the WtE facility will introduce an additional phase to the process whereby waste streams that are transported to the site that cannot be recovered will be processed through the WtE facility rather than directly to landfill (as detailed in the process description below).

The proposal does not seek or require further approval to the existing REMONDIS operations on site (as described in detail in Section 1.2 of this report).

3.6 Process Description

Resource Recovery / Sorting Facility
Waste received to site in a resource recovery / sorting area where the waste is sorted into recoverable and non-recoverable fractions. Recoverable waste will be collected and transported to suitable recycling facilities and non-recoverable wastes will be further sorted and transferred into the Receival / Tipping Hall.

Receival or Tipping Hall
Waste is received at the facility into the receiving or tipping hall. This hall is fully enclosed and maintained under negative pressure to minimise dust and odour emissions. The air in the tipping hall and waste bunker area is used as combustion air for the process to effectively prevent emissions.

Waste Bunker
The waste is tipped via multiple unloading bays into a large waste bunker which has enough capacity for storage of waste for several days. While no waste deliveries take place, the unloading bays are closed and sealed. Waste is fed directly by crane from this bunker into the combustion chamber.

Grate / Combustion Chamber
The combustion chamber is a highly specialised and large piece of equipment that utilises the reciprocating grate technology to move the waste through the combustion chamber while allowing combustion air to flow through the waste. Multiple combustion zones, that are separately controlled and supplied with combustion air, ensure an entire burnout of the waste. The hot flue gas from the combustion chamber goes through a secondary combustion chamber (post-combustion chamber) to finally ensure complete combustion.

Bottom Ash Conveyer
The entirely burned out waste falls as ash from the end of the combustion grate into the deslagger. The deslagger not only cools down the hot ash with water but also insulates the combustion chamber from the surrounding area, therefore preventing emissions. The bottom ash conveyer subsequently transports the ash out of the system, where it is taken away for re-processing and re-use.

Boiler or Heat Exchange Unit
This boiler unit (which comprises of a multi-pass heat exchanger system) takes the hot flue gas from the combustion chamber and transfers its thermal energy to the water-steam-cycle, where water evaporates and turns into steam. The steam is super-heated, normally to around 400 - 430C and high pressures of about 40 bar. The super-heated steam is then utilised in a steam turbine to generate electricity.

Flue Gas treatment
The flue gas, after passing through the boiler units, will pass through several treatment steps which include selective non catalytic reduction by utilizing urea or ammonia waster to remove NOx gases, injection of lime and activated carbon to remove acidic gases and heavy metals and a baghouse filter to removes reaction products and particulates. The flue gas treatment system will be fully compliant with current European emission limits for waste to energy plants. It will meet the requirements of the industrial emission directive (IED 2010/75 EU).

Water Steam Cycle with Steam Turbine
The turbine and generator units turn the super-heated steam into electricity. The steam is condensed back and re-used in the process. Depending on the design of the turbine, steam can be extracted in various pressure levels depending on the intended end use.

Stack
Purified flue gases will be emitted via a stack. The height of the stack will be determined by dispersion modelling.

Plant Outputs

Apart from electricity, steam and heat, there are three main outputs from the WtE process:

Bottom Ash

The bottom ash is processed to recover metals and the resulting aggregate is re-used in various applications (for example: road base). Bottom ash volumes are generally 16-22% of the input waste volumes.

Fly Ash

The fly ash is collected from the boiler and emission control processes. The ash is stabilised, if required, and disposed to REMONDIS' licenced landfill. Fly ash volumes are generally 2-3% of the input waste volumes.

Flue Gas Emissions

The gas emissions leaving the stack will be monitored continuously by a computerised system that complies with IED regulations. They will also be spot tested as required by relevant regulations for various contaminants such as metals, dioxins and furans. In Europe, it is best practice and common for real time gas emissions data to be transferred to the local Environmental Authority responsible for the regulatory supervision of the facility.

3.7 External infrastructure requirements

The SREWMF site can be accessed from the Cunningham Highway via Swanbank Road. Construction traffic will primarily occur via this road.

Existing power and water supply on site will be suitably meet the requirements of construction activities.

The activities of the WtE facility will require connection to the existing power grid system. This connection will be negotiated with the relevant parties prior to project commencement as it will be required to finalise design plans.

These connections will be undertaken in line with all necessary state and federal guidelines and permit systems. It is expected that this connection will extend past the boundaries of the existing Swanbank facility as required by the infrastructure system.

3.8 Timeframes for the project

The proposed commencement and completion of the WtE facility is outlined in the table below.

Table 1: Timeframe

Activity	Timeframe
Coordinated project and DES approvals.	2018-2019
Detailed Design and Approvals.	2019-2020
Construction and quality control.	2021-2023
Implementation and site operations commence.	2024-2025

3.9 Construction and operational processes

Overview of key construction and operational requirements:

- Access to water supply;
- Road network;
- Waste feedstocks;
- Connection to power grid;
- Environmental testing and guidelines.

The key project components and activities required to provide the Resource and Recovery and WtE facility at Swanbank include:

- Construction and Enabling Works:
  - Site establishment;
  - Bulk earthworks;
  - Piling and foundations;
  - Services location and reticulation;
  - Internal and external road works; and
  - Car parking and other civil infrastructure.
- Main Construction Works:
  - Site layout and building works;
  - Structure works:
    - Resource Recovery / Sorting Facility;
    - Transport/loading infrastructure for the transport of recyclables;
    - Tipping hall;
    - Waste bunker;
    - Grate / Combustion Chamber;
    - Boiler house;
    - Flue Gas treatment;
    - Turbine hall;
    - Ash conveyor belt;
    - Stack;
    - Ash processing.
- Weighbridges;
- Building Materials/Finishes;
- Office and amenities for staff and contractors;
- Parking and traffic management infrastructure;
- Landscaping and environmental development to support local ecosystems.

3.10 Workforce requirements during the construction and operation

Workforce numbers are estimated to be up to 200 Full Time Equivalent jobs during construction and up to 80 Full Time Equivalent jobs during operation.

3.11 Economic indicators

Based on concept design work undertaken to date, the Project's capital expenditure is approximately $400 million. The cost estimate will be further developed as part of the Project's detailed design process.

3.12 Financing requirements and implications

The proposed REMONDIS WtE facility will be a private sector investment. The project is not reliant on the Queensland State Government Resource Recovery Industry Development Program (RRIDP). REMONDIS has the necessary capacity to fund the project.

4.0 Location of the key project elements

4.1 Location

The SREWMF is located at 66-114 Blackheath Road SWANBANK QLD 4306 and is legally described as:

- Lot 101 on RP 839072;
- Lot 102 on RP 839072;
- Lot 103 on SP 189609;
- Lot 104 on RP 839073;
- Lot 3 on RP 214256.

The project area is located within the local context is shown below in **Figure 10.**

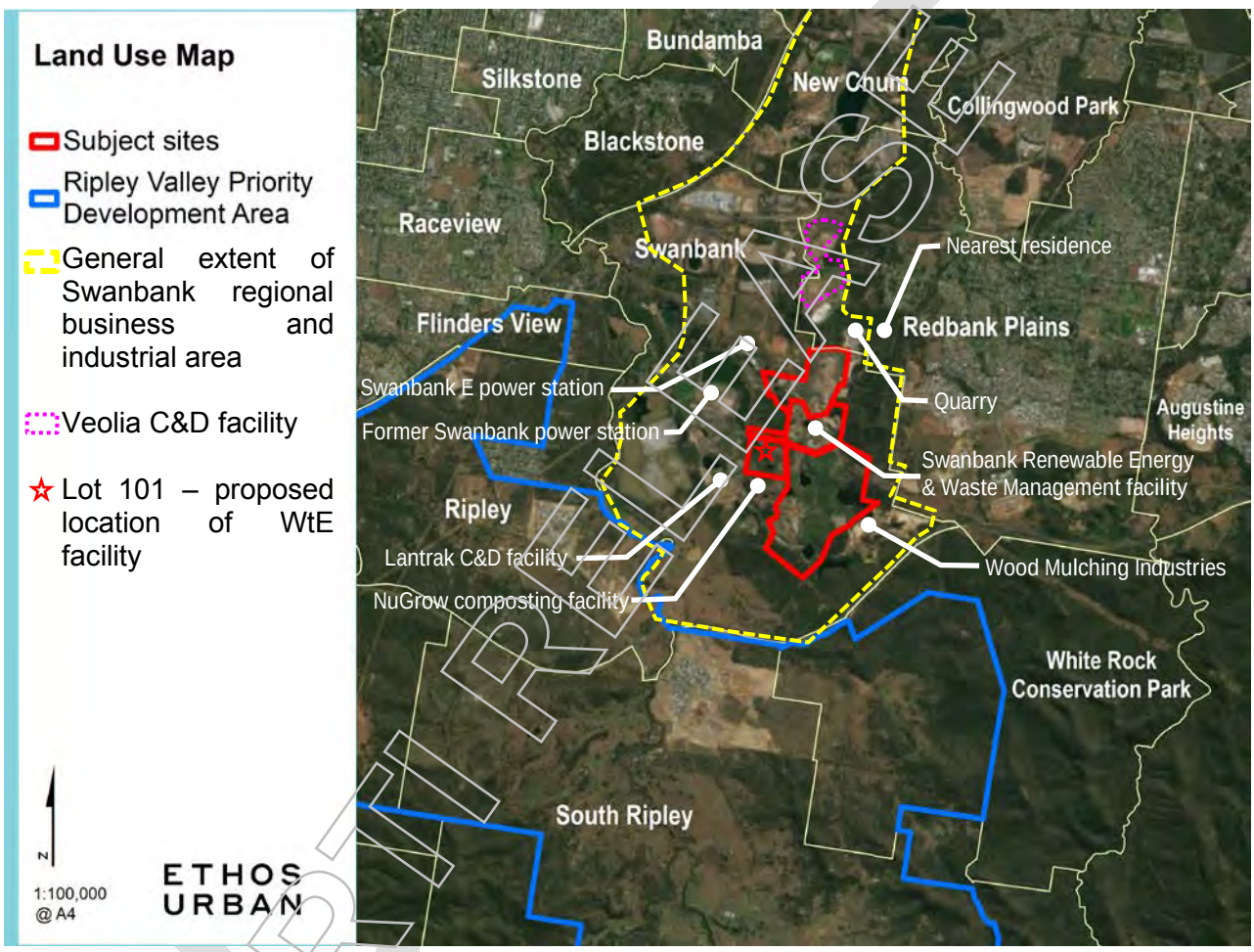

Figure 9: Surrounding features

4.2 Tenure

The proposed WtE facility is to be located on Lot 101 on RP 839072 however the proposal will include with wider SREWMF which includes Stage 1 (Lot 103 on SP 189609 and Lot 104 on SP 839073) and Stage 2 (Lot 101 and 102 on RP 839072 and Lot 3 on RP 214256).

The SREWMF is owned freehold by REMONDIS and is surrounded by freehold land. The site is zoned RBIA02 - Regional Business & Industry Investigation (New Chum) under the provisions of the Ipswich Planning Scheme, located within the City of Ipswich Local Government Area.

5.0 Description of the existing environment

5.1 Natural environment

5.1.1 Land

The SREWMF and the area around the Project site are located within the Swanbank regional business and industrial area as defined in the Ipswich City Plan and are characterised by disturbance from former coal mining operations and other ongoing industrial activities.

The entire site is included in the Regionally Significant Business Enterprise and Industry Area under the planning scheme. Within this area, Lots 101, 103 and 104 are located within the Regional Business and Industry Investigation Zone. Lot 102 is also partly included in this zone, with the eastern part of this lot included in the Regional Business and Industry Buffer Zone. Lot 3 is included in the Regional Business and Industry (Medium Impact Sub Area) Zone.

These areas primarily accommodate regional business enterprise and industry employment opportunities, as well as the buffer areas for these uses, that are generally compatible and create a high standard of amenity. Although the proposed land use is not typically associated with high amenity, it is consistent with and will form part of the existing on-site Swanbank landfill operations.

The zoning for the site, as shown below in **Figure 11**, is also consistent with the inclusion of the site in the Swanbank New Chum Land Use Concept Master Plan, where the site is identified as being part of the waste recycling/future rehabilitation, general business and industry (medium impact) and buffer/greenspace areas.

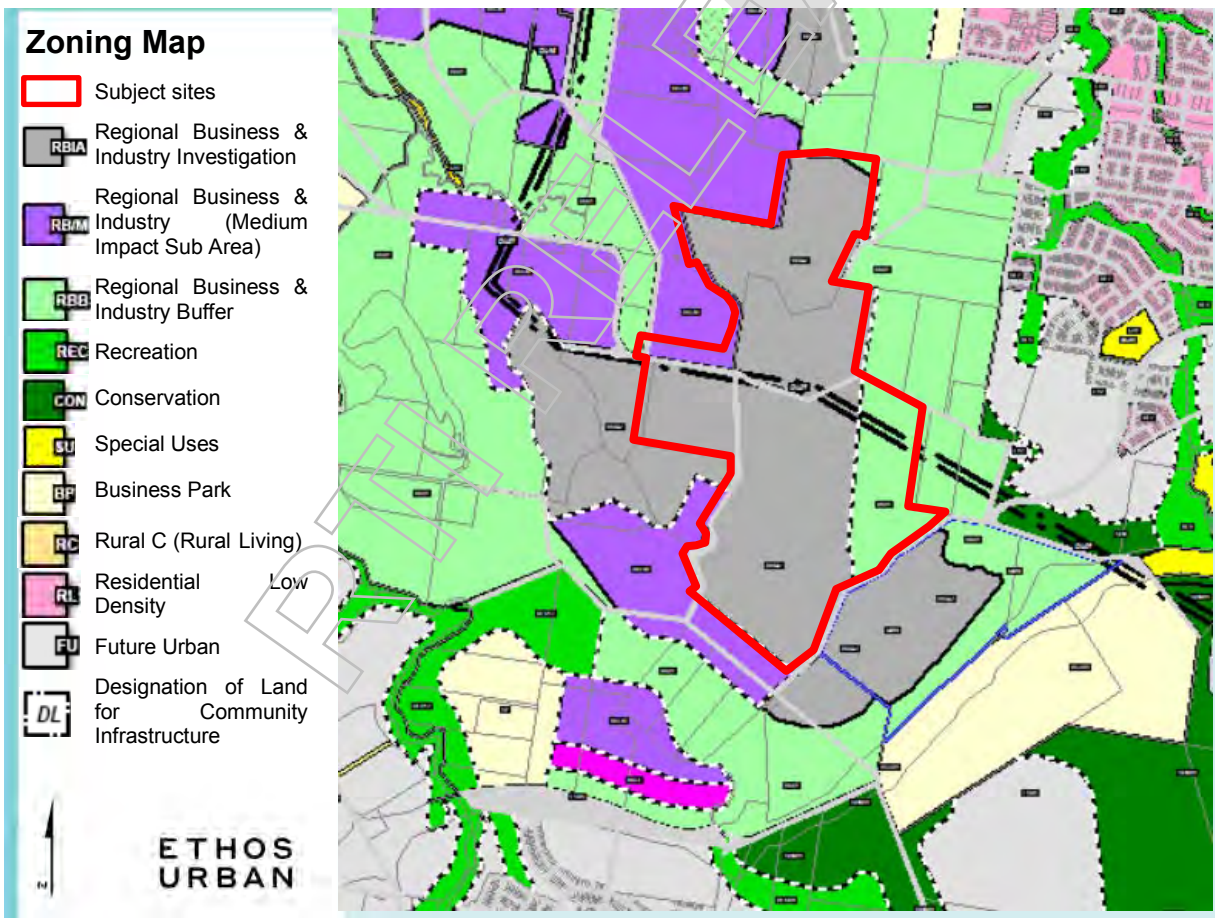

Figure 10Zoning Map

Figure 11 Site Aerial with Approved Stages of SREWMF

The subject site is also included in the following planning scheme overlays:

- Key Resource Areas, Buffers and Haul Routes (OV02): The subject site includes key resource areas and haul routes/buffers;
- Mining Influence Areas (OV03): The subject site includes mining influence constrained areas, areas of surface disturbance (including open cut mining) and areas that have been affected by underground mining (including shafts and tunnels);
- Difficult Topography (OV04): The subject site includes slopes >25%;
- Defence (Area Control) Regulations and Obstruction Clearance Surfaces (OV7a): The subject site is included in the 45 and 90 metre maximum building height limitation areas;
- Operational Airspaces, Wildlife Attraction and Lighting Issues (OV07b);
- Swanbank Power Station Buffer (OV10);
- High Pressure Oil and Gas Pipeline (OV11): Lot 104 includes a gas pipeline and associated buffer area; and
- High Voltage Electricity Transmission Lines (OV13).

As previously identified, the site incorporates the following lots the form the existing operations:

- Lot 103 on SP 189609 – is currently used for landfill support operations including site offices, weighbridge and works depot;
- Lot 104 on RP 839073 – is currently used for Stage 1 operations, including waste disposal and landfill gas electricity generation;

- Lot 102 on RP 839072 - the location for the proposed Stage 2 landfill. Some Construction & Demolition (C&D) and Commercial and Industrial (C&I) waste disposal currently occurs within the Stage 2 Hardfill area;
- Lot 101 on RP 839072 – proposed location of the WtE facility;

The following key industrial features surround the SREWMF site:

- Swanbank E gas-fired power station to the west;
- the former Swanbank B coal power station and associated cooling pond is located to the west;
- a construction and demolition (C&D) waste management facility, operated by Lantrak, is located to the south west;
- a C&D waste management facility, operated by Veolia Environmental Services, is located to the north (no longer operational);
- a construction and demolition (C&D) landfill, operated by Biorecycle, is located to the west;
- a waste transfer station, operated by Biorecycle, is located to the west;
- a quarry is located to the northeast, owned by PGH;
- a composting facility, operated by NuGrow, is located to the southeast;
- extractive industries and other waste management operations;
- Other nearby major land uses include electricity generation at the Swanbank Power Station.

As demonstrated above, the proposal is entirely consistent with the nature of land uses within the locality.

The site is located on a low, north to south orientated ridge, which extends from a range of hills (up to 350 metres elevation) to the south of the site. The topography of the area can generally be described as low hills and includes patches of vegetation and several drainage paths, whilst being characterised by the mining activities that previously occurred on the site.

The site is currently connected to the local water reticulation network, electricity and telecommunications.

The SREWMF is separated from the nearest proposed residential areas by the Regional Business and Industry Buffer, which would help to reduce potential amenity impacts associated with industrial activities. The nearest existing and future residential locations are approximately 1,500m from the proposed site.

The SREWMF is located within an area characterised by and planned for industrial land use under the planning scheme, as indicated in **Figure 13**.

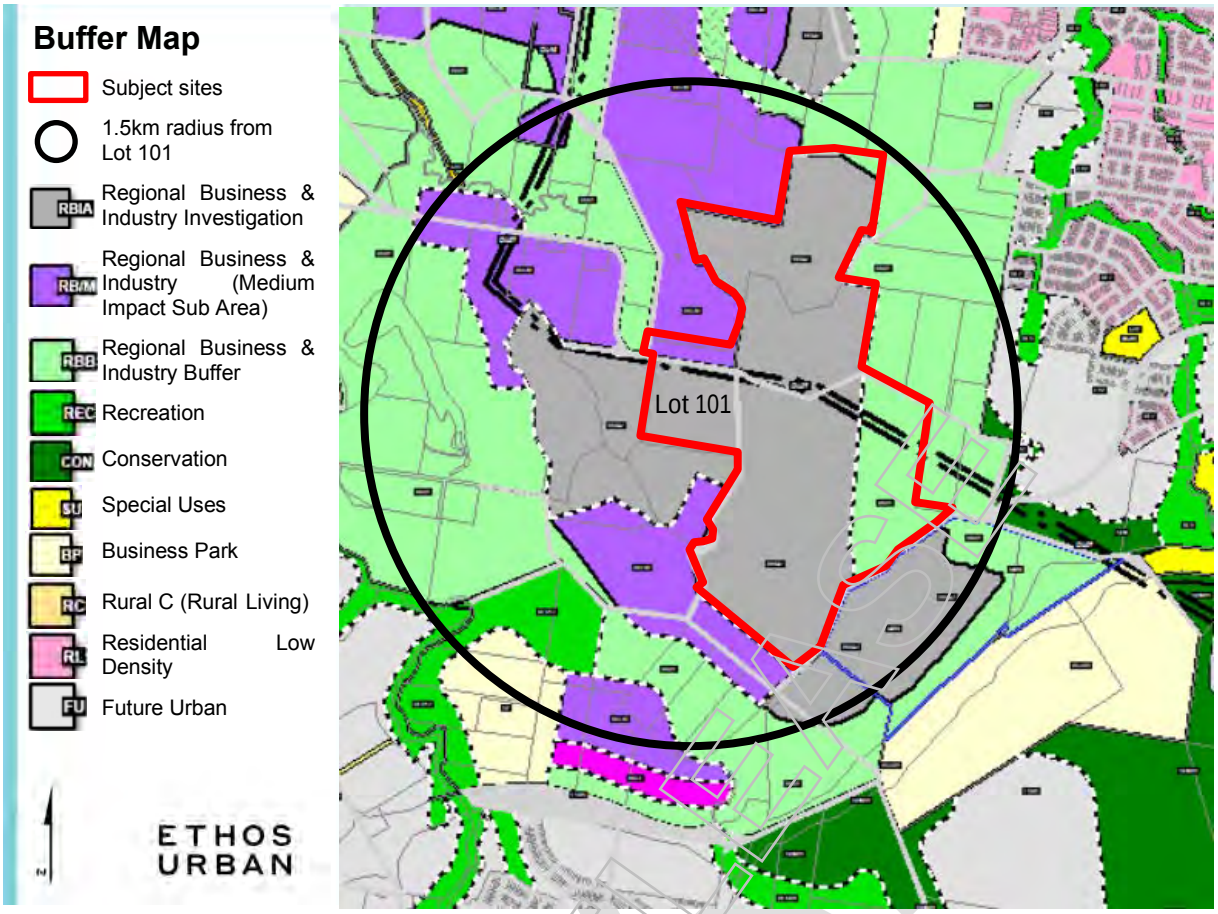

Figure 12 Buffer Map

Areas to the east of the SREWMF are zoned as an emerging community, and are forecast to be developed within the next ten years. The nearest residents are located approximately 1,500 m to the east of the Lot 101.

The Ripley Valley PDA is located to the south of the SREWMF as shown in and some areas of the PDA are expected to be developed over the next ten years.

The visual character and landscape of the SREWMF, located within the Swanbank industrial area, is characterised by former coal mining and more recent industrial activity.

The SREWMF is located at the end of Swanbank Road. Typically, traffic at the site is destined for the facility, and there would be minimal passing traffic. The existing landfill is visible from the end of Blackheath Road, which is a no-through road, and would not receive through traffic.

5.1.2 Water

Surface water features

The SREWMF site is located on a low, north-south running ridge, which extends from a mountain range (up to 350 m elevation) to the south of the site. The Bremer River is located approximately 8.5 km north of the site, and Bundamba Creek is approximately 2.5 km west of the site. The topography of the area can generally be described as low hills.

The site is located in the west-draining catchment of Oaky Creek; runoff form the site flows to the Swanbank Power Station cooling water dam located on Oaky Creek. Oakey Creek flows into Bundamba Creek approximately 1 km downstream of the cooling water dam, and Bundamba Creek flows into the Bremer River approximately 14.5 km downstream from there.

Bundamba Creek flows through a modified catchment consisting of grassland and sections of naturally vegetated channel through urban areas. Six Mile Creek is northeast of the existing SREWMF Stage 1 landfill, and does not receive runoff from the site.

Regional flooding regime

The site is located at the head of the Oaky Creek/Bundamba Creek catchments, and is outside the Bremer River floodplain. Flood modelling undertaken by Ipswich City Council indicates that Lot 101 is not affected by regional flooding from the Bremer River or other waterway.

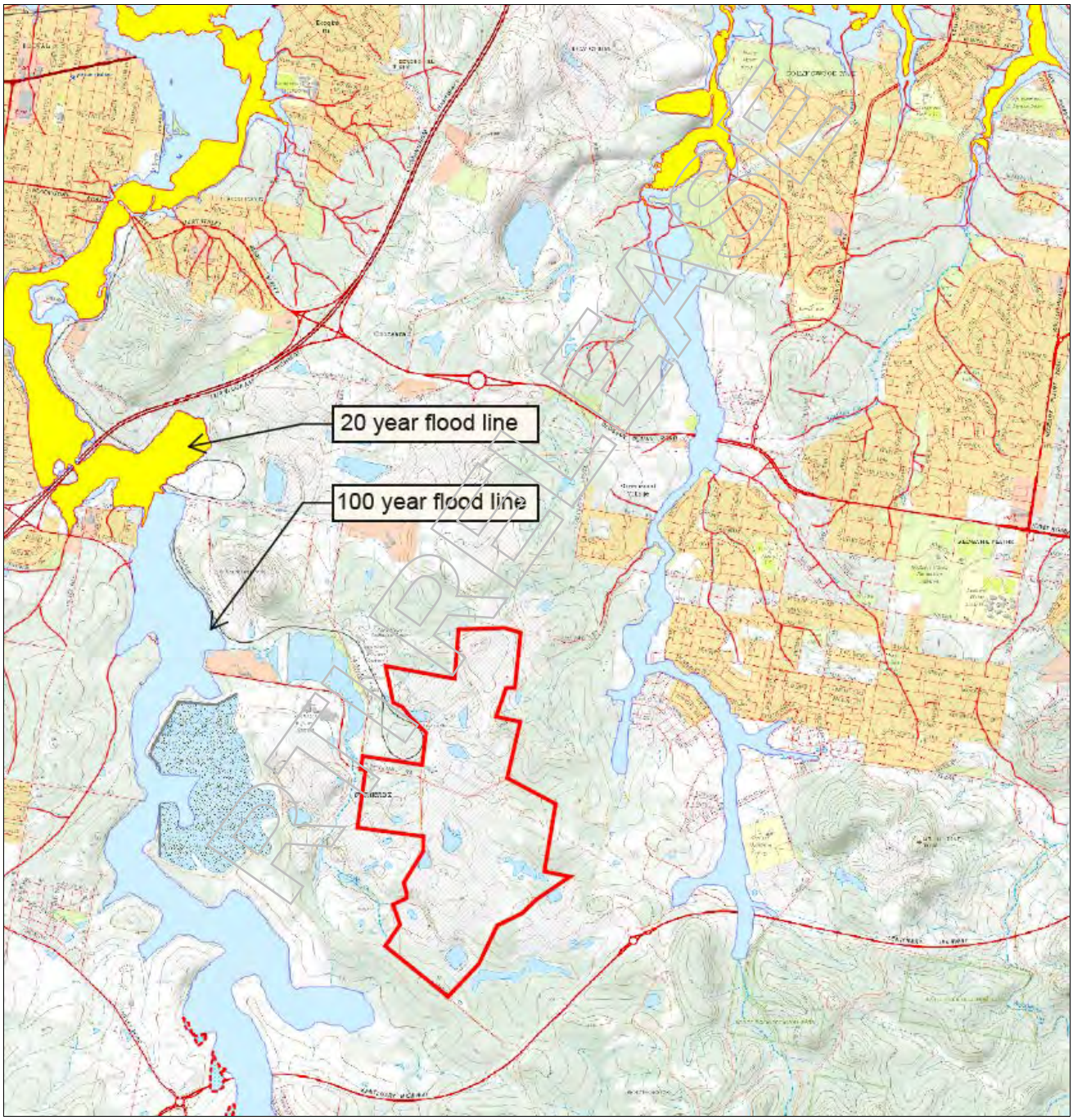

Figure 134 Regional Flood Plan

Climate and meteorology

This section describes the existing climate for the Swanbank area. Climate data is readily available from the Bureau of Meteorology (BOM) from the Amberley Allied Meteorological Office (AMO) weather station, situated 11 km west of the SREWMF. Records of climate data are available for the AMO weather station from 1941; this significant historical collection of data provides a reliable understanding of climatic averages.

Temperature

The Swanbank facility is located in a subtropical region of Australia and experiences varying climates over the year. Warm and humid summers are experienced with temperatures typically varying from approximately 19°C to 31°C, with highs reaching 44°C and lows reaching 19°C. Winters experienced in this area are typically mild and dry with temperature varying from 5°C to 22°C. Lows experienced during winter have been as low as -5°C and as high as 33°C. Recorded monthly temperatures are represented in **Figure 15**.

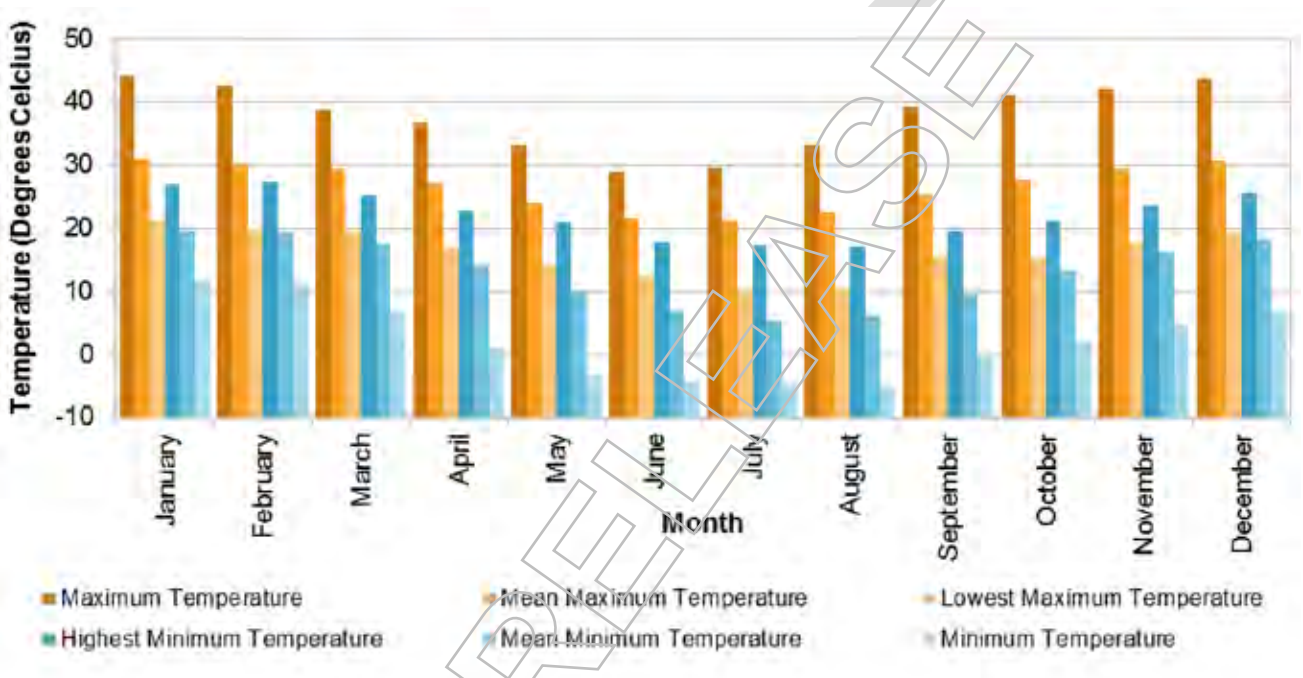

Figure 14 Monthly temperature statistics

Precipitation

The area receives greater volumes of rainfall in the warmer months and less in the cooler months, although this can vary and the cooler months can be known to produce wet periods, particularly in autumn. The warmer months in southeast Queensland typically produce a wetter climate because of the increased humidity in the atmosphere.

The highest daily rainfall for this region was in January 1974 with 240 mm. The monthly rainfall data for Amberley AMO is provided in **Figure 16**.

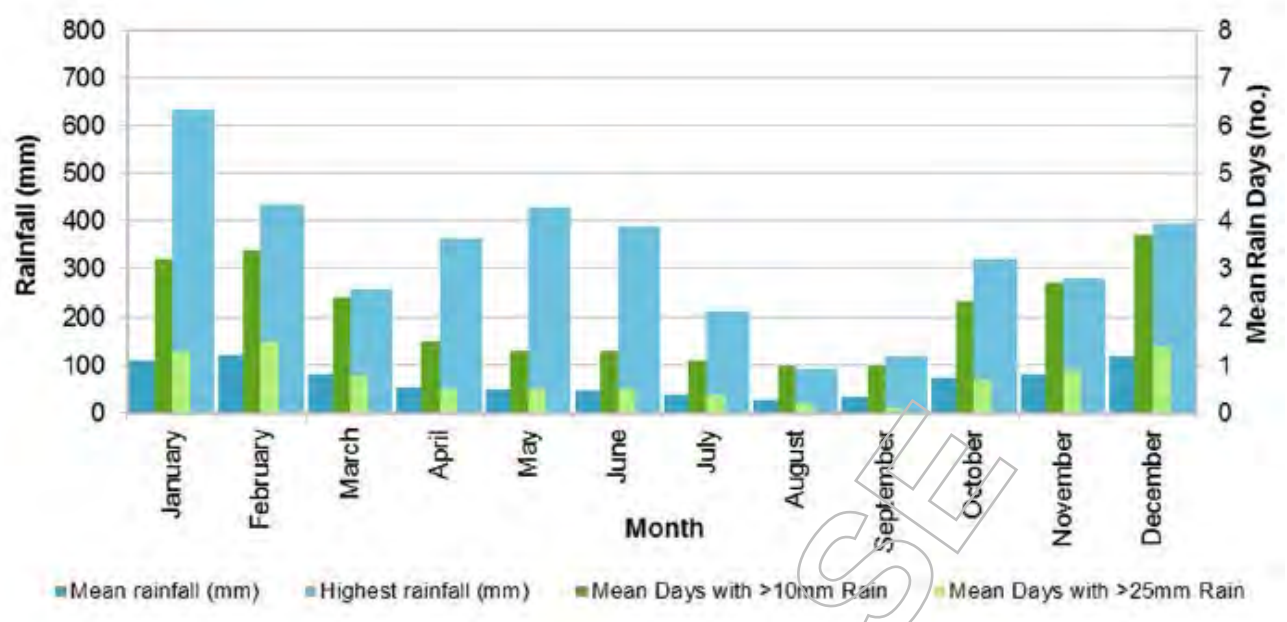

Figure 15 Monthly rainfall statistics

Wind

Wind speeds vary by season and throughout the day. The mean wind speeds for 9 am and 3 pm are provided in **Figure 17** to show the variation of wind speeds throughout the year and between morning and afternoon.

Afternoon wind speeds are typically 6 to 10 km/h greater than those in the morning, as shown in **Figure 17**. The historical records indicate a seasonal variation in wind speed, similar to temperature and rainfall. Typically east to south easterly winds are more dominant in the warmer months in the morning, shifting to east to north easterly in the afternoons. The cooler months receive more dominant winds from the south and west.

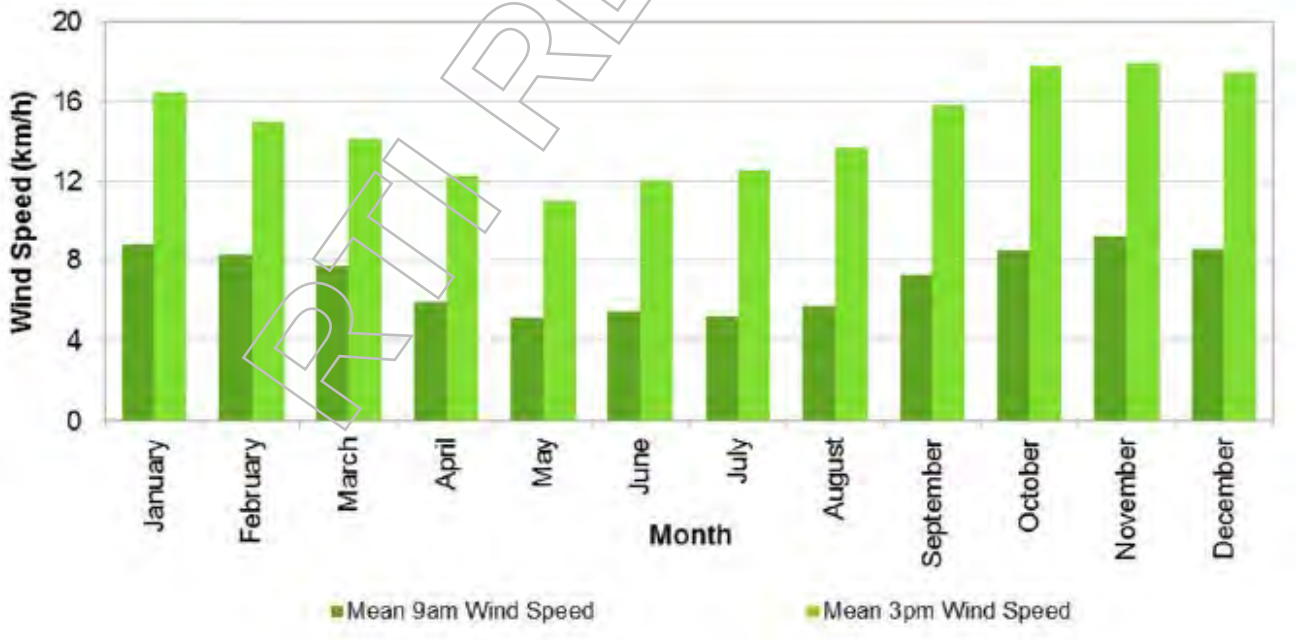

Figure 16 Monthly wind statistics

Noise / Vibration, light and air quality

A further Air Quality Impact Assessment will be prepared as part of the next phase of the application.

5.1.3 Flora and Fauna

A detailed Ecological Impact Assessment in relation to the proposed use of Lot 101 for the purpose of a WtE facility will prepared as part of the detailed documentation phase of the application.

5.2 Social and economic

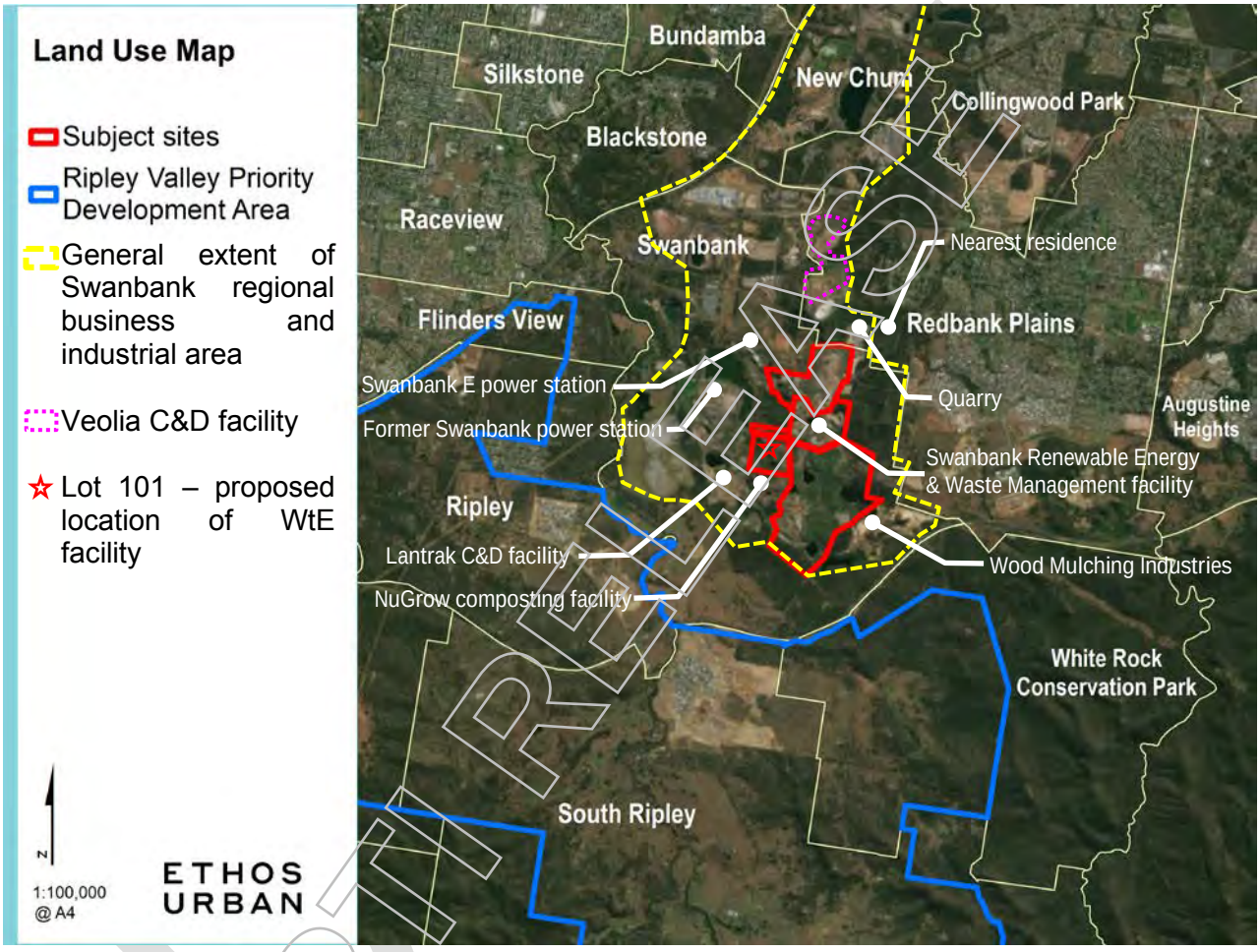

Figure 17 Surrounding features

Ripley Valley to the south, in its current form, exists as a small community of under 1,000 residents. The Ripley Valley Priority Development Area (PDA) has been identified by Economic Development Queensland (EDQ) is an opportunity to provide approximately 50,000 dwellings to house a population of approximately 120,000 people however the implementation plan for the does not envisage the forecast population to eventuate for upwards of 25-30 years.

The more established suburb of Redbank Plains is located to the east of the SREWMF, beyond the Regional Business and Industry Buffer zone to nearby sensitive land uses, as shown in **Figure 20** below.

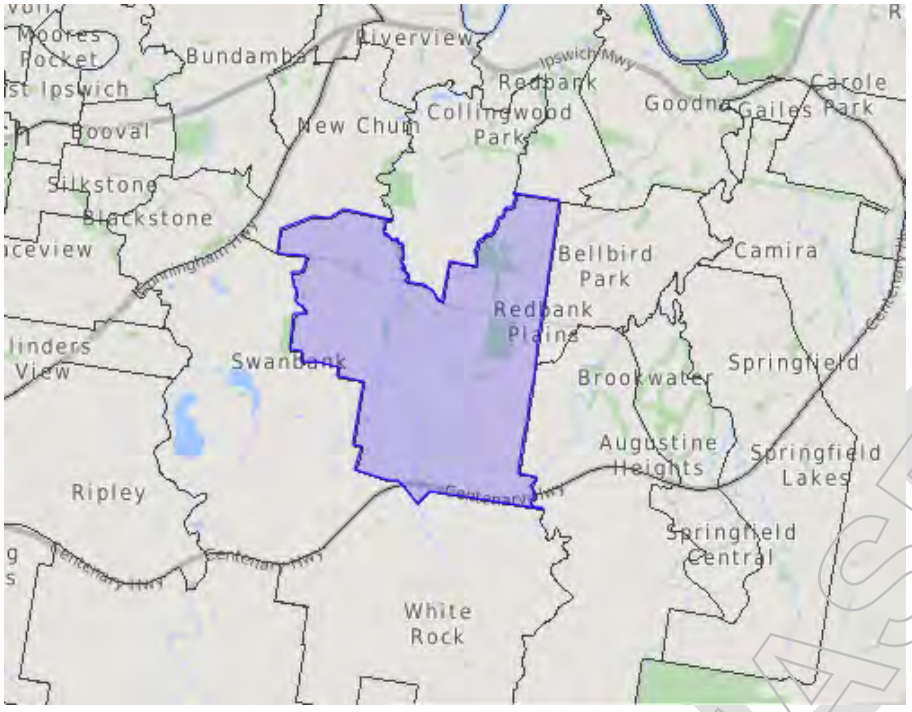

Figure 18 Redbank Plains ABS

In review of the 2016 Australian Bureau of Statistics Census Data for Redbank Plains:

- There were 19,299 people in Redbank Plains;
- The median age of people in Redbank Plains (State Suburbs) was 27 years;
- 6,367 private dwellings.

The Estimated Resident Population growth percentage in Redbank Plains has been 4.4% since 2011, marginally more than the more than the 3.2% for the Ipswich City Local Government Area (LGA).

This population growth data, both for nearby impacted communities and the wider Ipswich LGA, indicates that there will be continued impacts associated with waste management unless an alternative to existing practices can be implemented. In preparation of this IAS, REMONDIS has reviewed the European Union's paper; '*The Role of Waste To Energy in the Circular Economy 2017'.* A circular economy is defined as 'one in which the value of products, materials and resources is maintained for as long as possible, minimising waste and resource use'.

The paper recognises that Waste to Energy processes can play a role in the transition to a circular economy provided that the waste hierarchy is used as a guiding principle and that choices made do not prevent higher levels of prevention, reuse and recycling.

As demonstrated within this report, the proposed WtE facility will form a single component of the wider 'Swanbank Recycling Park' and REMONDIS is committed to ensuring that existing waste feedstock that is currently being transported to site will be separated that firstly, higher order waste management opportunities (reduce, re-use and recycle) will be prioritised and that the processing of waste through the proposed technology will only occur when all alternative recovery opportunities are exhausted.

Accommodation and housing

There is not anticipated to be any material impacts on accommodation and housing as a result of the Project. The Project is located within an identified Regional Business & Industry Investigation zone and will not result in a loss of accommodation or housing.

5.2.1 Cultural heritage (Indigenous and non-indigenous)

Aboriginal cultural heritage is recognised, protected and conserved under the provisions of the *Aboriginal Cultural Heritage Act 2003,* which is administered by the Department of Aboriginal and Torres Strait Islander Partnerships (DATSIP).

A search of the DATSIP Cultural Heritage Database and Register did not identify any cultural heritage site points in proximity of the Subject Site.

The *Queensland Heritage Act 1992* provides for the conservation of Queensland's cultural (non-indigenous) heritage. No recorded places were identified within proximity to the Subject Site (i.e. that have achieved registration under the provisions of the *Queensland Heritage Act 1992*).A search of the Australian Heritage Register was also undertaken. There are no places of heritage significance recorded in proximity of the Subject Site.

5.3 Built environment

The proposal is entirely consistent with the nature of land uses within the locality. The Swanbank Regional Business and Industry Investigation Zone has been identified by Council for land uses consistent with the SREWMF and has applied an appropriate Regional Business and Industry Buffer zone to nearby sensitive land uses to help to reduce potential amenity impacts associated with industrial activities with he nearest future and proposed residential locations approximately 1,500 metres from the proposed site (Lot 101).

There are no existing declared coordinated projects within the Ipswich City Local Government Area.

5.4 Traffic and transport

The project area is serviced by a range of State controlled roads and Council roads as shown in **Figure 21** below.

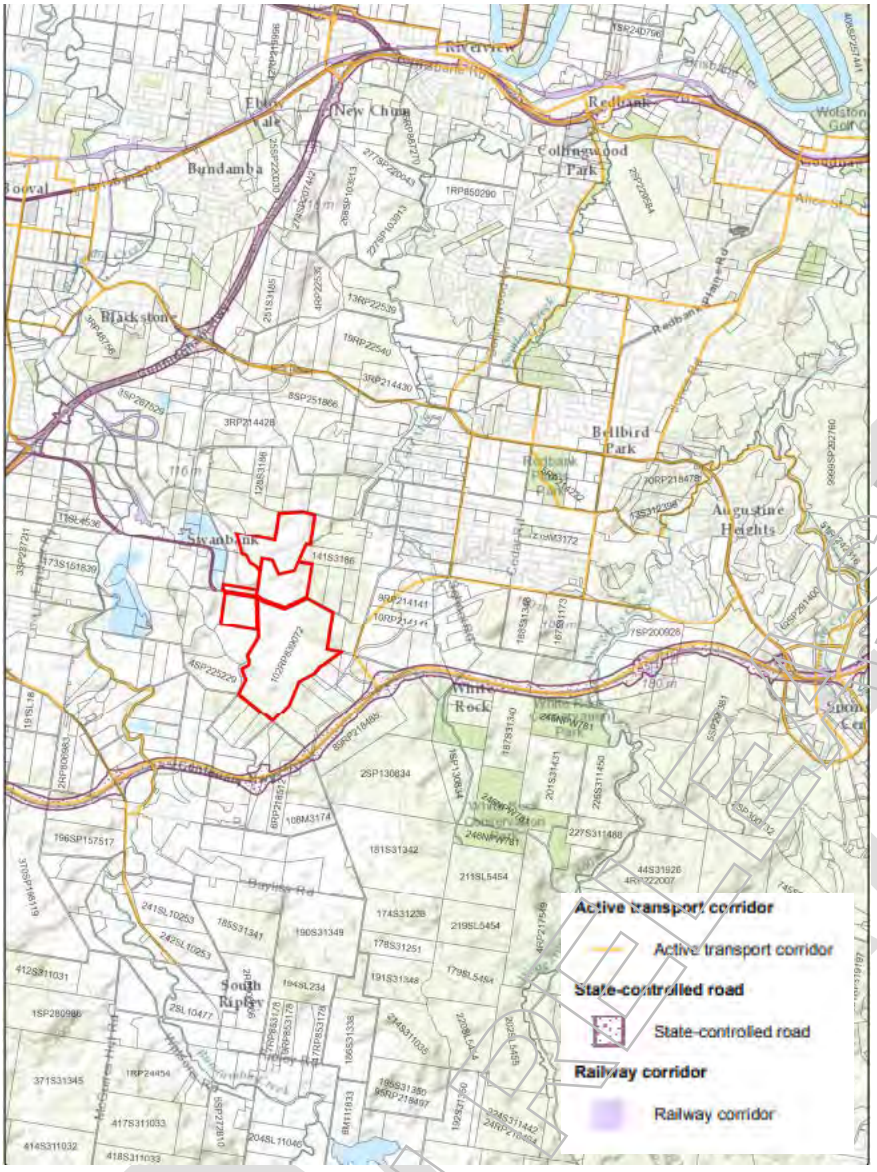

Figure 19 State controlled roads and council roads

Access to the site will continue to be via Swanbank Road and Cunningham Highway, with the proposal incorporating a new weighbridge and entry to Lot 101 on RP 839072.

Average Annual Daily Traffic (AADT) count data prepared by the Department of Transport and Main Roads (DTMR), indicates heavy vehicles accounted for approximately 33% of the 1,455 AADT estimated along Swanbank Road in 2013. This relatively high proportion of heavy vehicle traffic is largely due to the industrial nature of developments in the area. Since 2013, the coal-fired section of Swanbank Power Station was decommissioned. This is expected to have resulted in some reduction in AADT along Swanbank Road (GHD, 2015).

These vehicles use of Swanbank Road/Swanbank Coal Road and the Swanbank Road/Site Access/ Unnamed Road intersections and the associated numbers are not envisaged to change significantly as a result of the Project given the fuel for the WtE facility is from the same source as existing landfill waste.

5.5 Land use and tenure

5.5.1 Key local and regional land tenures

The Swanbank Renewable Energy and Waste Management Facility is freehold and is surrounded by freehold land as shown in **Figure 22** below.

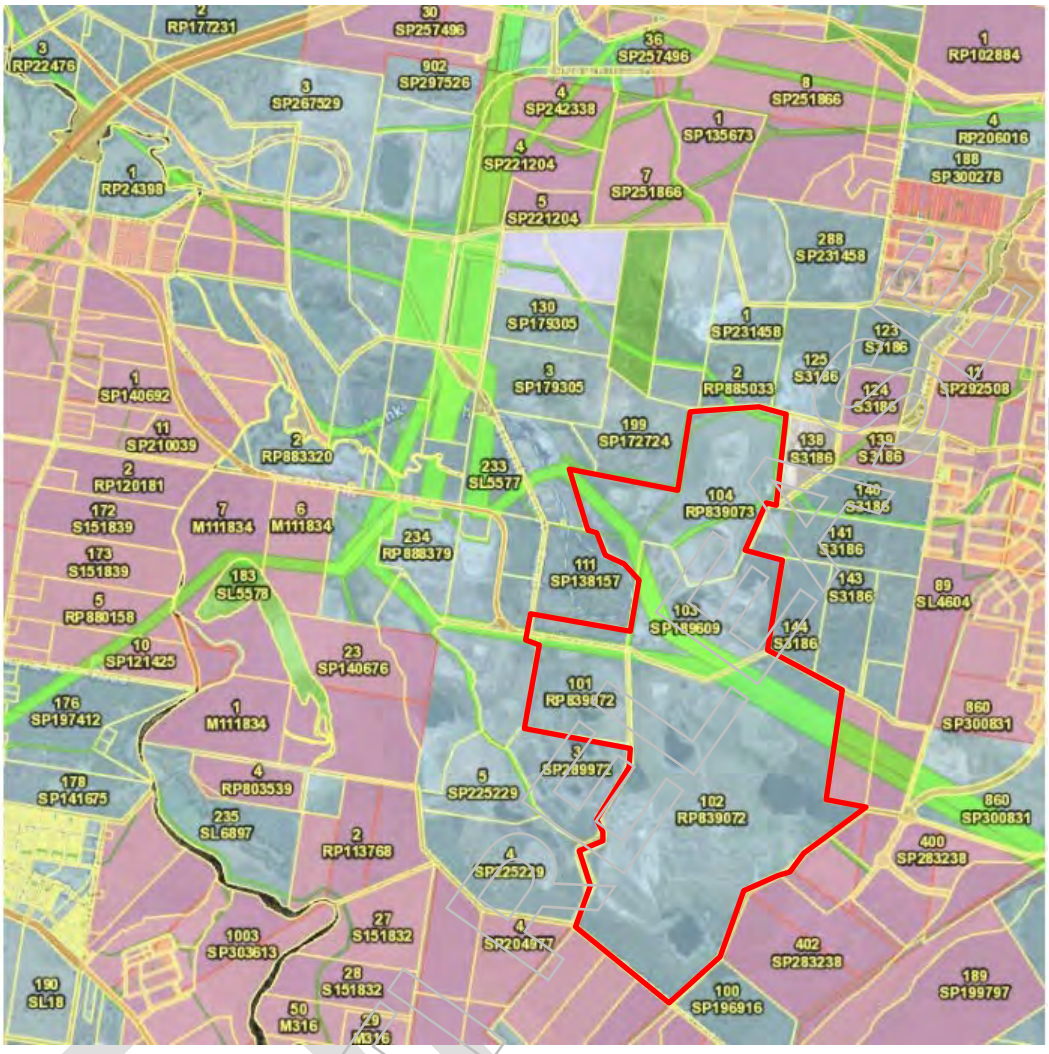

Figure 20 Tenure map for the Swanbank Renewable Energy and Waste Management Facility

The SREWMF is located within an area characterised by and planned for industrial land use under the planning scheme.

Areas of residential development exist and are proposed to the east and south, although most of this is more than 2 km from the SREWMF.

The footprint areas are zoned Regional Business and Industry Investigation under the Ipswich City planning scheme.

The SREWMF is separated from the nearest proposed residential areas by the Regional Business and Industry Buffer, which would help to reduce potential amenity impacts associated with industrial activities.

Areas to the east of the site are zoned as an emerging community, and are forecast to be developed within the next ten years.

The Ripley Valley PDA is located to the south of the SREWMF and some areas of the PDA are expected to be developed over the next ten years.

5.5.2 Native title

There is currently no registered Cultural Heritage Body for the subject site, on which the Project works will occur. The identified lots subject to the Project are all freehold title and are not identified as unallocated crown land.

5.6 Planning instruments, government policies

The following section provides an overview of the key legislation, policies and plans considered relevant to the Project. A detailed list of the likely project approvals, and the relevant legislation is provided at **Appendix A**.

5.6.1 Commonwealth

Environment Protection and Biodiversity Conservation Act 1999

The *Environment Protection and Biodiversity Conservation Act (Cth) 1999* (EPBC Act) is the Commonwealth Government's central piece of environmental legislation. The EPBC Act protects nine Matters of National Environmental Significance (MNES) including:

- listed threatened species and communities;
- listed migratory species;
- Ramsar wetlands of international importance;
- Commonwealth marine environment;
- world heritage properties;
- national heritage places;
- the Great Barrier Reef Marine Park;
- nuclear actions;
- a water resource, in relation to coal seam gas development and large coal mining development.

The EPBC Act provides a process for environmental assessment and approval of proposed actions that may have a significant impact on MNES, known as 'controlled actions'.

Under the EPBC Act, proponents proposing an action that may impact upon a MNES must refer the proposal to the Commonwealth Department of the Environment and Energy (DEE). This referral is used by the Commonwealth Minister for Environment to assist in deciding whether the proposal requires assessment and approval under the EPBC Act.

If the Project is deemed to be a controlled action it will be assessed under the EPBC Act in accordance with the Bilateral Agreement between the Commonwealth and the State of Queensland under Section 45 of the EPBC Act relating to environmental assessment.

The application of the EPBC Act to this Project is discussed further in **Section 7.5**.

Native Title Act 1993

The *Native Title Act (Cth) 1993* (NT Act) provides for the recognition and protection of native title rights for Australia's Indigenous people, as well as providing a legislative approach to address issues concerning native title. The legislation provides for the determination of native title claims, the treatment of future acts, which may impact on native title rights, and consultation and/or notification of relevant native title claimants where future acts are involved.

Aboriginal and Torres Strait Islander Heritage Protection Act 1984

The purpose of this act is to preserve and protect places, areas and objects of particular significance to Aboriginal people. This act is normally implemented through the provisions of the *Queensland Aboriginal Cultural Heritage Act 2003*.

5.6.2 State

The following Queensland state legislation could be triggered by the Project and will be considered in the approvals process.

Aboriginal Cultural Heritage Act 2003

The purpose of the *Aboriginal Cultural Heritage Act 2003* (ACH Act) is to provide for the effective recognition, protection and conservation of Aboriginal cultural heritage.

Biosecurity Act 2014

The *Biosecurity Act 2014* came into effect on 1 July 2016 and is designed to ensure consistent, modern, risk based and less prescriptive approach to biosecurity in Queensland.

Environmental Protection Act 1994

The *Environmental Protection Act 1994* (EP Act) is the principal environmental regulatory framework for environmental management and protection in Queensland. The EP Act objective is to protect the natural environment and associated ecological systems and processes while allowing for continued sustainable development.

The EP Act requires the Project's potential environmental impacts to be assessed and that measures be proposed to avoid or minimise any adverse impacts. To achieve this, the EP Act regulates activities that will or may have the potential to cause environmental harm.

Environmental Protection Regulation 2008

The EP Regulation supports and supplements the environmental assessment process outlined under the EP Act. It also specifies environmentally relevant activities (ERAs) that require approval, associated thresholds, specific approval details and reporting requirements.

Environmental Offsets Act 2014

The *Environmental Offsets Act 2014* (EO Act) coordinates the delivery of environmental offsets across jurisdictions. The EO Act purpose is to offset significant residual impact on prescribed environmental matters.

The *Environmental Offsets Regulation 2014* provides details on prescribed activities regulated under existing legislation and prescribed environmental matters to which the Act applies.

Land Act 1994

The Land Act 1994 (Land Act) provides the framework for State land, such as leasehold, roads and reserves and their subsequent management.

Under Chapter 4, Part 4 of the Land Act, a permit to occupy is required for the occupation of a reserve, road or area of unallocated State land. An application for a temporary road closure may also be required.

Local Government Act 2009

The purpose of the *Local Government Act 2009* (LG Act) is to outline the extent of local government responsibilities and powers within their respective jurisdictions. The Act provides local governments with the power to enact and enforce laws within the relevant local government area. These laws usually relate to the protection of amenity or other values important to communities including local roads, noise, light, waste management, vegetation, animals, parks and fencing.

Nature Conservation Act 1992

The *Nature Conservation Act 1992* (NC Act) is administered by EHP and regulates the environmental impacts on plants and animals through the protected plants framework and species management program requirements.

Developments in areas mapped as a Priority Koala Assessable Development Area or Koala Assessable Development Area need to be assessed under the *South East Queensland Koala Conservation State Planning Regulatory Provisions* which was developed under the *Sustainable Planning Act 2009.*

The subject site is not located within either of these priority area types, and as such the *South East Queensland Koala Conservation State Planning Regulatory Provisions* will not be triggered.

Nevertheless, requirements identified by the *Nature Conservation (Koala) Conservation Plan 2006* should be considered, including sequential clearing, having a koala spotter in attendance, and limits on the amount of habitat that can be cleared at any one time.

Planning Act 2016

The *Planning Act 2016* (Planning Act) establishes a system of land use planning (planning), development assessment and related matters that facilitates the achievement of ecological sustainability in Queensland. The Act coordinates development assessment in association with many of the other acts outlined below.

The Planning Act:

- manages the process by which development takes place, including ensuring the process;
- is accountable, effective and efficient and delivers sustainable outcomes;
- manages the effects of development on the environment (including managing the use of premises);
- coordinates and integrates planning at local, regional and state levels.

The assessment of the Project will consider the State Planning Policy (including the Queensland Plan) and South East Queensland Regional Plan, which applies to the area in which the Project is located.

South East Queensland Regional Plan 2017 – ShapingSEQ

The proposal will be assessed against the relevant aspects of the South East Queensland City Plan 2017 ShapingSEQ.

ShapingSEQ is the regions pre-eminent strategic land use plan given effect by the Planning Act 2016. The primary purpose of *ShapingSEQ* is to provide the regional framework for growth management, land use and development in South East Queensland (SEQ). The document sets the long-term planning direction for sustainable growth, a globally competitive economy, and high-quality living for SEQ.

ShapingSEQ provides the 50-year vision of the region and is supported by five (5) key themes which underpin the vision including, Growth, Prosper, Connect, Sustain and Live.

The subject site is within the urban footprint and as such will assist in meeting the needs of the Ipswich locality through the provision of critical infrastructure. The proposed infrastructure investment aligns with the Regional Plans desire to prioritise infrastructure investment and enhance regional infrastructure.

The proposal will be further assessed in greater detail against the relevant provisions of ShapingSEQ as part of the IAR process.

Queensland Heritage Act 1992

The *Queensland Heritage Act 1992* (Heritage Act) protects heritage areas that are considered to be of State significance and are placed on the Queensland Heritage Register, administered by the Queensland Heritage Council. Local heritage is also addressed in the Act, with local governments being required to establish their own heritage registers.

State Development and Public Works Organisation Act 1971

The *State Development and Public Works Organisation Act 1971* (SDPWO Act) provides a framework for coordinated and environmentally responsible infrastructure planning and development to support Queensland's economic and social progress. The SDPWO Act provides the Queensland Coordinator-General with the power and responsibility to assess and authorise the most significant and complex projects.

Section 26 of the SDPWO Act permits the Queensland Coordinator-General to declare a project to be a 'coordinated project' for the purpose of requiring the proponent to prepare an EIS or an IAR.

The preparation of an IAR or EIS in accordance with Part 4 of the Queensland SDPWO Act also satisfies the requirements of Section 8 of the Commonwealth EPBC Act.

Vegetation Management Act 1999

The *Vegetation Management Act 1999* (VM Act), in conjunction with the Planning Act, regulates the conservation and management of vegetation communities and clearing of vegetation. The VM Act provides a State-wide system for the management of native vegetation on freehold and leasehold land based on the concept of regional ecosystem (RE) areas. The conservation status of each RE is assigned as one of three categories: 'endangered', 'of concern' or 'least concern', based upon an estimate of the regional ecosystem's pre-clearing distribution, and how much of it remains.

Schedule 10, part 3 of the *Planning Regulation 2016* makes clearing of native vegetation on prescribed land assessable development which requires a development permit, unless the clearing is otherwise exempt.

Waste Reduction and Recycling Act 2011

The main objectives of the Act in relation to waste management are to: promote waste avoidance and reduction; reduce the overall impact of waste generation; promote resource recovery and efficiency actions; promote the sustainable use of natural resources; encourage the use of recovered resources; and ensure a shared responsibility between government, business and industry and the community.

The Act is supported by the Waste Reduction and Recycling Regulation 2011, which provides mechanisms to achieve the objectives of the Act.

Water Act 2000

The *Water Act 2000* (Water Act) provides a framework for the sustainable management of Queensland's non-tidal water resources and riverine quarry material.

With respect to the Project, the Water Act establishes systems for the planning, allocation and use of non-tidal water, including regulation of impoundments. Allocation of quarry material and riverine protection provided for by the Act will be of relevance.

5.6.3 Local

Temporary Local Planning Instrument No. 1 of 2018 (Waste Activity Regulation)

Ipswich City Council resolved to make a temporary local planning instrument (TLPI) which took effect, subject to the agreement of the Minister on 29 May 2018 (and amended on 31 August 2018).

This TLPI provides an interim policy response to address concerns raised by the Ipswich City Council and the local community in respect to landfill and waste industry uses occurring in the Swanbank / New Chum industrial area.

In accordance with section 9(3)(a) of the Planning Act 2016 (the Planning Act) the effective day for the TLPI is the day on which public notice of the TLPI is published in the Queensland Government Gazette. This TLPI will have effect in accordance with the Planning Act for a period not exceeding two years from the effective day or such longer period as may be permitted by law or unless otherwise repealed sooner.

The TLPI specifically relates to the regulation of a subset of waste management uses which it defines as a "waste activity use". Such a use would include:

a) *"Compost Manufacturing Enclosed";*
b) *"Compost Manufacturing Unenclosed";*
c) *"Landfill"; and*
d) *"Rehabilitating a mining void".*

Attachment C of the TLPI contains Table 1 – Table of Assessment and Relevant Criteria specifically states that any use not identified above will remain subject to the existing assessment category and assessment benchmarks under the Ipswich Planning Scheme. Accordingly, the TLIP is not directly relevant to REMONDIS' WtE facility. It will remain code assessable and subject to the normal provisions of the Ipswich Planning Scheme.

The TLPI does, however, show part of the subject land as falling within a waste activity buffer area in which the TLPI acts to preclude landfilling and composting activities. While the proposed facility does not cut across these new controls, REMONDIS is concerned this designation may cause some confusion to community stakeholders and unnecessarily complicate the assessment process.

The proposed WtE facility does not fall within the definition of *"Waste Activity Use"* as defined under the TLPI and as such the proposal will remain Code Assessable development as per Table 6.1 of the Ipswich Planning Scheme.

5.6.4 Also for Consideration

Queensland Waste Avoidance and Resource Recovery Productivity Strategy (2014-2024)

The Waste Avoidance and Recovery Productivity Strategy provides a high-level direction for waste management and resource recovery in Queensland over a 10 year period, and predominantly focuses on waste from all sectors, such as household, agricultural, mining, commercial and industrial waste and sold and liquid hazardous (or regulated) waste (DEHP, 2014).

The strategy sets a framework of guiding principles and objectives, and priority areas which underpin the development of action plans. The strategy is also informed by the waste and resource management hierarchy, which sets out an order of preference for options for managing waste – from avoiding, the reusing, recovering, treating and disposing of waste (DEHP, 2014).

While no specific incentives are stated in the strategy, it does acknowledge that Queensland has around 450 MW of installed WtE capacity, and included WtE as part of the waste resource management hierarchy.

The proposal is considered to align with the intent of the strategy and will be assessed against the strategy in greater detail as part of the future application should the project be declared.

Transforming Queensland's Recycling and Waste Industry Directions Paper

On 20 March 2018, the Queensland Government announced the development of a comprehensive waste management strategy underpinned by a waste disposal levy to increase recycling and recovery and create new jobs.

The Directions Paper outlined the directions for Queensland's new resource recovery, recycling and waste management strategy that will support the Government's Advance Queensland agenda by promoting growth and jobs in the resource recovery and recycling industry.

The strategy is intended to provide the waste and resource recovery sector with the policy certainty that has been lacking, resulting in significant under investment in new and expanded resource recovery infrastructure in Queensland.

The key principles of the strategy include:

- Attract industry investment and innovation;
- Create new jobs for our communities;
- Have no direct impact on Queensland households;
- Deliver long-term value to our environment; and
- Move Queensland towards a circular economy.

Part B of the paper outlines the direction the Government will take to reinvigorate Queensland's waste strategy. The development of a new waste strategy will fulfil the statutory requirement under the Waste Reduction and Recycling Act 2011 (the Act). The final comprehensive waste strategy will be released following the statutory consultation process required by the Act.

The Strategy identifies that the Queensland Government will explore the development of waste to-energy.

It is recognised that there are a range of technological solutions that are already available commercially, and a host of new and emerging innovative technologies.

There is also a significant body of literature on waste to-energy reducing the amount of waste that goes to landfill, and the role that waste-to-energy plays in a transition towards a more circular economy.

The proposal aligns with the intent of the strategy to transition towards a more circular economy through the provision of a WtE facility at Swanbank. Given the extensive knowledge available to REMONDIS through their existing WtE operations, the proposal will take on board the lessons learned from other jurisdictions and to ensure the most appropriate types of waste are used for WtE.

REMONDIS are committed to continued engagement with the Department of Environment and Science (DES) as part of the application process should the project be declared to ensure the proposal aligns with the strategy as it continues to be refined.

6.0 Potential project impacts

6.1 Natural environment

6.1.1 Land

The impact on land based environmental values is anticipated to be minimal, given the sites location in an established Industrial Precinct. Any impacts on this environmental value will largely relate to construction activities, where the footprint of these activities is generally isolated to Lot 101 on RP 839072 and located on REMONDIS property with existing infrastructure, as well as some road reserve land also affected.

Soils and geology are not expected to be significant concerns because the Project will be largely constrained to the existing disturbed areas of the SREWMF.

Visual amenity will be minimal due to the significance buffer distance to nearby sensitive land uses and the site topography. The impact assessment undertaken as part of the IAR or EIS will identify key land values within the Project area and determine any associated potential impacts. Identified mitigation measures will be outlined in the IAR or EIS.

6.1.2 Water

Potential environmental impacts in relation to water, arising from Project activities, comprise:

- increased sediment in surface water bodies resulting from earthwork activities, leading to changes in surface water quality;
- inadvertent release of potential pollutants to surface water bodies from activities such as vehicle refuelling/wash-down and uncontrolled or controlled release of contaminated water or treated/untreated sewage leading to changes in surface water quality;
- potential effects to groundwater flow (although the site has a history of highly disturbed groundwater due mining activities),

Due to the nature of the Project, there may be a range of impacts on water values. These impacts will range from typical construction project impacts (e.g. construction impacts on water quality) to more complicated site-specific impacts. Based on the variety of potential impacts and complexity/unknowns around some areas, REMONDIS proposes focused assessment to inform mitigation measures.

6.1.3 Air

This environmental value is anticipated to be a key environmental concern that would require focused assessment as the project has the potential to produce a number of air emissions through the processing and combustion of waste streams. The assessment of the air quality and suitable mitigation measures will be outlined in the Project IAR or EIS.

The flue gas treatment system involves several treatment steps which include scrubbing (for acidic gases and metals), selective non catalytic reduction (to remove NOx gases), the utilisation of activated charcoal (removing dioxin, furans and mercury) and a baghouse filter (removes particulates) to minimise emissions.

Flue gas treatment technologies have developed and improved significantly over the last 50 years and are now highly efficient in reliably meeting strict standards such as the EU Industrial emissions directive.

In relation to potential greenhouse Gas emissions from the WtE facility, the proposal offers the potential benefit of reducing the production of GHG emissions, based on waste being diverted from landfill (thereby reducing methane production).

The cumulative effect GHG emissions produced and avoided will be determined through the engagement of a GHG emissions assessment in the detailed assessment phase of the application.

6.1.4 Ecosystems

The Project will require localised vegetation removal for construction, which may include some vegetation mapped as Regional Ecosystem (RE), subject to localised assessment. Nevertheless, the area of vegetation removal will be minimal, constrained to REMONDIS existing land, and is unlikely to fragment any habitat or create isolated patches of vegetation in the area.

Detailed ecological and vegetation studies will be engaged by REMONDIS in support of the Project to determine potential impacts and suitable mitigation measures will be outlined in the detailed assessment.

6.1.5 Flora and Fauna

The proposal has the potential to result in the following environmental impacts:

- Vegetation clearing and fragmentation;
- Direct fauna injury and mortality during earthworks;
- Disturbance to fauna;
- Direct loss of habitat and breeding places;
- Importation and/or spread of weeds;
- Introduction and/or proliferation of pest fauna;
- Degradation of habitat through dust, sedimentation and erosion;
- Degradation of aquatic environments; and
- Impacts on adjacent bushland.

Direct impacts from the proposal will consist of clearing vegetation (subject to localised site investigations) has the potential to result in localised habitat fragmentation however the extent of any impact will need to be determined through detailed ecological and vegetation studies and outline suitable mitigation measures.

6.2 Amenity

Noise

The Project has the potential to have an impact on noise and vibration values as a result of:

- increased vehicular movements;
- foundation works, including piling;
- excavation works;
- earthworks;
- concrete batching;
- other construction activities.

The Project site is not located in proximity to sensitive receptors, and so construction noise is not anticipated to impact on receptors (however can be appropriately managed). The assessment of the Project's noise and vibration aspects and suitable mitigation measures will be outlined in the Project IAR or EIS.

Odour

The Project has the potential to be a source of odour from waste stored in the tipping hall and from opening and closing roller doors. The tipping hall will be operated under negative pressure to minimise possible odour emissions. Further the tipping hall air will be used as combustion air in the process. If the unlikely situation occurs where waste is still present in the tipping hall during shutdowns the air will pass via the negative pressure flow and through filters. Sophisticated and proven off gas treatment systems prevent stack odour emissions. Stack height will be determined by dispersion modelling.

It should be added that the intensity of odour is very low, in particular, the offensiveness of odours is minimal in waste incineration plants compared to other waste treatment plants or especially landfill. Additionally, odour does not occur during normal operations of waste incineration, when a sophisticated flue gas treatment system is utilised.

Although, modern WTE plants have distinct advantages over other waste treatment processes in terms of odor emissions, cumulative impacts in relation to odour in the context of the existing SREWMF need to be carefully considered throughout the design and assessment phase of the proposal. Taking into account the location of the Project in an established Industrial Precinct, local climatic conditions and distance/buffer from the Project to nearby sensitive land uses, it is considered that the potential impacts associated with odour can be mitigated.

6.3 Social and economic impact

Social and Economic Impacts have been discussed here as these extend across the entire life of project. The economic and social impacts during the construction phase which will attract a peak work force estimated at 200 persons to the Ipswich region over the construction phase are significantly different from the operational impacts of a workforce likely to be sourced from personnel permanently settled to service the needs of this project.

A rigorous social impact assessment process will analyse potential social impacts in detail, with input from the community through ongoing consultation. This will identify how positive social impacts can be enhanced and negative impacts mitigated and/ or managed.

The REMONDIS SREWMF has a proven operational track record within the Swanbank locality for best practice waste management since commencement of site operations in 1998 which should provide comfort to nearby residents that the highest standards to mitigate impacts will be incorporated into the design and operation of the WtE facility.

REMONDIS know the local community well through their 20 year operations on site and has a good working relationship with nearby businesses within the Swanbank Regional Business and Industrial Precinct and residents of adjoining suburbs. REMONDIS will continue to consult with key stakeholders to ensure any community concerns are promptly addressed.

As a major industrial and waste management project, the Project is forecast to deliver a range of positive socio-economic impacts targeting the Ipswich LGA but extending to the wider South East Queensland population.

6.4 Built environment

The design of the facility with respect to building form and heights has largely evolved in response to operational nature of the technology.

Figure 21 Artist's impression of the Waste to Energy Facility at Swanbank, Ipswich

The building design has a graduated form and scale with the heights of various elements stepping up in height as they move into the site. This design approach overcomes the potential for adverse impacts associated with bulk and scale at the street and provides a site responsive design.

The assessment of the Project's visual aesthetics and suitable mitigation measures will be outlined in the Project IAR.

6.5 MNES under the EPBC Act

An EPBC Act Protected Matters search has been undertaken for the Project site (**Appendix B).** The search report indicates that MNES are likely to occur in the Project area and may be affected by the proposed works.

Matters of National Environmental Significance	Comment
World Heritage Property	None
National Heritage Places	None
Ramsar Wetlands of International Significance	None
Nuclear actions.	None
Commonwealth Marine Area	None
Listed Threatened ecological communities	3
Listed Threatened species	31
Listed Migratory Species	16

Table 2: EPBC Matters of National Environmental Significance

Based on the above, the proposed development is not considered to be a 'controlled action' pursuant to the *EPBC Act* however the construction and operational impacts will need to be assessed in greater detail by a suitably qualified ecologist as part of the IAR to confirm this position.

Should the potential for Project impacts warrant an EPBC Act referral to address legislative requirements in relation to MNES. REMONDIS will submit an EPBC referral for the project shortly after submission of the coordinated project application. Should the Project be declared a 'controlled action', REMONDIS requests the use of a bilateral assessment process.

7.0 Environmental management and mitigation measures

7.1 Natural environment

7.1.1 Land

Earthworks related to the Project will require an erosion and sediment control plan (ESCP) which will be a sub-plan of the CEMP.

The ESCP will be consistent with current practice for construction projects and align with International Erosion Control Association (IECA) guidance. Impacts on environmental values of land (soils and geology) are not expected to be a material issue during construction. Any impact mitigation measures are expected to be relatively typical of a construction project and conform to industry best practice.

7.1.2 Water

Focused assessment will be required to confirm the Project impacts on water values and appropriate mitigation measures, such as:

- Implementation of groundwater drainage system around the entirety of the proposed waste bunkers to assist groundwater re-entering the strata;
- Monitoring of groundwater surrounding the waste bunkers, by incorporation of inspection manhole to enable periodic inspection of groundwater levels surrounding the waste bunkers;
- A surface water quality monitoring program;
- The process will use demineralised water for steam production for the turbine. This water will be reused through the process and will incur minimal losses;
- Cooling water may be used for the plant. The options between using air cooling and water cooling will be considered for the project.

7.1.3 Air Quality

The primary emissions from the WtE facility, as defined by emission limits for waste incineration set by the European Union (EU) Industrial Emissions Directive (IED; Directive 2010/75/EU), are anticipated to be as follows:

- Particulate matter (PM), assumed to be emitted as PM10 and PM2.5a;
- Hydrogen Chloride (HCl);
- Hydrogen Fluoride (HF);
- Carbon Monoxide (CO);
- Sulfur Dioxide (SO2);
- Oxides of nitrogen (NOx) (expressed as Nitrogen Dioxide (NO2);
- Heavy metals (including Mercury (Hg), Cadmium (Cd), Arsenic (As) and Chromium (Cr);
- Gaseous and vaporous organic substances (expressed as total organic carbon (TOC));
- Dioxins and furans.

In addition to the atmospheric emissions identified in the EU IED, other potential emissions that have been addressed include:

- Hydrogen sulfide (H2S);
- Chlorine (Cl2);
- Ammonia (NH3);
- Polycyclic -aromatic hydrocarbons (PAHs).

A summary of the EU emissions limits are listed in Table 3:

EU Industrial Emissions Directive 2010/75 - Emission Limits for Waste Incinerators				
Substance	**Unit**	**30 min Average**	**24 hour average**	**Periodic limit**
Total dust	Mg/Nm3	30	10	none
Gaseous and vaporous organic substances, expressed as total organic carbon (TOC)	Mg/Nm^3	20	10	none
Hydrogen chloride (HCl)	Mg/Nm3	60	10	none
Hydrogen fluoride (HF)	Mg/Nm3	4	1	none
Sulphur dioxide (SO2)	Mg/Nm3	200	50	none
Nitrogen monoxide (NO) and nitrogen dioxide (NO2), expressed as NO2	Mg/Nm^3	400	200	none
Cadmium and its compounds (Cd)	Mg/Nm^3	None	none	0.05
Thallium and its compounds (Tl)	Mg/Nm^3	None	none	0.05
Mercury and its compounds (Hg)	Mg/Nm^3	None	none	0.5
Arsenic and its compounds (As)	Mg/Nm^3	None	none	0.5
Lead and its compounds (Pb)	Mg/Nm^3	None	none	0.5
Chromium and its compounds (Cr)	Mg/Nm^3	None	none	0.5
Cobalt and its compounds (Co)	Mg/Nm^3	None	none	0.5
Copper and its compounds (Cu)	Mg/Nm^3	None	none	0.5
Manganese and its compounds (Mn)	Mg/Nm^3	None	none	0.5
Nickel and its compounds (Ni)	Mg/Nm^3	None	none	0.5
Vanadium and its compounds (V)	Mg/Nm^3	None	none	0.5
Dioxins & Furans	ng/Nm^3	None	none	
Carbon Monoxide	Mg/Nm^3	100	50	none

Table 3: EU Industrial Emissions Directive 2010/75

Emissions from WtE facilities are primarily controlled by the flue gas treatment process. The flue gas treatment proposed is designed to meet the in-stack concentrations limits for waste incineration set by the European Union Industrial Emissions Directive.

Stack emissions will be continuously monitored by a computer controlled system for the following compounds:

- Carbon monoxide;
- Hydrogen chloride;
- Nitrogen oxides;
- Ammonia;
- Volatile organic compounds (VOC's);
- Particulates;
- Sulphur dioxides.

Spot testing will take place at regulated frequencies for metals and dioxins/furans and Hydrogen fluoride.

The proposed WtE Project is based on existing facilities in Europe and will incorporate best available technology for flue gas treatment, designed to meet the stringent in-stack concentrations limits for waste

incineration set by the Industrial Emissions Directive (IED). REMONDIS operate numerous such facilities in Europe.

To manage air quality the following mitigations measures are proposed:

- Implement best practice monitoring processes;
- Implement an appropriate maintenance schedule to ensure that FGT systems operate appropriately;
- The facility shall be managed by a duly qualified specialist and trained personnel;
- Implement continuous monitoring system to ensure facility operates within acceptable parameters;
- Management of incoming waste fuels received from external sources.

In addition, it is expected that human health risk studies will be conducted during the IAR process that will incorporate various relevant analyses based on normal and upset conditions scenarios on recognised sensitive receptors.

7.2 Flora and Fauna

Despite the identified impacts, the cumulative effect is considered acceptable in the context of the broader site that is used as an active industrial premises that is appropriately zoned for the intended development. In this circumstance, it is not possible to avoid the impact accordingly measures have been developed to mitigate and offset.

- Appointment of a project ecologist to undertake and oversee all flora and fauna pre-clearing, management and revegetation works;
- Preparation of a vegetation management plan;
- Measures to prevent tree impacts during construction and prevent clearing where possible;
- Revegetation where required.

7.3 Built environment

It is not envisaged, with the availability of existing infrastructure within the Swanbank Industrial Precinct and the existing SREWMF that the Project will have a significant effect on the built environment.

The existing Council and State Controlled Road network will continue to be the main mode of transporting machinery and infrastructure during construction and the vehicular movements associated with the operation and comparable to the current levels associated with the operation of the existing SREWMF.

7.4 Cultural heritage management plan (Indigenous)

The project will be assessed under the Cultural Heritage Duty of Care Guidelines (Queensland Aboriginal Cultural Heritage Act 2003).

It is not anticipated that a cultural heritage management plan (CHMP) will be required however will be undertaken should the findings of the assessment warrant its inclusion.

7.5 Non-Indigenous cultural heritage management

A non-indigenous cultural heritage survey of the Project site will be undertaken as part of the IAR or EIS process. No heritage listed sites are located in proximity to the site and due to the relatively modern age of the existing dam and water treatment structures, the heritage values of the site are expected to be negligible. However, any finds will be handled in accordance with the legislative requirements.

7.6 Greenhouse gas management plan

A greenhouse gas management plan will be developed as part of the proposal to ensure best practice standards are achieved in relation to GHG emissions.

- Use of Best Available Technology in flue gas treatment;
- Continuous emissions monitoring to ensure they are within acceptable limits;
- Reporting of emissions to Regulators.

The associated CO_2 emissions is reduced when generating power from WTE plants in comparison to using fossil fuels Additionally, studies have shown that emissions of sulfur dioxide, particulate matter and nitrogen oxides were lower from WtE facilities than from coal-fired plants.

7.7 Hazard and risk, and health and safety

Hazard and risk and health and safety assessments and management plans will be developed as required for the construction and operation phase of the Project.

7.8 Environmental management

Several management plans will be developed as part of the Project's environmental assessment and approvals phase.

These management plans will reflect REMONDIS's ongoing commitment to environmental management during construction and will incorporate management measures identified during the assessment process.

As part of the construction phase of the Project, and as referred to throughout section 8, a Construction Environmental Management Plan (CEMP) will be developed and will form an important management tool for the Project's impacts and mitigation measures.

The CEMP will incorporate environmental and social mitigation measures from the IAR or EIS as a framework for the ongoing management, monitoring, reporting and improvement during construction. Its primary purpose will be to identify the environmental values potentially affected by the Project and detail measures to manage the risk of potential adverse impacts to these environmental values. For each component, the CEMP will outline the following:

- environmental values;
- potential impacts;
- environmental protection objectives;
- management controls;
- monitoring programs.

7.9 Public Concerns

It is acknowledged that stakeholders hold concerns regarding the proposed Project, in particular, the issues raised in a petition titled "*Rejection of incinerator to be built within city limits*". REMONDIS is committed to undertaking a thorough stakeholder engagement process as part of the approval process (refer to Section 10.0).

The following section provides an initial response to a number of concerns raised to date. Further information and management practices will be provided by REMONDIS as the approval process continues and as detailed reporting is undertaken as part of the IAR:

Issue/Concern	Initial Response
• Pollution control technologies have not proven capable of appropriately managing emissions • Uncertainty in relation to air quality and impacts of air quality and water quality • Uncertainty in relation to the human health risks and site suitability • Such a facility in urban areas contravene efforts of environmental regulations regarding air quality • Incinerators are primary sources of persistent organic pollutants, which contaminate food chains, building up dangerous levels in humans, and sources of lead, mercury, dioxins and furans.	REMONDIS has extensive experience is managing emissions from similar WtE plants. REMONDIS has in place technologies and processes which meet the EU IED. REMONDIS proposes to implement similar technologies and processes for the Project, resulting in positive and controlled emission and air quality outcomes. Further details on the process are available in section 7.1.3.
• The project is not in the public interests, 500,000 tonnes of waste per year is required to feed an incinerator for 24 hours operation, which means more trucks, more traffic and more pollution	REMONDIS currently operates the SREWMF at Swanbank. This facility is expected and approved to continue operating for many decades. It is proposed that the waste volumes that are currently received into the facility will be redirected for recycling and material that cannot be recycled will be used as a fuel source for the Project.
• Every four tonnes of waste create one tonne of toxic ash	Fly ash represents around 3% of the input fuel source. Please refer to section 3.6 for further details.
• Undermines genuine clean, safe renewable energy solutions; is not in line with a circular economy	The European Commission confirms that WtE has a role to play in a circular economy (refer to "*The role of Waste to Energy in a circular economy*").

8.0 Approvals required for the project

As per Section 34G (2) of the SDPWO Act, a draft IAR must contain a statement about whether or not any of the following approvals (each of which is notifiable approval) is required for the Project:

- a development approval if the development application for the approval would, under the Planning Act, require impact assessment;
- an environmental authority if the application for the authority would, under the Environmental Protection Act 1994, chapter 5, part 4, require public notification;
- another approval under an Act if—
  - the application for the approval requires, other than under the Planning Act or the Environmental Protection Act, chapter 5, an EIS or a similar statement to address the environmental effects of the approval; and
  - the application for, or the granting of, the approval requires public notification under the relevant Act.

The table at **Appendix A** provides a summary of approvals applicable to the project in accordance with these requirements. This will continuously be reviewed as the project is development and in consultation with the relevant State departments.

REMONDIS seeks declaration of the Project as a coordinated project pursuant to the SDPWO Act (Qld). As part of this declaration, REMONDIS seeks to utilise the IAR process. **Section 7.6** outlines the Acts and policies that were assessed as relevant to the Project.

Once the Project description has been sufficiently completed, following concept design optimisation and commencement of detailed design, a finalised list of required approvals will be presented as part of either the IAR or EIS. As a result, further approvals may be identified, while others that were identified at the preliminary stage (**Appendix A**) may not be required.

The approvals that REMONDIS intends to be coordinated during the IAR process are identified in **Appendix A**. Note that these are based on the assessment of required approvals at the concept design stage the Project. The required approvals are subject to change during detailed design development, as described above.

9.0 Cost and benefits summary

9.1 Local, state and national economies

An Economic Impact Assessment (EIA) will be submitted with the IAR. An EIA will assess benefits, values and potential impact areas resulting from the construction and operational phases of the Project.

The Project will bring some additional short term economic benefits to the regional economy during construction through the provision of construction and engineering services, along with long term cost benefits for Queensland households and businesses through the generation of up to 50MW of baseload renewable electricity.

9.2 Natural and social environments

The primary Project benefit is to provide an alternative waste management solution to landfilling. It is widely recognised that if Queensland maintains a "business as usual" approach to waste management, most of South East Queensland's landfills will have no capacity by 2040. The project provides a direct solution to this key State issue and an opportunity to divert thousands of tonnes of suitable waste (non-recyclable wastes) away from landfill and into a best-practice WtE facility that will extend the life of south east Queensland's constrained landfills.

The SREWMF is an integrated waste facility, comprising landfill, recycling and, in the future, the proposed WtE facility. Adopting WtE technology will ensure that wastes with recoverable value are not sent to landfill and, instead, are put to beneficial use. The world leader in waste management, the European Union, encourages construction of "state-of-the-art energy-efficient" Energy from Waste plants to "create new capacity for the treatment of residual waste" in member states.

It is the intention of the IAR process to investigate the possible impacts and define suitable environmental mitigation strategies to be incorporated into management protocols and plans in support of anticipated approvals.

REMONDIS will implement mitigation strategies as part of the construction and operation of the Project. Where impacts are unavoidable, the intent will be to offset such impacts to land-based and ecological values.

An assessment of the existing social environment and possible impacts associated with the Project will be submitted in the EIS/IAR. Most of the potential social impacts are anticipated to be positive for the area including economic diversification and increased economic, employment and training opportunities. The proponent believes that this will in turn raise the level of confidence in the region.

The social environments will benefit from increased local expenditure in Ipswich and the broader region due to additional expenditure. Strategies will be developed through the Social Impact Assessment conducted as part of the IAR process to avoid or mitigate against social impacts.

10.0 Community and stakeholder consultation

REMONDIS has commissioned specialist consultants, Three Plus, to draft a Community and Stakeholder Engagement Plan in preparation for an IAR or EIS process. The draft Plan will be reviewed and amended, as required, if the Project achieves Coordinated Project status.

As part of its early engagement activities, REMONDIS has activated a website to provide information on the proposed project and to provide opportunities for interested parties to review the proposal, register for updates and provide initial feedback.

Plan Structure

The Community and Stakeholder Engagement (C&SE) Plan is based on a four-stage approach:

- Stage 1: Active support for the draft TOR advertising phase (if required)
- Stage 2: IAR research and preparation, including technical investigations and community consultation
- Stage 3: Active support for the IAR public comment phase, and finalisation of the IAR
- Stage 4: Post-IAR stakeholder follow-up

The purpose of the consultation will be to engage stakeholders in informed discussion about what the project may mean to the local area and the region. This will require the provision of information about the project design and potential impacts, and the establishment of a number of opportunities and avenues for stakeholders to participate in consultation.

Objectives

The community and stakeholder engagement objectives for the IAR will be to:

- Add value to the study's decision-making process
- Inform stakeholders about the study objectives, drivers, processes and consultation opportunities
- Provide easy and accessible ways for stakeholders to participate in the consultation process, and
- Inform the IAR project team.

Principles

The following strategic principles will guide the IAR community and stakeholder engagement:

- Positioning: The IAR will be positioned in the context of investigating the environmental impacts (including social, cultural and economic) of the Project.
- Open and transparent: IAR stakeholder engagement will be in accordance with the International Association for Public Participation (IAP2) spectrum.
- Responsiveness: Stakeholders' ideas, issues and comments will be identified through consultation activities. To demonstrate an open, two-way process is being undertaken, the IAR team will close the loop with stakeholders to inform them how their views have been considered. The IAR team will also manage stakeholder expectations about what the IAR can deliver by effectively communicating the study negotiables and non-negotiables.
- Integration with related activities: The IAR team will recognise stakeholders' previous contributions by linking the IAR with submissions received during the public comment phase on the draft Terms of Reference.
- Issues management: The IAR team will identify as early as possible, and proactively manage, any issues that may influence the IAR.

Stage 1: Active support for the Office of Coordinator-General draft Terms Of Reference advertising phase (if public input into TOR is required)

In addition to the community and stakeholder engagement activities planned for the IAR phase, REMONDIS has determined that it will support the public comment phase on the Coordinator-General's draft Terms of Reference (TOR).

To help ensure comprehensive and well-supported Terms of Reference are developed, REMONDIS will undertake a dedicated round of stakeholder engagement to support the draft TOR public advertising period which will provide information about the project and encourage feedback on the draft TOR (to the Coordinator-General).

Stage 2: Baseline Studies – IAR research and preparation, including technical investigations and community consultation

Should the project be declared a Coordinated Project, REMONDIS and its project team will commence the preparation of an IAR and documentation requirements nominated by the Office of Coordinator-General.

During this stage, REMONDIS will continue with stakeholder engagement to update key stakeholders and provide additional information on the progress of the proposal. Potential issues and concerns raised during the engagement process will inform the detailed design and the documentation phase of the IAR.

Stage 3: Active support for the IAR public comment phase, and finalisation of the IAR

REMONDIS will support the IAR public comment phase by implementing a dedicated stakeholder engagement program to ensure stakeholders have an opportunity to inform themselves of the IAR outcomes and recommendations, and to provide comment via formal channels.

The specific methodologies for this phase will be determined during Stage 3 and provided to the Office of the Coordinator General for review prior to roll-out, but will generally follow the process set down in the draft C&SE plan (***attached***).

Stage 4: Post IAR stakeholder follow-up

Once the IAR has been finalised, REMONDIS will "close the loop" and inform stakeholders about final IAR, conditions of approval and project timelines. The appropriate methodologies will be determined, but may include briefings to summarise the IAR outcomes and to report on community and stakeholder engagement activities.

11.0 References and data sources

- AECOM. (2008). *Swanbank Landfill Stage 1A and 1B - Flora and Fauna Assessment.*
- Applied Ecology. (1998). *Swanbank Landfill Extension of the Facility - Environmental Report.*
- DEE (2018). EPBC Act Protected Matters Report. Commonwealth Department of the Environment, Canberra. Report created: 25/09/18.
- Department of State Development, Manufacturing, Infrastructure and Planning, *Social Impact Assessment Guideline*, March 2018.
- KBR. (2012). *Bundamba Creek Flood Study and Risk Management Plan.* Ipswich: Ipswich City Council.
- Sattler, P. S. and Williams, R.D. (Eds) (1999). The Conservation Status of Queensland's Bioregional Ecosystems, Environmental Protection Agency.
- Vegetation Survey of Proposed Dump Site, Swanbank (Bostock and Forster, 1988)
- Swanbank Landfill Stage 2 (Oxbow Consulting, 1998)
- Swanbank Landfill Extension of the Facility – Environmental Report (Applied Ecology, 1998)
- Swanbank Landfill Stage 1A and 1B - Flora and Fauna Assessment (AECOM, 2008)
- Flinders Karawatha Corridor - Environmental Values and Land Use Data Report (EHP, 2013)
- "Emissions from Waste-to-Energy: A comparison with Coal-fire Power Plants" (DOI: 10.1115/IMECE2003-55295)
- https://www.researchgate.net/publication/242108296_Emissions_from_Waste-to-Energy_A_Comparison_with_Coal-fired_Power_Plants
- "The role of waste-to-energy in the circular economy". Communication from the Commission to the European Parliament, The Council, The European Economic and Social Committee and the Committee of the Region.

Appendix A. Approvals required for the project

Legislation and Administering Authority	Approval Trigger	Approval	Relevance to the Project	Applicability
Commonwealth				
Environment Protection and Biodiversity Conservation Act 1999 (EPBC Act) **DEE**	Actions that have, or are likely to have, a significant impact on a MNES	EPBC Act Referral – controlled action or not a controlled action	Due to the presence of High Value Koala Habitat and the potential occurrence of threatened species, the Project *may* need to be referred to DEE to determine if the proposed works constitute a 'controlled action' under the EPBC Act.	Unlikely Applicable
Native Title Act 1993 **Native Title (Queensland) Act 1993** **National Native Title Tribunal**	Works to be undertaken on land subject to Native Title	An Indigenous Land Use Agreement (ILUA) is required if works are to be undertaken on land subject to Native Title	The site consists of freehold titles not subject to Native Title	No
State				
Non-Planning Act and Regulation Approvals				
State Development and Public Works Organisation Act 1971 **Coordinator-General**	A project with one or more of the following characteristics may apply to have it declared a 'Coordinated Project' under the *State Development and Public Works Organisation Act 1971*(SDPWO Act): • complex approval requirements, involving local, state and federal	Coordinated Project Declaration	As outlined within this Initial Advice Statement (IAS), the project is considered of strategic significance to the Region for the economic and social benefits, capital investment and employment opportunities it would provide. By obtaining 'coordinated project' declaration from the Coordinator-General, the project would benefit from: • a clear approvals framework for the Project; • coordinated and	Yes

Legislation and Administering Authority	Approval Trigger	Approval	Relevance to the Project	Applicability
	governments • significant environmental effects • strategic significance to the locality, region or state, including for the infrastructure, economic and social benefits, capital investment or employment opportunities it may provide • significant infrastructure requirements		targeted whole-of-government advice with respect to scoping technical investigations and/or environmental assessments necessary to facilitate Project approvals. The Proponent considers the IAR process as suitable for the Coordinator-General to assess the project in the event that the project is declared a 'Coordinated Project'. As outlined within this IAS, the potential environmental impacts of the project are well defined and low-medium risk and do not warrant an EIS. Furthermore, the project would previously have been subject to code assessment under the Planning Act 2016, recognising its acceptance in principle. The Proponent has resolved, in any event, to adopt best practice measures to minimise and mitigate any potential environmental impacts associated with the project.	
Land Act 1994 DNRME	Temporary or permit road closure Permit to occupy	Road closure permit or permit to occupy	An application for a temporary road closure may be required to facilitate the works. Requirements will be confirmed through detailed design.	Yes, if required
Nature Conservation	Clearing protected plants or	Clearing Permit – Protected	A clearing permit may be required for clearing	Yes, if required.

Legislation and Administering Authority	Approval Trigger	Approval	Relevance to the Project	Applicability
Act 1992 **DES**	tampering with animal breeding places	plants Permit to tamper with animal breeding places	within a high risk area on the Protected Plants Flora survey trigger map. Clearing requirements will be determined through detailed design. Additionally the removal or disturbance of native animal breeding places by earthwork activities, requires a permit with approved species management programme.	
Aboriginal Cultural Heritage Act 2003 **Torres Strait Islander Cultural Heritage Act 2003** **DATSIP**	Duty of care to not harm cultural heritage sites or items of significance	Cultural Heritage Management Plan	All persons must take all reasonable and practicable measures to ensure their activities do not harm Aboriginal cultural heritage. The duty of care applies regardless of the tenure of the land and regardless of whether it has been identified or recorded in a database. Development may require assessment against the Duty of Care Guidelines. Additionally, if an EIS is required, an approved Cultural Heritage Management Plan (CHMP) is mandatory.	Unlikely applicable
Water Act 2000 **DNRME**	Taking of water	Licence to take water	Development may require a licence to take water. Requirements will be confirmed through detailed design.	Yes, if required
Waste Reduction and Recycling Act 2011 **Waste Reduction and Recycling**	Using a resource for an industrial activity	End of waste approval	A waste can be approved as a resource if it meets specified quality criteria for its specific use. As the project involves the use of waste as a resource for generating electricity	Yes

Legislation and Administering Authority	Approval Trigger	Approval	Relevance to the Project	Applicability
Regulation 2011 **DNRME**			it is considered that an end of waste approval is required.	
Electricity Act 1994 **Electricity Regulation 2006** **DNRME**	If the WtE plant exceeds 30MW in capacity a General Authority is required. If less than 30MW a Special Approval is required. A transmission authority is also required to connect the proposed plan to a transmitting grid	A General Authority Or A Special Approval permit (s130) And A Transmission Authority	The type of permit is contingent upon the capacity of the proposed WtE plant. A transmission authority is required irrespective of the capacity in order to connect to the grid.	Yes
Planning Act and Planning Regulation and associated Legislative Approvals				
Planning Act 2016 **DSDMIP**	Development Assessment (DA) Rules under Section 68(1) of the Planning Act		The assessment process in the DA Rules involves the following parts: • Part 1 – Application • Part 2 – Referral • Part 3 – Information Request • Part 4 – Public notification (if required) • Part 5 – Decision An Applicant is required to identify the development type, applicable assessment manager and relevant referral agencies as prescribed under the Planning Regulation.	Yes
Planning Regulation 2017, Schedule 10, Part 3	Clearing native vegetation	Development Permit – Operational Works for clearing native vegetation	A development permit for operational works may be required for clearing certain vegetation. Clearing requirements will be	Yes, if required

Legislation and Administering Authority	Approval Trigger	Approval	Relevance to the Project	Applicability
Vegetation Management Act 1999 **DNRME**			confirmed through detailed design.	
Planning Regulation 2017, Schedule 10, Part 4 **Environmental Protection Act 1994** **DES**	Material change of use on contaminated land	Development Permit – Material Change of Use on contaminated land	A development permit for material change of use may be required for the proposed use as the premises are listed on the contaminated land register/environmental management register and may involve an accessible underground facility. This will be confirmed through detailed design.	Yes, if required
Planning Regulation 2017, Schedule 10, Part 5 **Environmental Protection Act 1994** **DES**	Material change of use for an environmentally relevant activity	Development Permit – Material Change of Use for an environmentally relevant activity	A development permit for a material change of use may be required for certain environmentally relevant activities, including ERA 14 (electricity generation), ERA 15 (Fuel Burning), ERA 55 (regulated waste recycling or reprocessing), ERA 56 (regulated waste storage) and ERA 57 (regulated waste transport). The full list of applicable ERAs will be confirmed through detailed design.	Yes
Planning Regulation 2017, Schedule 10, Part 19 **Water Act 2000** **DNRME**	Taking or interfering with water	Development Permit – Operational Works that involves taking or interfering with water	A development permit for operational works may be required for the project if it involves taking or interfering with a watercourse, lake or spring; or a dam ; underground water or taking overland flow water. The extent of taking or interfering with water will be confirmed through detailed design.	Yes, if required

Legislation and Administering Authority	Approval Trigger	Approval	Relevance to the Project	Applicability
Ipswich Planning Scheme 2006 **Ipswich City Council**	Material change of use assessable against the planning scheme	Development Permit – Material Change of Use	A development approval is required for a material change of use for Special Industry and Major Utility (full extent of land use definitions to be confirmed).	Yes

Appendix B. Desktop searches and mapping

Sch. 4(4)(6) - Disclosing pe

From: Sch. 4(4)(6) - Disclos
Sent: Friday, 25 January 2019 10:29 AM
To: Sch. 4(4)(6) - Disclos
Subject: REMONDIS WtE IAS Submission
Attachments: EFT Remittance Advice_21770.pdf; 1.0 REMONDIS IAS Cover Letter.pdf; 2.0 REMONDIS IAS Final.pdf; 3.0 REMONDIS IAS IAR Confirmation.pdf; 4.0 REMONDIS IAS Prefeasibility Report Final.pdf

From Sch. 4(4)(6) - Disclosing p@remondis.com.au>
Sent: Monday, 17 December 2018 2:34 PM
To: Steven Tarte <Steven.Tarte@coordinatorgeneral.qld.gov.au>
Cc: Paul Byrne <Paul.Byrne@coordinatorgeneral.qld.gov.au>
Subject: REMONDIS WtE IAS Submission

Good Afternoon Steven

REMONDIS' WtE Initial Advice Statement submission is available from the following link:

http://publish.remondis.com.au/download.php?intro=BB0hqOEh15ClmrjQQKqv

Attached is a copy of an EFT Remittance confirming payment of the prescribed fee.

Thank you for your assistance to date on this matter.

Please do not hesitate to contact me with any queries or if you wish to discuss this application further.

Kind Regards
REMONDIS Australia Pty Ltd

Sch. 4(4)(6)
Manager – Landfills, Transfer Stations and Transport
Queensland Waste

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P.O. Box 213, Booval QLD 4304, Australia
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REMONDIS Australia Pty Ltd
69 Grindle Rd
Rocklea QLD 4106
Australia

17 December 2018

Coordinator General
The Department of State Development
Executive Building
1 William Street
Brisbane Qld 4000

Dear Mr Broe

RE: REMONDIS Australia Pty Ltd: Application for Coordinated Project Declaration for a Waste to Energy Facility located at Swanbank Road, Ipswich

Following the recent success of pre-lodgement meetings with your office, please find attached REMONDIS Australia Pty Ltd application for its proposed Waste to Energy Infrastructure development to be considered for declaration as a Coordinated Project under Part 4 of the *State Development And Public Works Organization Act 1971.* The appropriate lodgement fee corresponding with an application of this nature has been paid on submission.

The attached Initial Advice Statement details the proponent's proposal to develop Waste to Energy infrastructure at its existing Swanbank Renewable Energy and Waste Management Facility in Ipswich. This Infrastructure will allow REMONDIS to utilise existing waste volumes managed at the facility to generate up to 50MW of renewable base load power for Queensland households and businesses. This development will utilise 'best practice' European technology and will allow REMONDIS to increase recycling efforts, divert waste streams from needlessly consuming finite landfill space and contribute to the availability of renewable and affordable power for Queensland.

The proponent is one of the largest privately owned operators of such facilities in Europe. The proponent intends to apply its experience and expertise to develop the Swanbank project. The project represents an investment by the proponent of $400 million dollars in Queensland. It will generate 200 full time equivalent jobs during the construction phase and 80 full time equivalent jobs once complete.

REMONDIS expects to make the required submission to the Commonwealth Minister for the Environment following declaration of the project.

REMONDIS has a proven track record in the Ipswich region in relation to resource recovery and waste management and the proposal is considered to be well suited for declaration as a Coordinated Project.

If you have any queries regarding the application or wish to further discuss any aspect of the submission, please do not hesitate to contact either Sch. 4(4)(6 of my office or myself.

Yours faithfully
REMONDIS Australia Pty Ltd

Sch. 4(4)(6) - Disclosing person

General Manager QLD - Operations and Business Development

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WORKING FOR THE FUTURE

Initial Advice Statement

Waste to Energy Facility
Swanbank Road, Swanbank

Submitted by REMONDIS Australia Pty Ltd
17 December 2018

Contents

Contents

Figures

Contents

Tables

Contents

Abbreviations

Abbreviation	Descriptions
AADT	Annual average daily traffic
AHD	Australian Height Datum
BGL	Below Ground Level
CEMP	Construction Environmental Management Plan
Cth	Commonwealth
IAR	Impact Assessment Report
IED	Industrial Emissions Directive
IPS	Ipswich Planning Scheme
EIS	Environmental Impact Statement
EPBC	Environmental Protection and Biodiversity Act 1999 (Cth)
EPP (Noise)	Environmental Protection (Noise)Policy 2008
EPP (Air)	Environmental Protection (Air) Policy 2008
GHG	Greenhouse Gas
LGA	Local Government Area
NC Act	Nature Conservation Act 1992
Planning Act	Planning Act 2016
PDA	Priority Development Area
REMONDIS	REMONDIS Australia Pty Ltd
SREWMF	Swanbank Renewable Energy and Waste Management Facility
The Site	The location of the proposed development including the proposed WtE facility referred to as the 'Site'.
WtE	Waste to Energy
VM Act	Vegetation Management Act 1999 (Qld)

Appendices

Executive Summary

REMONDIS is one of Europe's largest privately owned operators of WtE facilities that produce heat, steam and generate energy. REMONDIS Australia is proposing to build Resource Recovery Infrastructure and a Waste to Energy (WtE) facility on its site at Swanbank, in area zoned for heavy industry (under the Ipswich City Plan) and adjacent to the Swanbank E gas-fired power station.

Currently, REMONDIS' Swanbank facility supplies around 12,000 MWh per annum of renewable energy to the Queensland electricity grid through a methane capture and electricity generation project.

This development will include processes to allow for the recovery of a range of recyclable products for processing and recycling. Waste material which cannot be recovered or recycled with be utilised for WtE activities rather than landfill. The proposed WtE facility will form a single component of the wider 'Swanbank Recycling Park'. The WtE technology is proven and currently operates reliably in Europe and many other countries and has a successful track record in treating the same waste streams proposed as fuel as part of this application. REMONDIS will be able to undertake recycling and recovery activities on the current waste being received at Swanbank and use the non-recyclable component to generate up to 50MW of baseload renewable electricity for Queensland households and businesses.

REMONDIS is committed to ensuring that higher order waste management opportunities (reduce, re-use and recycle) are prioritised and that the processing of waste through the proposed WtE facility will only occur when alternative recovery opportunities have been undertaken. A WtE facility which is synergistic with an existing waste disposal and recycling facility will be able to use the power and heat generated within the immediate business precinct and to attract investment, development and employment generating activities.

This Initial Advice Statement (IAS) demonstrates the suitability for 'coordinated project' determination as set out in section 26 (2), 27 and 27 (AC) of the *State Development and Public Works Organisation Act 1971* (SDPWO Act). This IAS provides information regarding the proposal and a brief description of the elements that comprise it. The IAS has been developed to provide an overview of the nature and extent of the potential environmental, social and economic impacts that may be associated with the construction and operation of the proposed project as far as they can be foreseen at this time. The IAS also identifies the key statutory approvals that may be required for the project to proceed, and identifies further environmental studies that may be required to support the project.

As a major Resource Recovery Infrastructure and Energy project requiring an investment of approximately $400 million, the Project is expected to deliver a range of positive socio-economic impacts targeting the region but extending to other population centres in South East Queensland. These include:

- Creation of employment opportunities during the planning, design, construction and operation of the Project – with current estimates of 200 Full Time Equivalent jobs during construction and up to 80 Full Time Equivalent jobs during operation;
- Project will assist the retention of jobs in the Ipswich LGA as a result of new investment and economic activity;
- Project is a strategically significant development for Ipswich in terms of supporting the city's industrial diversification;
- Facilitation of critical infrastructure to the State in advancing the resource recovery, recycling and waste management strategy;
- Assist to achieve the Queensland State Government target for 50 per cent renewable energy by 2030;
- Project adopts technology to ensure that wastes with recoverable value are not sent to landfill and, instead, are put to beneficial use; and
- Supply base load power to the domestic market.

On the basis that the Project's scale and extent is anticipated to have known environmental impacts that are able to be managed through well understood environmental risk mitigation measures, the use of an Impact Assessment Report (IAR) process under the SDPWO Act is requested as the prudent coordinated project

pathway. Given the existing approval of the wider SREWMF, the current site operations, the infrastructure that currently caters to waste storage and treatment (both on site and within the locality) and the industrial nature of the Swanbank precinct, the proposal is well suited to progress under an IAR pathway.

An aerial map of the Swanbank Renewable Energy and Waste Management Facility (SREWMF) is shown at **Figure 1**.

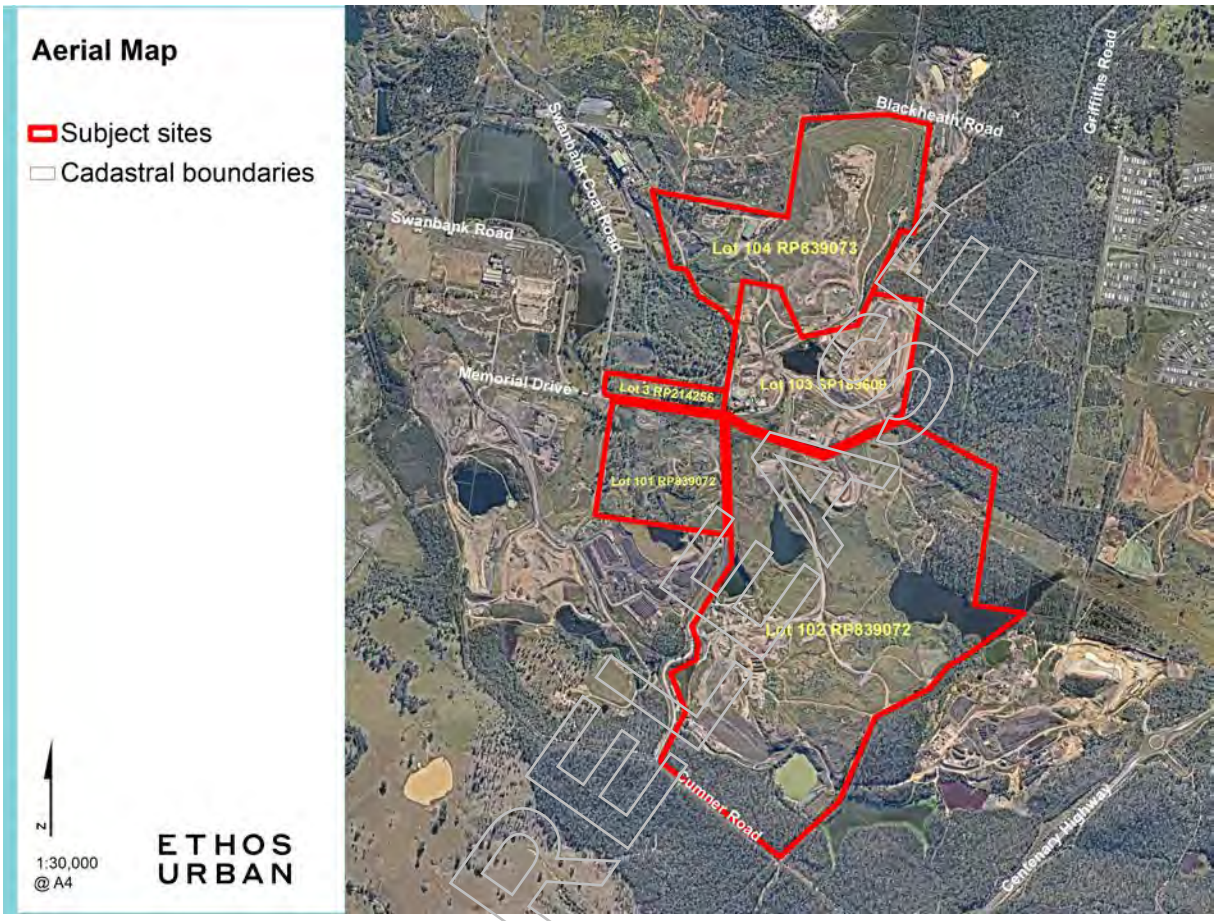

Figure 1: Site Aerial

REMONDIS has commenced implementing its Stakeholder Engagement program and will broaden the execution of this program after the Project is declared as a Coordinated Project.

This proposed WtE facility presents an opportunity for Queensland to benefit from REMONDIS' global experience, and other successful European and UK facilities, and incorporate WtE as part of the solution to sustainable, best practice waste management. Although the proposed technology is new in the context of Queensland, based on existing operational experience, REMONDIS is in a unique position to be able to provide the Coordinator General with certainty regarding the technology and provide assurance that the performance of the facility will meet Industrial Emissions Directive (IED) emissions limits and nearby sensitive receivers will not be at any risk in terms of air quality and human health.

REMONDIS has a proven track record in the Ipswich region in relation to resource recovery and waste management and the proposal is considered to be well suited for declaration as a Coordinated Project.

1.0 Introduction

1.1 Background

REMONDIS Australia (REMONDIS) is committed to diverting waste from landfill and revolutionising recycling and resource recovery at its Swanbank Renewable Energy and Waste Management Facility (SREWMF).

Waste disposal at SREWMF (Stage 1) commenced in 1998 and the landfill currently comprises seven cells, which were constructed progressively between 1997 and 2018. Although the site has operated as a landfill for many years, the subject site was previously used for open cut mining activities and is surrounded primarily by extractive industries and other waste management operations.

REMONDIS has identified that the biggest waste management issue for South East Queensland Councils is the cost of cheap landfill, which results in little incentive to look for other waste management options. Further, a business as usual approach to waste management may see most of South East Queensland's landfills with no capacity by 2040.

Waste-to-energy technology is used across the world, with countries including Germany, Japan, China and Finland using waste to generate electricity. Diverting thousands of tonnes of suitable waste away from landfill and into a best-practice WtE facility will extend the life of South East Queensland's constrained landfills and also provide an additional, baseload electricity source for Queensland residents and businesses.

Queensland has the opportunity to benefit from successful European and UK experiences and incorporate WtE as part of the solution to sustainable, best practice waste management.

1.1.1 Site Details

The SREWMF is located at 66-114 Blackheath Road SWANBANK QLD 4306 and is legally described as:

- Lot 101 on RP839072
- Lot 102 on RP839072
- Lot 103 on SP189609
- Lot 104 on RP839073
- Lot 3 on RP214256

The SREWMF includes the approved landfill footprints identified as Stage 1 and 2:

- Stage 1 is made up of Lot 103 on SP189609 and Lot 104 on RP 839073.
- Stage 2 is identified as Lot 101 and 102 on RP 839072 and Lot 3 on RP 214256.
- Stage 1 of the landfill operation comprises a number of approved individual landfill cells along with a major power easement which runs along the western and southern boundary of Stage 1B on SP 152158 and SP 127335.

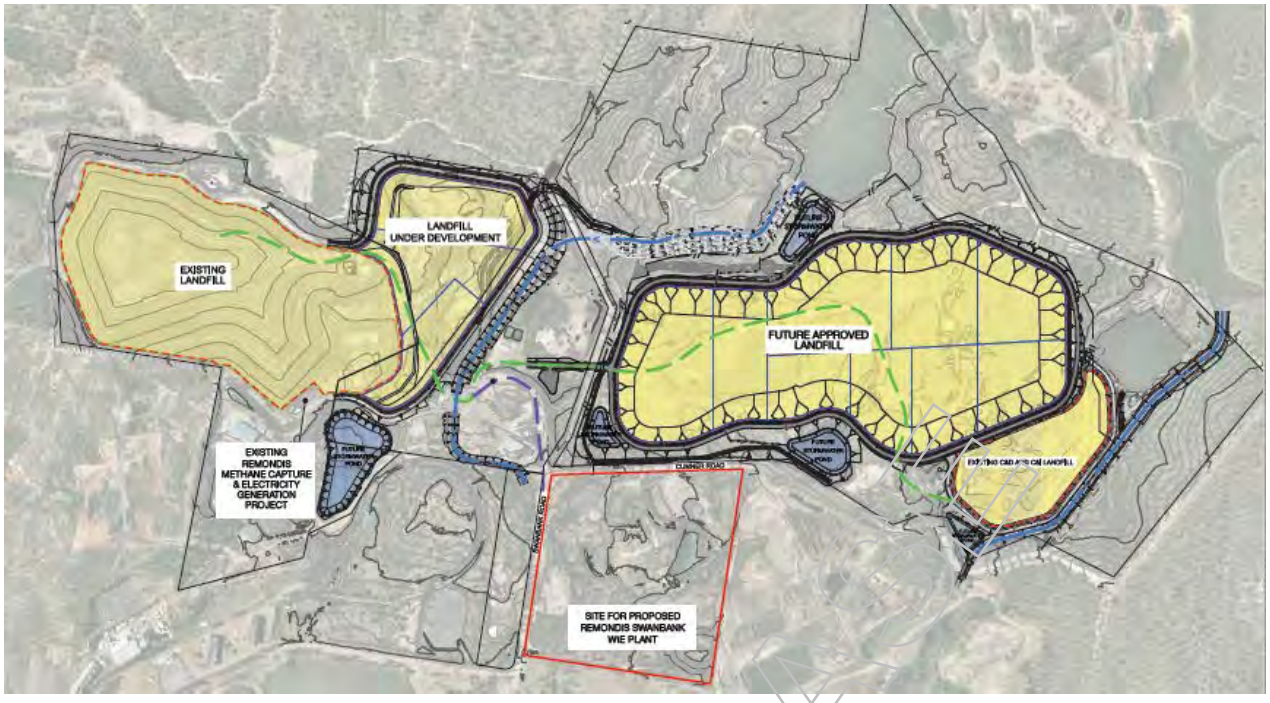

Figure 2: Swanbank Landfill – Approved Landfill Footprints – Stage 1 and 2

As identified in **Figure 3** below, the site falls within the Swanbank Approved Land Use Precincts (3 and 4) under the Ipswich City Plan for the following purposes:

1. Waste Processing, Treatment and Disposal (in accordance with Plan of Development No. 10556/001C).
2. Waste Recycling, Composting and Disposal, Land Rehabilitation, Truck Depot and Park with ancillary uses of Leachate Collection, Landfill, Gas Collection, Treatment, Storage and Disposal, Crushing of Spoil Pile Material, Vegetation Propagation for Rehabilitation and Caretakers Flat (Generally in Accordance with Plan of Development TP-61/90).

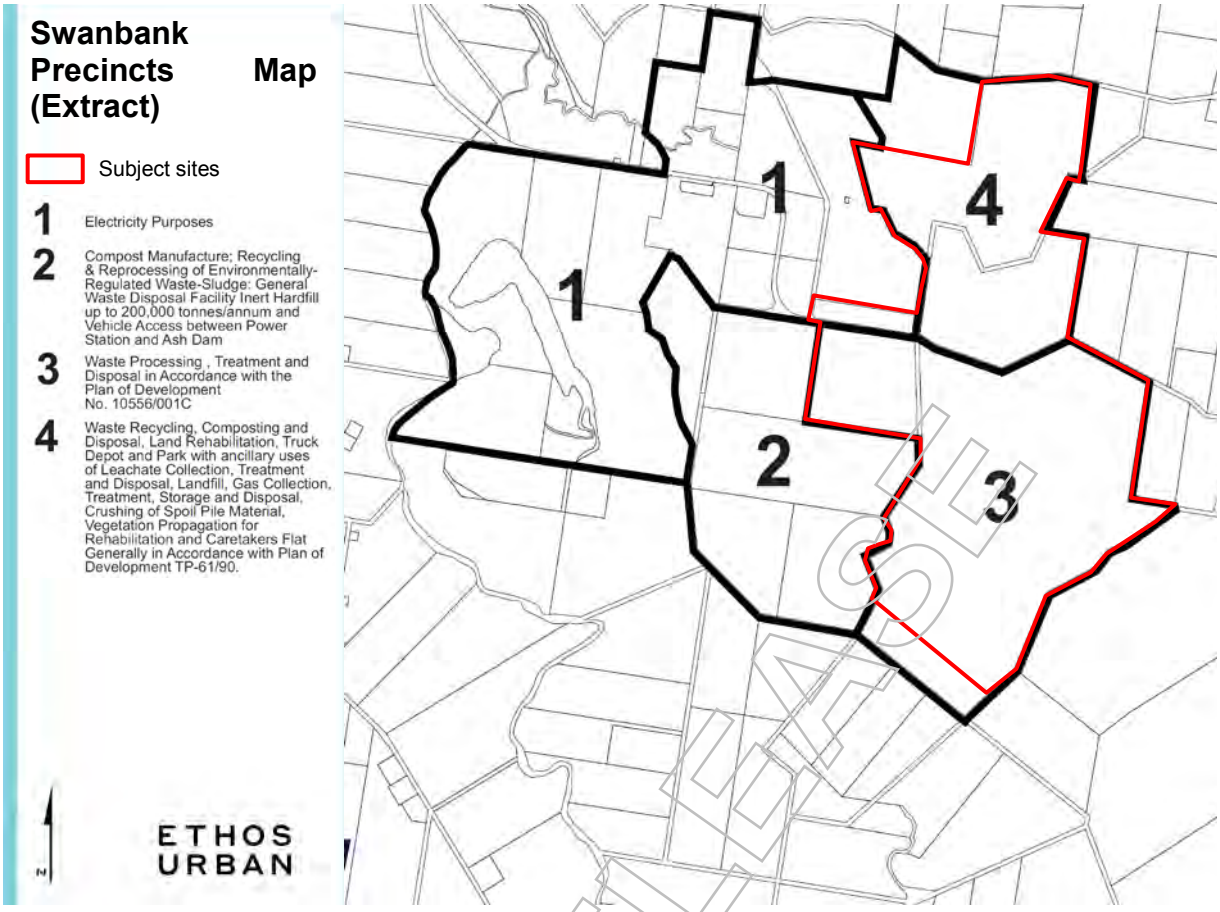

Figure 3: Swanbank Approved Land Use Precincts (Ipswich Planning Scheme)

1.2 Site Approvals

In 1990, the former Moreton Shire local government agency issued an approval for the rezoning of land identified as Stage 1 of the Swanbank site under the Moreton Shire Planning Scheme (TP-61/90).

Although subsequent planning schemes have changed zoning regimes, the wording of the original rezoning continues to be reflected in the current planning scheme. This wording indicates appropriate activities on the land as including:

- Waste recycling, composting and disposal;
- Leachate collection, treatment and disposal;
- Landfill gas collection, treatment and disposal; and
- Crushing of spoil pile material.

Land comprising of the Stage 2 of SREWMF area was granted zoning and development approval in 1990 by Ipswich City Council for activities of waste processing, treatment and disposal in accordance with plan of development 10556/001C.

The current environmentally relevant activities (ERA) approvals over the SREWMF site allow for a wide range of activities, including the following:

- Waste disposal;
- Soil conditioner manufacturing;
- Composting;
- Regulated waste storage;
- Regulated waste treatment; and
- Fuel burning.

The site has been subject to a number of planning approvals since it commenced operation as a Renewable Energy and Waste Management Facility with each extension, expansion and construction of the landfill cells requiring a subsequent approval.

It is noted that the proposed WtE facility will be located on Lot 101 on RP 839072 which forms Stage 2 of the SREWMF.

The subject site is identified within the Swanbank New Chum Land Use Concept Master Plan as shown in **Figure 4** below. The Swanbank New Chum master plan (as described within the ICC Planning Scheme Part 6.7D) is an indicative footprint for future development and is not intended to prescribe the precise boundaries of the indicative land use designations and structural elements.

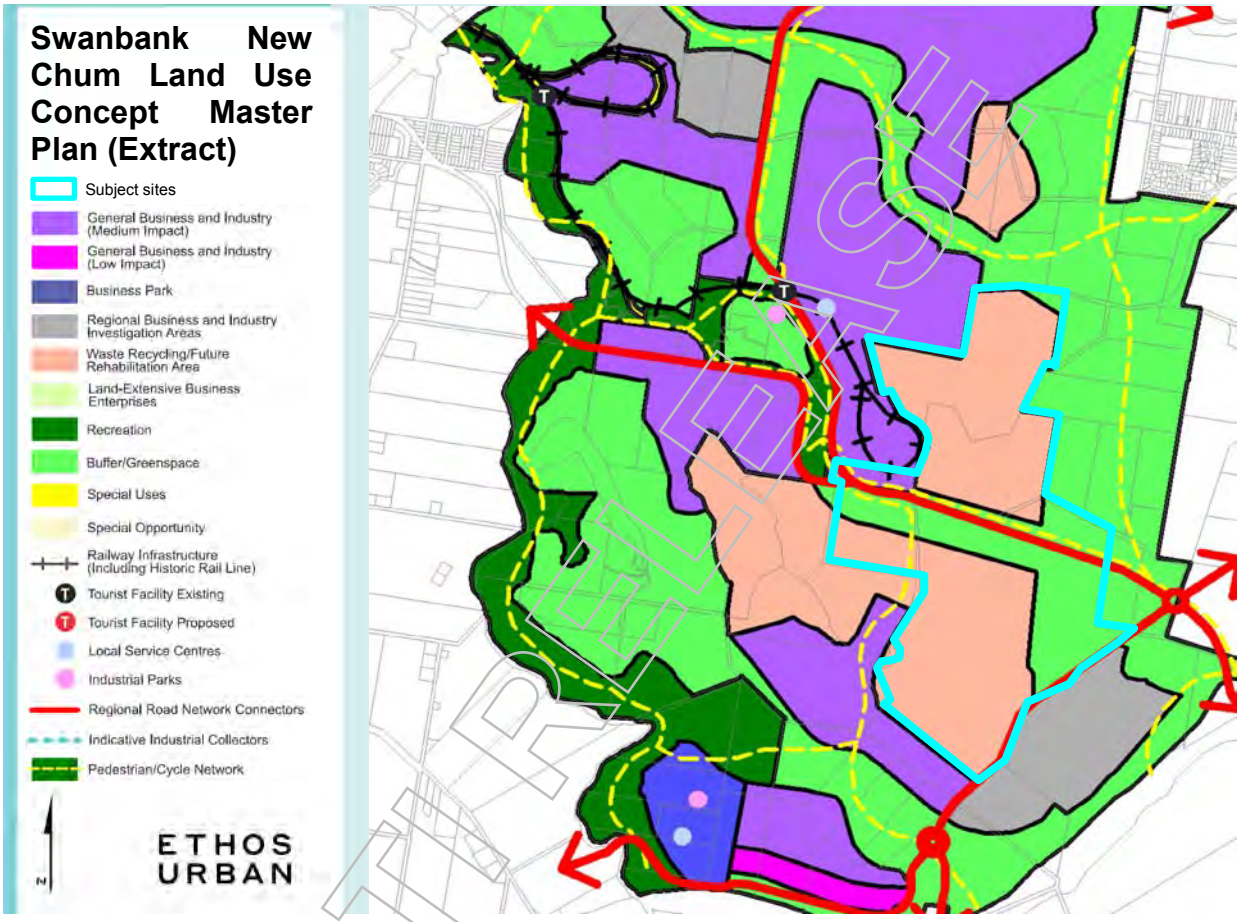

Figure 4: Swanbank New Chum Land Use Concept Master Plan (Extract)

1.3 Purpose and scope of Initial Advice Statement

The purpose of this Initial Advice Statement (IAS) is to assist the Coordinator General in determining whether the project should be declared a 'coordinated project' under Part 4 of the *State Development and Public Works Organisation Act 1971* (SDPWO Act) and the level of assessment required. The IAS identifies the potential Project impacts (positive and negative) to be investigated in detail in either the Project Impact Assessment Report (IAR) or Environmental Impact Statement (EIS).

Accordingly, the IAS provides the Project information to interested and affected stakeholders and the general public. It identifies additional approvals that may be required for the implementation of the Project once the Coordinator General assessment is complete.

1.4 Coordinated project declaration

Due to the importance of the Project, the need for a viable long term solution to waste management in South East Queensland and an alternative to traditional landfill waste management, REMONDIS believes the Project would benefit from declaration as a Coordinated Project by the Coordinator General under Part 4 of the SDPWO Act.

The proposed approach to build and operate the resource recovery WtE facility within the existing SREWMF site is expected to significantly reduce the environmental, social and economic impacts of the Project.

REMONDIS seeks confirmation from the Office of Coordinator General that the proposal's declaration as a 'Coordinated Project' is appropriate under section 27(2)(b) of the SDPWO Act as the IAS confirms that the Project will:

Require complex State or Commonwealth government approval requirements

A number of approvals from or referrals to local, State and the Commonwealth government will be required for the Project. This will require coordination of the input of a number of regulatory agencies, which are likely to include:

- Department of Natural Resources, Mines and Energy (DNRME);
- Department of Environment and Science (DES);
- Workplace Health and Safety, Queensland (WHSQ);
- Department of Transport and Main Roads (DTMR);
- Hazardous Industries and Chemicals Branch (HICB);
- Ipswich City Council (ICC); and
- Department of Environment and Energy (DoEE).

Further, SREWMF holds a current Environmental Authority (EA) for a number of Environmentally Relevant Activities (ERA's). The operation of a WtE facility at SREWMF (Lot 101) will require an application to amend an EA to include the following ERA's:

- ERA 14 – Electricity Generation (for all WtE technology operations);
- ERA 15 – Fuel Burning (for all WtE technology operations);
- ERA 55 – Regulated Waste Recycling or Reprocessing.

Be of Strategic significance to the locality, region or the State

As a major Resource Recovery Infrastructure and Energy project requiring an investment of approximately A$400 million, the Project is expected to deliver a range of positive socio-economic impacts targeting the region but extending to other population centres in South East Queensland. These include:

- Creation of employment opportunities during the planning, design, construction and operation of the Project – with current estimates of 200 Full Time Equivalent jobs during construction and up to 80 Full Time Equivalent jobs during operation;
- Project will assist the retention of jobs in the Ipswich LGA as a result of new investment and economic activity;
- Project is a strategically significant development for Ipswich in terms of supporting the city's industrial diversification;
- Facilitation of critical infrastructure to the State in advancing the resource recovery, recycling and waste management strategy;
- Assist to achieve the Queensland State Government target for 50 per cent renewable energy by 2030;
- Project adopts technology to ensure that wastes with recoverable value are not sent to landfill and, instead, are put to beneficial use; and
- Supply base load power to the domestic market.

There will be several key environmental matters that require focused assessment to fully identify impacts and develop appropriate mitigation measures.

On the basis that the Project's scale and extent is anticipated to have known environmental impacts that are able to be managed through well understood environmental risk mitigation measures, the use of an Impact

Assessment Report (IAR) process under the SDPWO Act is requested as the prudent coordinated project pathway.

Given the existing approval of the wider SREWMF, the current site operations, the infrastructure that currently caters to waste storage and treatment (both on site and within the locality) and the industrial nature of the Swanbank precinct, the proposal is well suited to progress under an IAR pathway.

The IAR pathway is also consistent with the assessment category that would be applicable to the proposal if approval were to be sought through the normal pathway under the Planning Act 2016. Under normal circumstances, the proposal would require only a code assessable application to Ipswich City Council, although that application would involve a number or referral triggers to the State as indicated above.

This code assessable status is established by Part 6, Division 5 of the Ipswich Planning Scheme, which contains the Assessment Categories and Relevant Assessment Criteria for Regional Business and Industry Investigation Zone (Table 6.4 – Making a Material Change of Use).

Table 6.4 identifies that any specified use listed in Table 6.1 for the specified precincts within Sub Area RBIA2, Swanbank New Chum have the following assessment category:

- Exempt, if located within an existing building approved or lawfully used for a specified use listed in Table 6.2 for the specified Sub Area.
- Code Assessable otherwise.

The site falls within the Swanbank Approved Land Use Precincts (3 and 4) under the Ipswich City Plan for the following purposes (as per Table 6.1 of the Ipswich Planning Scheme):

3. *Waste Processing, Treatment and Disposal (in accordance with Plan of Development No. 10556/001C).*
4. *Waste Recycling, Composting and Disposal, Land Rehabilitation, Truck Depot and Park with ancillary uses of Leachate Collection, Landfill, Gas Collection, Treatment, Storage and Disposal, Crushing of Spoil Pile Material, Vegetation Propagation for Rehabilitation and Caretakers Flat (Generally in Accordance with Plan of Development TP-61/90).*

This wording in the Ipswich Planning Scheme reflects longstanding approvals over the REMONDIS land at Swanbank which envisage a wide range of waste related activities.

Drawing upon their extensive international experience in building and operating WtE plants (described in greater detail in Section 2 of this report), REMONDIS can provide the Coordinator General with comfort that the WtE technology and process is well understood and with limited environmental effects, the Project should be considered suitable for the IAR pathway.

Although the proposed technology is new in the context of Queensland, based on existing operational experience, REMONDIS is in a unique position to be able to provide the Coordinator General with certainty regarding the concentrations and mixes of emissions associated with the technology to provide assurance that the performance of the facility will meet Industrial Emissions Directive (IED) emissions limits and nearby sensitive receivers will not be at any risk in terms of human health. The IED details rules for integrated prevention and control of pollution arising from industrial activities[15].

It also lays down rules designed to prevent or, where that is not practicable, to reduce emissions into air, water and land and to prevent the generation of waste, in order to achieve a high level of protection of the environment.

The proposal will be in a position to provide direct reference to fully operational facilities that incorporate the thermal treatment of the same type of waste feedstock proposed at Swanbank to provide the Coordinator General with certainty with regard to potential environmental impacts (such as air quality impacts and human risk estimates).

REMONDIS can demonstrate that the nominated waste streams will be separated. Higher order waste management opportunities (reduce, re-use and recycle) will be prioritised and that the processing of waste through the proposed technology will occur after alternative recovery opportunities have been undertaken.

REMONDIS has a proven track record in the Ipswich region in relation to resource recovery and waste management. When the proposal is considered in the context of the existing operation and the fact that

REMONDIS is one of Europe's largest privately owned operators of WtE plants, it is demonstrated that the proposal is a well-defined, low to medium risk project where the likely impacts are highly predictable. REMONDIS has a well-defined proposal to avoid, minimise, mitigate and/or offset those impacts that are accepted best-practice in the WtE industry. The proposal is therefore well suited to progress via the IAR pathway.

Justification for using the more targeted IAR process is summarised in Section 7.1 (potential project impacts) and Section 8.1 (Environmental Management and Mitigation Measures).

2.0 The proponent

REMONDIS is one of the world's largest waste, water and environmental management organisations, managing recyclable material, general waste, organic matter, liquids and more problematic wastes. It has been operating since 1934.

The company employs more than 30,000 staff in over 800 business locations across 30 countries and generates revenues valued at approximately AUD$11.5 billion per annum.

REMONDIS has a network of more than 800 plants and facilities that service more than 200,000 commercial and industrial customers and collect, process and market more than 30 million tonnes of recyclable materials every year.

Sustainability and the conservation of natural resources are the central features of the company's philosophy and directly influence all of REMONDIS' business activities. Across the world, REMONDIS promotes and advances efforts to sustainably improve living conditions.

REMONDIS Australia was founded in 1982 with its first operation in Penrith, NSW. Since then, REMONDIS Australia has grown steadily, with operations in Sydney, Melbourne, Brisbane, Adelaide, Perth and in regional Australia.

In Queensland, REMONDIS employs approximately 180 people, servicing more than 7,000 commercial customers, including 9 councils, and working with a network of domestic customers. REMONDIS is one of Europe's largest privately owned operators of WtE facilities that produce heat, steam and generate energy.

REMONDIS has extensive international experience in building and operating WtE plants. They own and/or operate large WtE plants that utilise various types of fuel including municipal waste, refused derived fuel and biomass. Examples of some of these plants include:

GMVA Oberhausen, Germany
The 720,000 tonnes per year WtE plant in Oberhausen Germany which produces up to 262 MW of thermal power input which is converted into electricity and additional heat production for heat supply from municipal solid waste.

Environmental control systems include SNCR, wet scrubber, entrained flow absorber.

RETA Staßfurt, Germany
The 300,000 tonnes per year WtE plant in Staßfurt Germany which produces up to 111 MW of thermal power in the form of electricity and additional heat production for heat supply from municipal solid waste.

Environmental controls include SNCR, semi-dry adsorption reactor, fabric filter.

AVG Cologne, Germany
The 700,000 tonnes per year WtE plant in Cologne Germany which produces up to 264 MW of thermal power in the form of electricity and additional heat production for heat supply from municipal solid waste.

Environmental control systems include spray drier, fabric filter, SCR catalytic reactor, wet scrubber, fixed bed hearth furnace coke filter.

BMK Biomass Plant in Lunen, Germany
A 150,000 tonnes per year biomass plant which produces 46 MW of

thermal power primarily from wood waste.

MHKW Frankfurt, Germany
525,000 tonnes per year WtE plant in Frankfurt City, Germany. The plant produces 250 MW of thermal power in the form of steam for district heating and power production for Frankfurt.

Environmental control systems include SNCR, entrained flow adsorption, fabric filter.

BEG Bremerhaven
300,000 tonnes per year plant treating MSW located near Bremerhaven, Germany. The plant produces up to 139 MW of thermal power for electricity and district heating.

Environmental control systems include SNCR, EP, quench, Entrained flow adsorption, wet scrubber, fabric filter.

In Germany, REMONDIS' Lippe Plant is the focal point and the hub of its recycling activities, where more than 330,000MWh of energy (electricity and steam) is produced each year, including 158,600MWh from a biomass-fired power plant. The Lippe Plant is Europe's largest recycling site, where annually more than one million tonnes of waste is recycled/recovered and converted into recycled raw materials, other products or energy. Along with exporting a large amount of energy, the Lippe Plant creates sufficient energy to power the whole site. Details of the Lippe Plant can be found at https://www.remondis-sustainability.com/en/acting/lippe-plant/

REMONDIS has engaged the services of Ethos Urban (Planning Consultants) to assist with the preparation of the IAS and Three Plus (Communications Consultants) to assist with the preparation of a Community and Stakeholder Engagement Plan.

The proponent's Queensland head office is located in Rocklea at the following address:

69 Grindle Road,
Rocklea QLD 4106

3.0 Nature of the proposal

3.1 Scope of the project

The project is proposed to comprise of an integrated waste receiving, processing, recovery, and power generation facility which includes a Waste to Energy (WtE) facility. WtE plants recover energy through the combustion of waste as the fuel for generating power, just as other power plants use coal or natural gas. The burning fuel creates steam to drive a turbine to create electricity. Unlike wind and solar systems, WtE plants can generate renewable baseload electricity for households and businesses irrespective of weather patterns.

At Swanbank, diverting suitable waste away from landfill (as shown in **Figure 2** below) and into a best-practice WtE facility, REMONDIS can generate up to 50MW of electricity and extend the life of constrained landfills.

REMONDIS' existing Swanbank landfill does not take any of the NSW waste streams that has been the subject of recent media coverage and public interest, and REMONDIS' WtE proposal does not rely on additional waste streams coming to the Swanbank site. Instead, REMONDIS will divert existing waste streams to a beneficial use (recovered energy).

The proposal does not seek or require further approval to the existing REMONDIS operations on site (as described in detail in Section 1.2 of this report).

Waste will be received to the facility either for recovery and recycling, or directly for use of suitable materials as a fuel source in a WtE plant. Residues from the plant's flue gas treatment system and the boiler will be processed in an on-site facility or disposed to a suitable landfill. Resulting bottom ash from the plant will be processed through a recovery facility to extract valuable resources such as metals and reused potentially as a construction material or disposed to a suitable landfill.

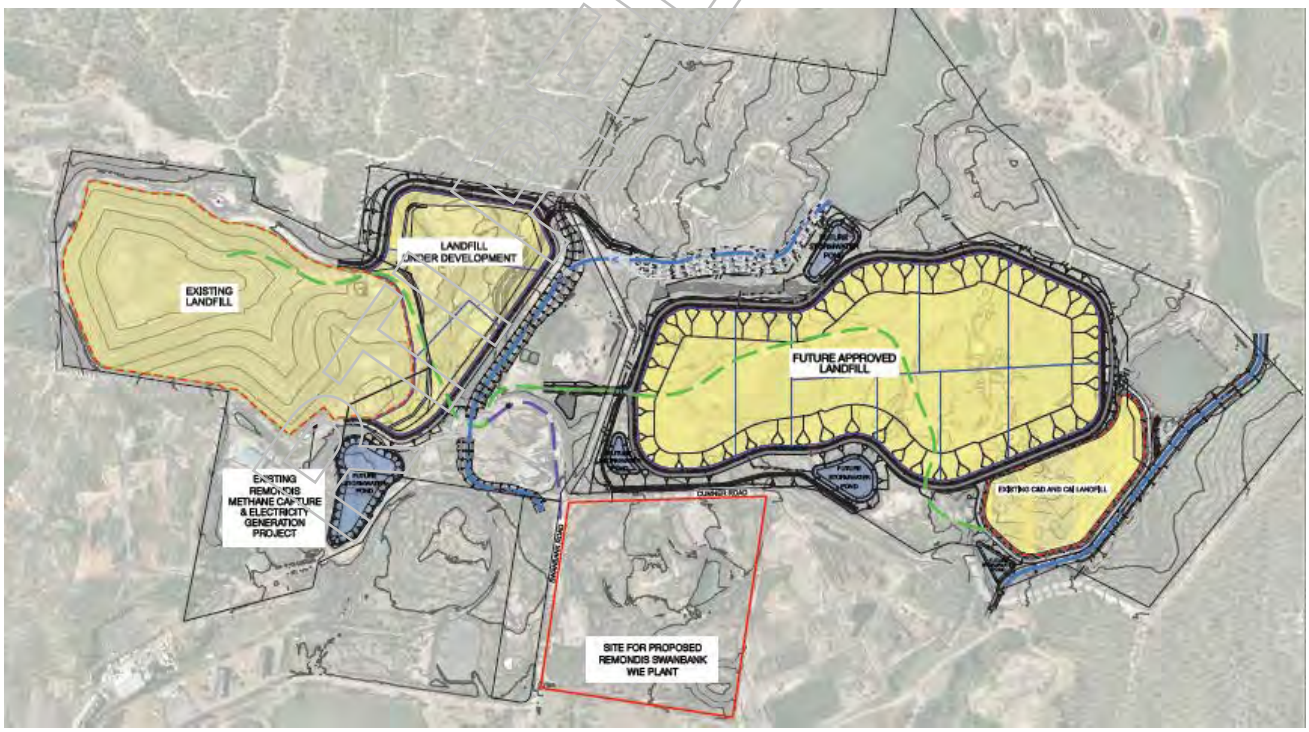

Figure 5: Swanbank landfill with proposed site for REMONDIS WtE facility shown in red

Figure 6: Artist's impression of the Waste to Energy Facility at Swanbank, Ipswich.

Figure 7: Artist's impression of the Waste to Energy Facility.

3.2 Land uses

Activities currently approved on the Stage 1 and 2 of the subject land include the following:

- Waste disposal;
- Resource recovery and recycling of waste;
- Waste volume reduction and separation;
- Biological treatment processing;
- Chemical waste treatment (including sewerage sludge treatment);
- Thermal treatment technologies; and
- Composting and organic processing.

3.3 Project need, justification and alternatives considered

The main objectives of the proposed facility are as follows:

- To manage or reduce the need/dependency for landfill in South East Queensland.
- To improve resource recovery from waste and to divert recyclables away from landfill.
- To help solve the energy and waste needs of South East Queensland.

South East Queensland faces a significant existing landfill challenge, with landfill disposal accounting for about 40% of total waste management in Australia. There are 11 landfills in South East Queensland which receive nearly four million tonnes of household rubbish, commercial and industrial waste, and construction and demolition waste a year.

The diversion of waste from landfill, reducing the potential for methane emissions, while also providing a form of low carbon, renewable energy, is now recognised by Government as making an important contribution to the targets for dealing with waste.

It is therefore considered that the 'Do Nothing' scenario is not appropriate given the established need for new energy generation, including a need for low carbon generation. The alternative to the proposed Development proceeding would be continued operation of traditional landfill waste management operations which have been found to be inefficient as a long term sustainable solution to South East Queensland's expanding population and waste generation.

The selection of the site for the proposed Development is directly related to its proximity to the Cunningham Highway, local electricity grid, and the direct synergies between the proposed Development and the adjoining REMONDIS SREWMF currently in operation which will provide a high percentage of the waste fuels.

The WtE facility does not rely on additional waste streams coming to the Swanbank site, instead it will divert existing waste streams to a beneficial use. REMONDIS does not take any of the NSW waste streams that were the subject of recent media coverage and public interest.

The Swanbank area is designated and zoned as a significant business and industrial area of the city of Ipswich and is identified as having preferred development outcomes for industry with high energy uses.

WtE technology is used across the world, with countries including Germany, France, Swiss, USA, Japan, China, Denmark, Norway and Finland using waste to generate electricity. Diverting thousands of tonnes of suitable waste away from landfill and into a best-practice WtE facility will extend the life of South East Queensland's constrained landfills and also provide an additional, baseload electricity source for Queensland residents and businesses. Queensland has the opportunity to benefit from successful European and UK experiences and incorporate WtE as part of the solution to sustainable, best practice waste management. Examples of plants operated by REMONDIS are provided in Section 2.0.

It should also be noted that other Australian States have WtE facilities progressing through the approval stages, with some facilities expected to be operational within the next few years. Examples of Australian facilities include:

Australian Paper

- Location: Latrobe Valley Victoria
- Proposal: 225MW thermal energy from waste
- Input: 650,000 tonnes per annum of MSW and C&I waste
- Status: Works approval application submitted with EPA Victoria.

Recovered Energy Australia

- Location: Laverton North, Victoria
- Proposal: 10MW gasification to energy plant
- Input: 200,000 tonnes per annum of MSW
- Status: Design and application stage.

Mt. Piper (Energy Australia and RE Group)

- Location: Portland, New South Wales
- Proposal: 27MW energy from waste
- Input: 200,000 tonnes per annum of waste
- Status: Planning / EPA decision pending. Expected 2019.

Phoenix Energy Australia

- Location: Naval Base, Western Australia
- Proposal: 36MW energy from waste
- Input: 400,000 tonnes per annum
- Status: Approved. Expected to be operational by 2021

New Energy Corporation Pty Ltd

- Location: East Rockingham, Western Australia
- Proposal: 27.8MW energy from waste
- Input: 300,000 tonnes per annum from MSW, C&I and C&D waste
- Status: Currently awaiting approval

New Energy Corporation Pty Ltd

- Location: Port Headland, Western Australia
- Proposal: 18.5MW energy from waste
- Input: 70,000-130,000 tonnes per annum
- Status: Approved. Operational 2019.

3.4 Components, developments, activities, and infrastructure that constitute the project to be declared coordinated

The proposed development involves the construction and operation of resource recovery infrastructure and WtE Facility on the REMONDIS SREWMF, in an area appropriately zoned for heavy industry and adjacent to the Swanbank power station and with the infrastructure in place to operate a power station.

WtE plants recover energy through the combustion of waste as the fuel for generating power, as shown in a simple process diagram in **Figure 8** below.

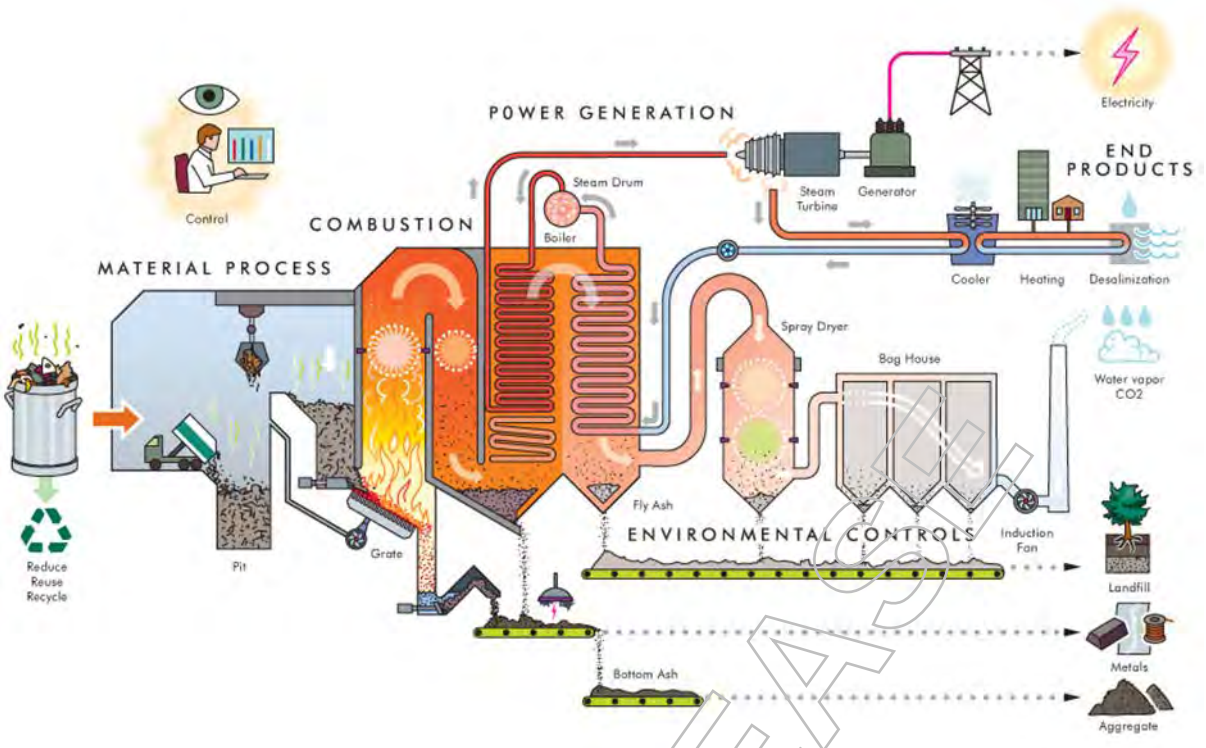

Figure 8: Simple Waste to Energy process

(Source:https://www.ct.gov/deep/lib/deep/waste_management_and_disposal/solid_waste/transforming_matls_mgmt/resources_recovery_task_force/crra_operational_review_report_110813.pdf)

3.5 Process Description

Resource Recovery / Sorting Facility

Waste received to site in a resource recovery / sorting area where the waste is sorted into recoverable and non-recoverable fractions. Recoverable waste will be collected and transported to suitable recycling facilities and non-recoverable wastes will be further sorted and transferred into the Receival / Tipping Hall.

Receival or Tipping Hall

Waste is received at the facility into the receiving or tipping hall. This hall is fully enclosed and maintained under negative pressure to minimise dust and odour emissions. The air in the tipping hall and waste bunker area is used as combustion air for the process to effectively prevent emissions.

Waste Bunker

The waste is tipped via multiple unloading bays into a large waste bunker which has enough capacity for storage of waste for several days. While no waste deliveries take place, the unloading bays are closed and sealed. Waste is fed directly by crane from this bunker into the combustion chamber.

Grate / Combustion Chamber

The combustion chamber is a highly specialised and large piece of equipment that utilises the reciprocating grate technology to move the waste through the combustion chamber while allowing combustion air to flow through the waste. Multiple combustion zones, that are separately controlled and supplied with combustion air, ensure an entire burnout of the waste. The hot flue gas from the combustion chamber goes through a secondary combustion chamber (post-combustion chamber) to finally ensure complete combustion.

Bottom Ash Conveyer

The entirely burned out waste falls as ash from the end of the combustion grate into the deslagger. The deslagger not only cools down the hot ash with water but also insulates the combustion chamber from the surrounding area, therefore preventing emissions. The bottom ash conveyer subsequently transports the ash out of the system, where it is taken away for re-processing and re-use.

Boiler or Heat Exchange Unit

This boiler unit (which comprises of a multi-pass heat exchanger system) takes the hot flue gas from the combustion chamber and transfers its thermal energy to the water-steam-cycle, where water evaporates and turns into steam. The steam is super-heated, normally to around 400 – 430°C and high pressures of about 40 bar. The super-heated steam is then utilised in a steam turbine to generate electricity.

Flue Gas treatment

The flue gas, after passing through the boiler units, will pass through several treatment steps which include selective non catalytic reduction (SNCR) by utilizing urea or ammonia waster to remove NOx gases, injection of lime and activated carbon to remove acidic gases, heavy metals, dioxins / furans and other organic pollutants and a baghouse filter to remove reaction products and particulates. The flue gas treatment system will be fully compliant with current European emission limits for WtE plants. It will meet the requirements of the IED.

Water Steam Cycle with Steam Turbine

The turbine and generator units turn the super-heated steam into electricity. The steam is condensed back and re-used in the process. Depending on the design of the turbine, steam can be extracted in various pressure levels depending on the intended end use.

Stack

Purified flue gases will be emitted via a stack. The height of the stack will be determined by dispersion modelling.

Plant Outputs

Apart from electricity, steam and heat, there are three main outputs from the WtE process:

Bottom Ash

The bottom ash is processed to recover metals and the resulting aggregate is re-used in various applications (for example: road base). Bottom ash volumes are generally 16-22% of the input waste volumes.

Fly Ash

The fly ash is collected from the boiler and flue gas treatment system. The ash is stabilised, if required, and disposed to REMONDIS' licenced landfill. Fly ash volumes are generally 2-3% of the input waste volumes.

Flue Gas Emissions

The gas emissions leaving the stack will be monitored continuously by a computerised system that complies with IED regulations. They will also be spot tested as required by relevant regulations for various contaminants such as heavy metals, dioxins and furans. In Europe, it is best practice and common for real time gas emissions data to be transferred to the local Environmental Authority responsible for the regulatory supervision of the facility. It is also recommended to continuously measure mercury to obtain a best practice removal efficiency.

3.6 External infrastructure requirements

The SREWMF site can be accessed from the Cunningham Highway via Swanbank Road. Construction traffic will primarily occur via this road.

Existing power and water supply on site will suitably meet the requirements of construction activities.

The activities of the WtE facility will require connection to the existing power grid system. This connection will be negotiated with the relevant parties prior to project commencement as it will be required to finalise design plans.

These connections will be undertaken in line with all necessary state and federal guidelines and permit systems. It is expected that this connection will extend past the boundaries of the existing Swanbank facility as required by the infrastructure system.

3.7 Timeframes for the project

The proposed commencement and completion of the WtE facility is outlined in the table below.

Table 1: Timeframe

Activity	Timeframe
Coordinated project and DES approvals.	2018-2019
Detailed Design and Approvals.	2019-2020
Construction and quality control.	2021-2023
Implementation and site operations commence.	2024-2025

3.8 Construction and operational processes

Overview of key construction and operational requirements:

- Access to water supply;
- Road network;
- Waste feedstocks;
- Connection to power grid;
- Environmental testing and guidelines.

The key project components and activities required to provide the Resource and Recovery and WtE facility at Swanbank include:

- Construction and Enabling Works:
  - Site establishment;
  - Bulk earthworks;
  - Piling and foundations;
  - Services location and reticulation;
  - Internal and external road works; and
  - Car parking and other civil infrastructure.
- Main Construction Works:
  - Site layout and building works;
  - Structure works:
    - Resource Recovery / Sorting Facility;
    - Transport/loading infrastructure for the transport of recyclables;
    - Tipping hall;
    - Waste bunker;
    - Grate / Combustion Chamber;
    - Boiler and boiler house;
    - Flue Gas treatment;
    - Turbine / turbine hall;
    - Deslagger;
    - Ash conveyor belt;
    - Stack;
    - Ash processing.
- Weighbridges;
- Building Materials/Finishes;
- Office and amenities for staff and contractors;
- Parking and traffic management infrastructure;
- Landscaping and environmental development to support local ecosystems.

3.9 Workforce requirements during the construction and operation

Workforce numbers are estimated to be up to 200 Full Time Equivalent jobs during construction and up to 80 Full Time Equivalent jobs during operation.

3.10 Economic indicators

Based on concept design work undertaken to date, the Project's capital expenditure is approximately $400 million. The cost estimate will be further developed as part of the Project's detailed design process.

3.11 Financing requirements and implications

The proposed REMONDIS WtE facility will be a private sector investment. The project is not reliant on the Queensland State Government Resource Recovery Industry Development Program (RRIDP). REMONDIS has the necessary capacity to fund the project.

4.0 Location of the key project elements

4.1 Location

The SREWMF is located at 66-114 Blackheath Road SWANBANK QLD 4306 and is legally described as:

- Lot 101 on RP 839072;
- Lot 102 on RP 839072;
- Lot 103 on SP 189609;
- Lot 104 on RP 839073;
- Lot 3 on RP 214256.

The project area is located within the local context is shown below in **Figure 9.**

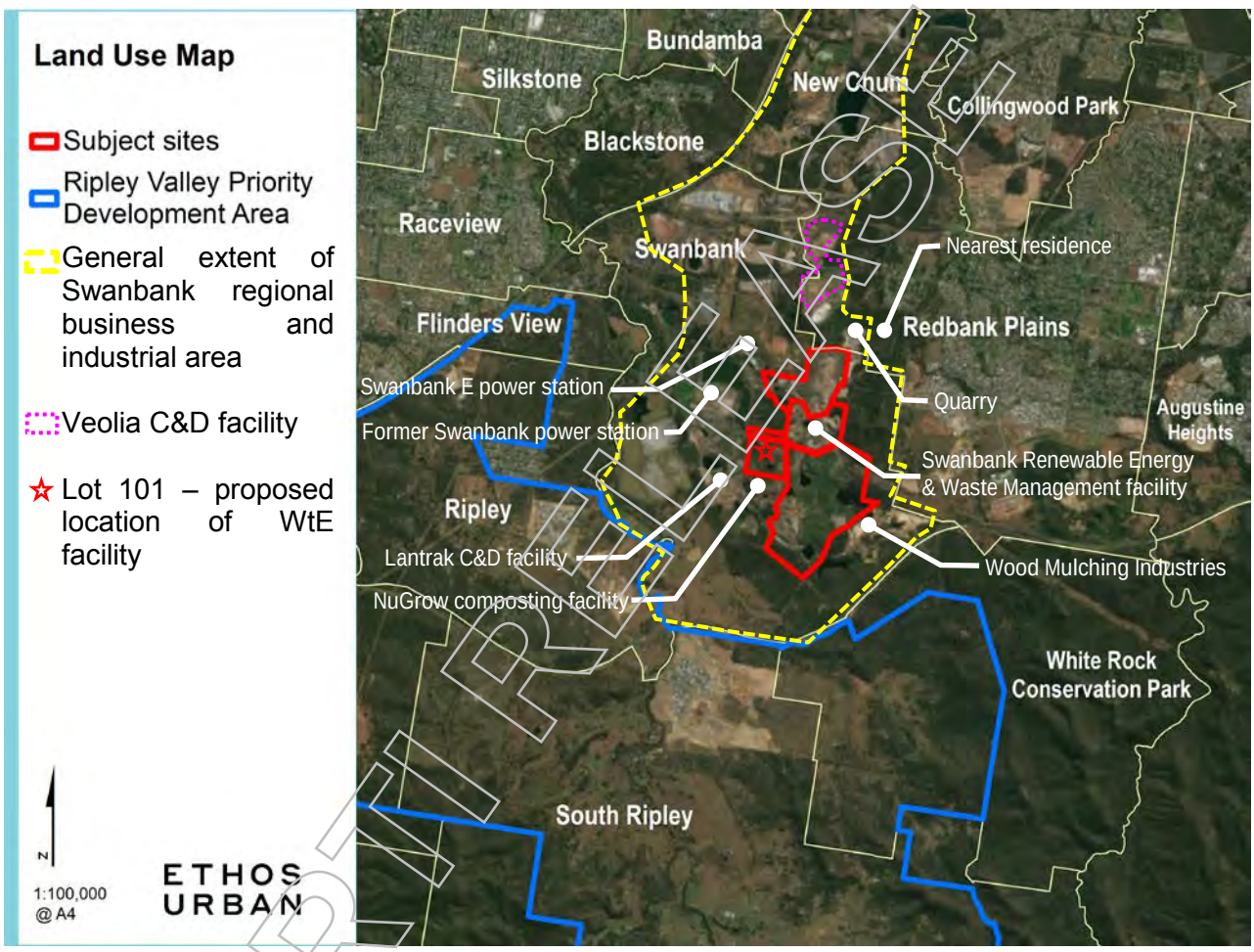

Figure 9: Surrounding features

4.2 Tenure

The proposed WtE facility is to be located on Lot 101 on RP 839072 however the proposal will include the wider SREWMF which includes Stage 1 (Lot 103 on SP 189609 and Lot 104 on SP 839073) and Stage 2 (Lot 101 and 102 on RP 839072 and Lot 3 on RP 214256).

The SREWMF is owned freehold by REMONDIS and is surrounded by freehold land. The site is zoned RBIA02 - Regional Business & Industry Investigation (New Chum) under the provisions of the Ipswich Planning Scheme, located within the City of Ipswich Local Government Area.

5.0 Description of the existing environment

5.1 Natural environment

5.1.1 Land

The SREWMF and the area around the Project site are located within the Swanbank regional business and industrial area as defined in the Ipswich City Plan and are characterised by disturbance from former coal mining operations and other ongoing industrial activities.

The entire site is included in the Regionally Significant Business Enterprise and Industry Area under the planning scheme. Within this area, Lots 101, 103 and 104 are located within the Regional Business and Industry Investigation Zone. Lot 102 is also partly included in this zone, with the eastern part of this lot included in the Regional Business and Industry Buffer Zone. Lot 3 is included in the Regional Business and Industry (Medium Impact Sub Area) Zone.

These areas primarily accommodate regional business enterprise and industry employment opportunities, as well as the buffer areas for these uses, that are generally compatible and create a high standard of amenity. Although the proposed land use is not typically associated with high amenity, it is consistent with and will form part of the existing on-site Swanbank landfill operations.

The zoning for the site, as shown below in **Figure 10**, is also consistent with the inclusion of the site in the Swanbank New Chum Land Use Concept Master Plan, where the site is identified as being part of the waste recycling/future rehabilitation, general business and industry (medium impact) and buffer/greenspace areas.

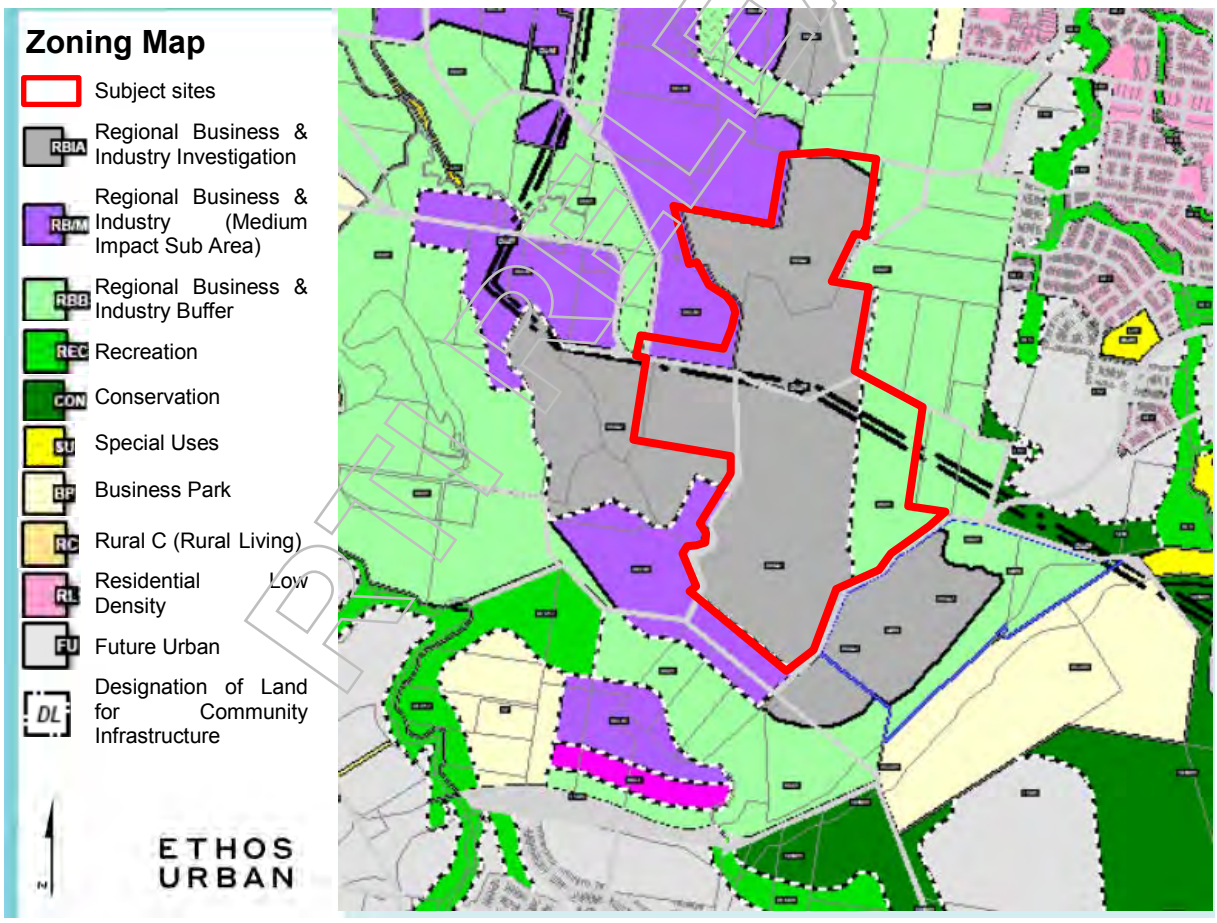

Figure 10: Zoning Map

Figure 11 Site Aerial with Approved Stages of SREWMF

The subject site is also included in the following planning scheme overlays:

- Key Resource Areas, Buffers and Haul Routes (OV02): The subject site includes key resource areas and haul routes/buffers;
- Mining Influence Areas (OV03): The subject site includes mining influence constrained areas, areas of surface disturbance (including open cut mining) and areas that have been affected by underground mining (including shafts and tunnels);
- Difficult Topography (OV04): The subject site includes slopes >25%;
- Defence (Area Control) Regulations and Obstruction Clearance Surfaces (OV7a): The subject site is included in the 45 and 90 metre maximum building height limitation areas;
- Operational Airspaces, Wildlife Attraction and Lighting Issues (OV07b);
- Swanbank Power Station Buffer (OV10);
- High Pressure Oil and Gas Pipeline (OV11): Lot 104 includes a gas pipeline and associated buffer area; and
- High Voltage Electricity Transmission Lines (OV13).

As previously identified, the site incorporates the following lots the form the existing operations:

- Lot 103 on SP 189609 – is currently used for landfill support operations including site offices, weighbridge and works depot;

- Lot 104 on RP 839073 – is currently used for Stage 1 operations, including waste disposal and landfill gas electricity generation;
- Lot 102 on RP 839072 - the location for the proposed Stage 2 landfill. Some Construction & Demolition (C&D) and Commercial and Industrial (C&I) waste disposal currently occurs within the Stage 2 Hardfill area;
- Lot 101 on RP 839072 – proposed location of the WtE facility;

The following key industrial features surround the SREWMF site:

- Swanbank E gas-fired power station to the west;
- the former Swanbank B coal power station and associated cooling pond is located to the west;
- a construction and demolition (C&D) waste management facility, operated by Lantrak, is located to the south west;
- a C&D waste management facility, operated by Veolia Environmental Services, is located to the north (no longer operational);
- a construction and demolition (C&D) landfill, operated by Biorecycle, is located to the west;
- a waste transfer station, operated by Biorecycle, is located to the west;
- a quarry is located to the northeast, owned by PGH;
- a composting facility, operated by Wood Mulching Industries, is located to the southeast;
- a composting facility, operated by NuGrow, is located to the southwest;
- extractive industries and other waste management operations;
- Other nearby major land uses include electricity generation at the Swanbank Power Station.

As demonstrated above, the proposal is entirely consistent with the nature of land uses within the locality.

The site is located on a low, north to south orientated ridge, which extends from a range of hills (up to 350 metres elevation) to the south of the site. The topography of the area can generally be described as low hills and includes patches of vegetation and several drainage paths, whilst being characterised by the mining activities that previously occurred on the site.

The site is currently connected to the local water reticulation network, electricity and telecommunications.

The SREWMF is separated from the nearest proposed residential areas by the Regional Business and Industry Buffer, which would help to reduce potential amenity impacts associated with industrial activities. The nearest existing and future residential locations are approximately 1,500m from the proposed WtE facility site.

The SREWMF is located within an area characterised by and planned for industrial land use under the planning scheme, as indicated in **Figure 12**.

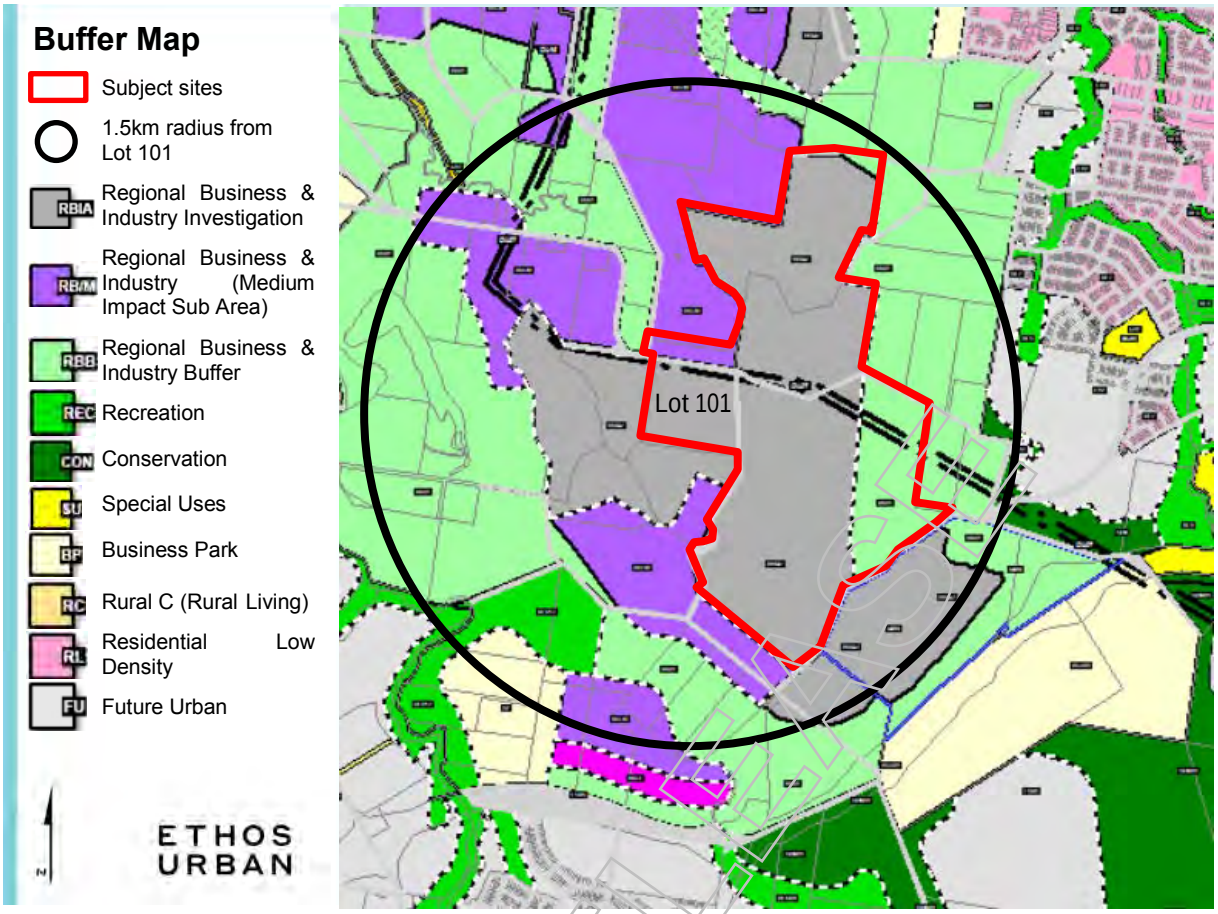

Figure 12: Buffer Map

Areas to the east of the SREWMF are zoned as an emerging community, and are forecast to be developed within the next ten years. The nearest residents are located approximately 1,500 m to the east of the Lot 101.

The Ripley Valley PDA is located to the south of the SREWMF as shown in and some areas of the PDA are expected to be developed over the next ten years.

The visual character and landscape of the SREWMF, located within the Swanbank industrial area, is characterised by former coal mining and more recent industrial activity.

The SREWMF is located at the end of Swanbank Road. Typically, traffic at the site is destined for the facility, and there would be minimal passing traffic. The existing landfill is visible from the end of Blackheath Road, which is a no-through road, and would not receive through traffic.

5.1.2 Water

Surface water features

The SREWMF site is located on a low, north-south running ridge, which extends from a mountain range (up to 350 m elevation) to the south of the site. The Bremer River is located approximately 8.5 km north of the site, and Bundamba Creek is approximately 2.5 km west of the site. The topography of the area can generally be described as low hills.

The site is located in the west-draining catchment of Oaky Creek; runoff form the site flows to the Swanbank Power Station cooling water dam located on Oaky Creek. Oakey Creek flows into Bundamba Creek approximately 1 km downstream of the cooling water dam, and Bundamba Creek flows into the Bremer River approximately 14.5 km downstream from there.

Bundamba Creek flows through a modified catchment consisting of grassland and sections of naturally vegetated channel through urban areas. Six Mile Creek is northeast of the existing SREWMF Stage 1 landfill, and does not receive runoff from the site.

Regional flooding regime

The site is located at the head of the Oaky Creek/Bundamba Creek catchments, and is outside the Bremer River floodplain. Flood modelling undertaken by Ipswich City Council indicates that Lot 101 is not affected by regional flooding from the Bremer River or other waterway.

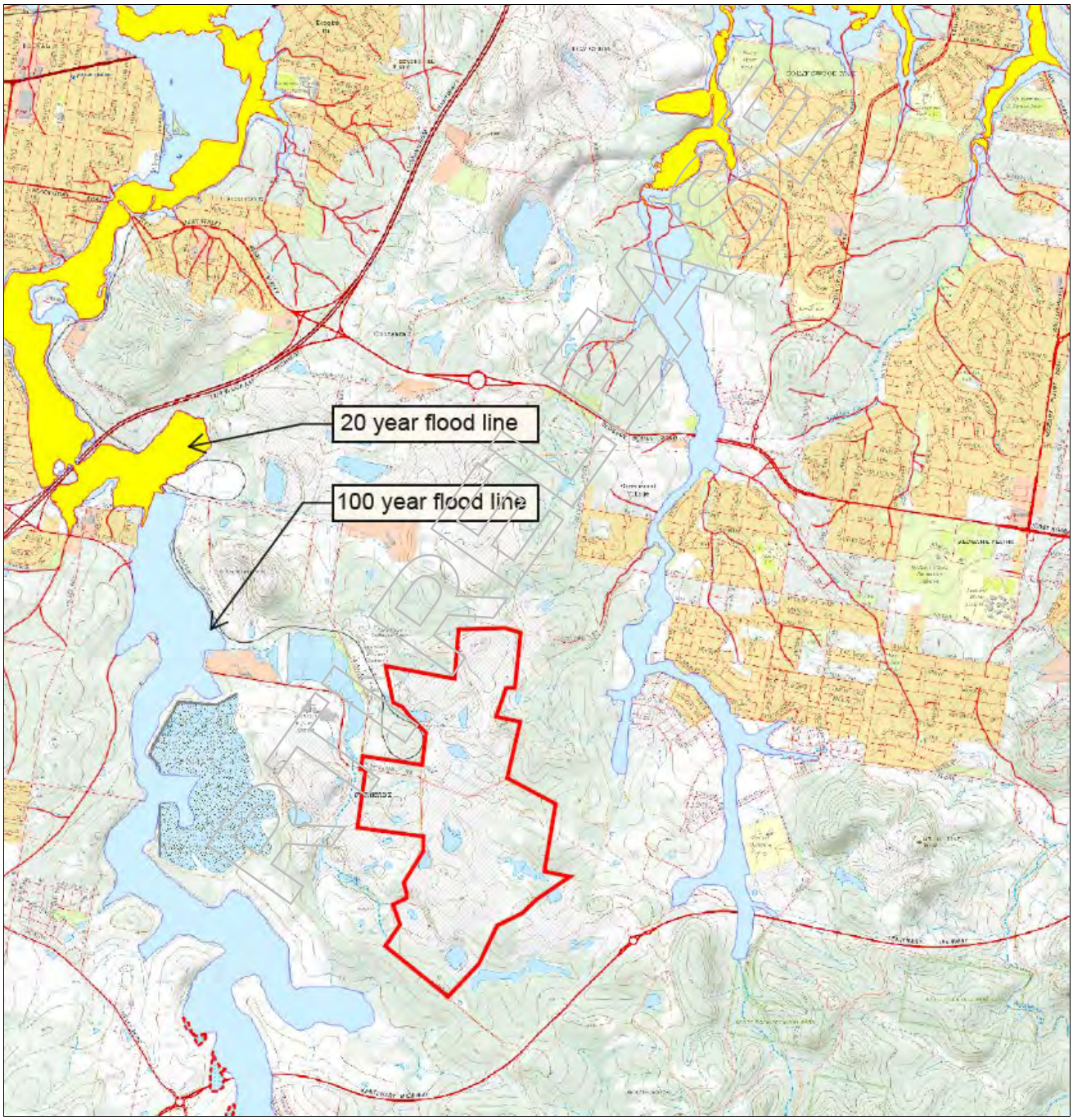

Figure 13: **Regional Flood Plan**

Climate and meteorology

This section describes the existing climate for the Swanbank area. Climate data is readily available from the Bureau of Meteorology (BOM) from the Amberley Allied Meteorological Office (AMO) weather station, situated 11 km west of the SREWMF. Records of climate data are available for the AMO weather station from 1941; this significant historical collection of data provides a reliable understanding of climatic averages.

Temperature

The Swanbank facility is located in a subtropical region of Australia and experiences varying climates over the year. Warm and humid summers are experienced with temperatures typically varying from approximately 19°C to 31°C, with highs reaching 44°C and lows reaching 19°C. Winters experienced in this area are typically mild and dry with temperature varying from 5°C to 22°C. Lows experienced during winter have been as low as -5°C and as high as 33°C. Recorded monthly temperatures are represented in **Figure 14**.

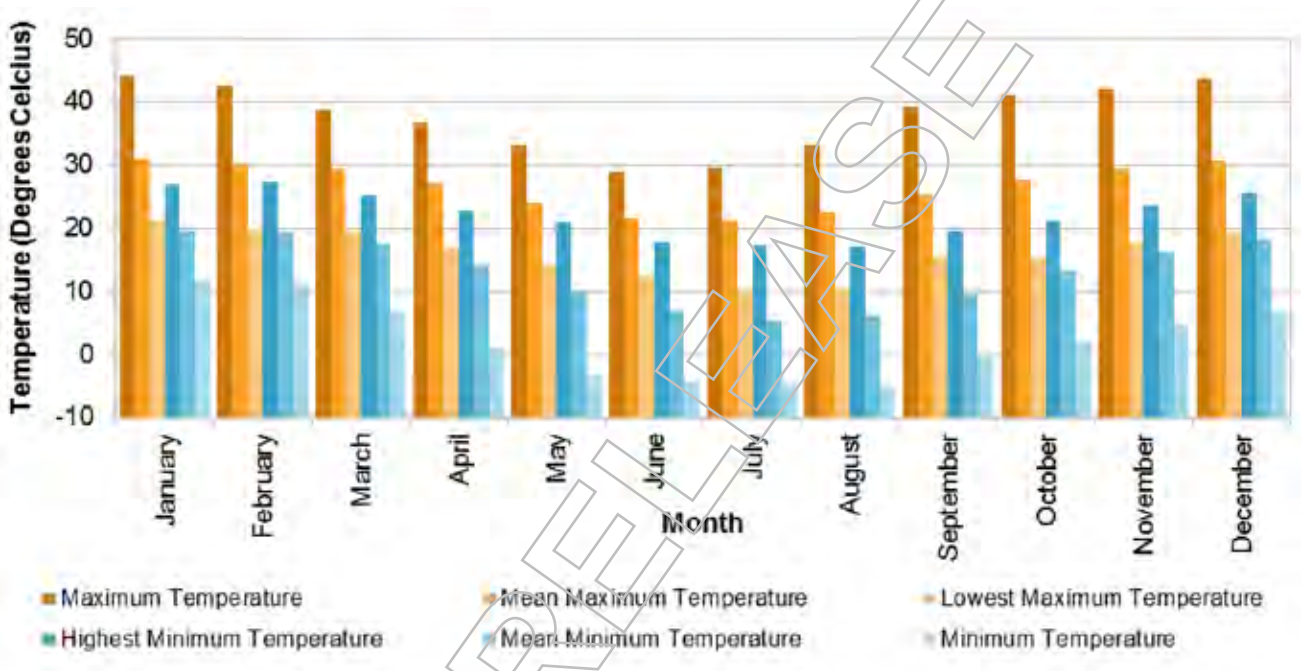

Figure 14 Monthly temperature statistics

Precipitation

The area receives greater volumes of rainfall in the warmer months and less in the cooler months, although this can vary and the cooler months can be known to produce wet periods, particularly in autumn. The warmer months in southeast Queensland typically produce a wetter climate because of the increased humidity in the atmosphere.

The highest daily rainfall for this region was in January 1974 with 240 mm. The monthly rainfall data for Amberley AMO is provided in **Figure 15**.

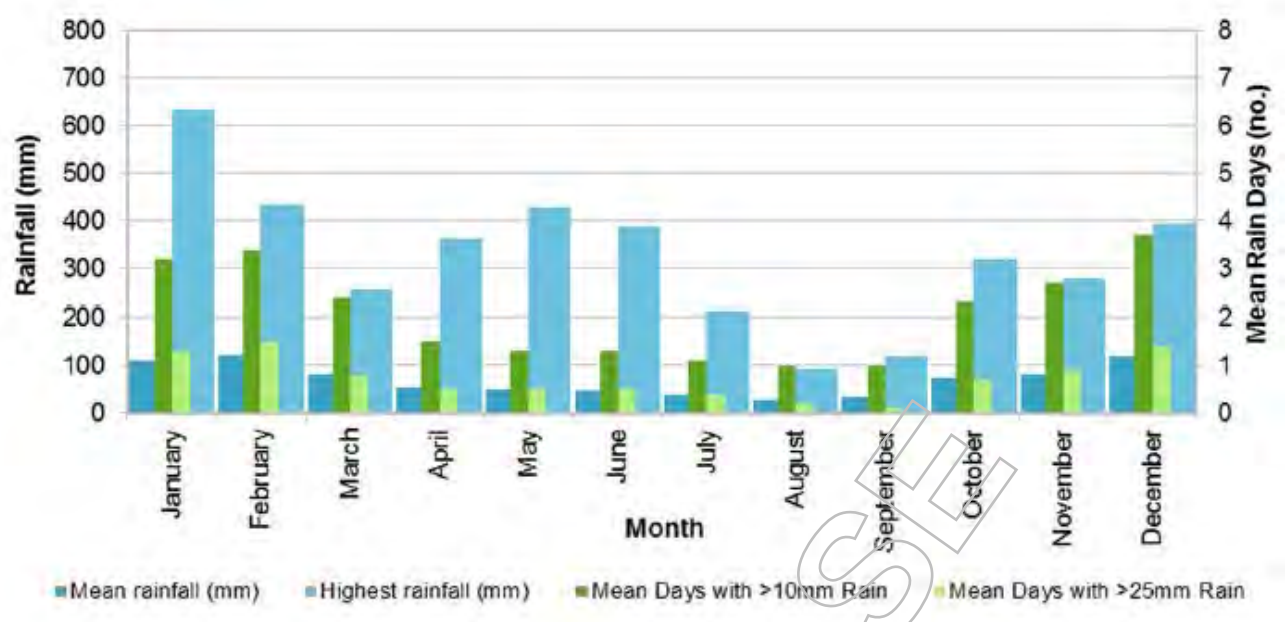

Figure 15 Monthly rainfall statistics

Wind

Wind speeds vary by season and throughout the day. The mean wind speeds for 9 am and 3 pm are provided in **Figure 16** to show the variation of wind speeds throughout the year and between morning and afternoon.

Afternoon wind speeds are typically 6 to 10 km/h greater than those in the morning, as shown in **Figure 17**. The historical records indicate a seasonal variation in wind speed, similar to temperature and rainfall. Typically east to south easterly winds are more dominant in the warmer months in the morning, shifting to east to north easterly in the afternoons. The cooler months receive more dominant winds from the south and west.

Figure 16 Monthly wind statistics

Noise / Vibration, light and air quality

A further Air Quality Impact Assessment will be prepared as part of the next phase of the application.

5.1.3 Flora and Fauna

A detailed Ecological Impact Assessment in relation to the proposed use of Lot 101 for the purpose of a WtE facility will prepared as part of the detailed documentation phase of the application.

5.2 Social and economic

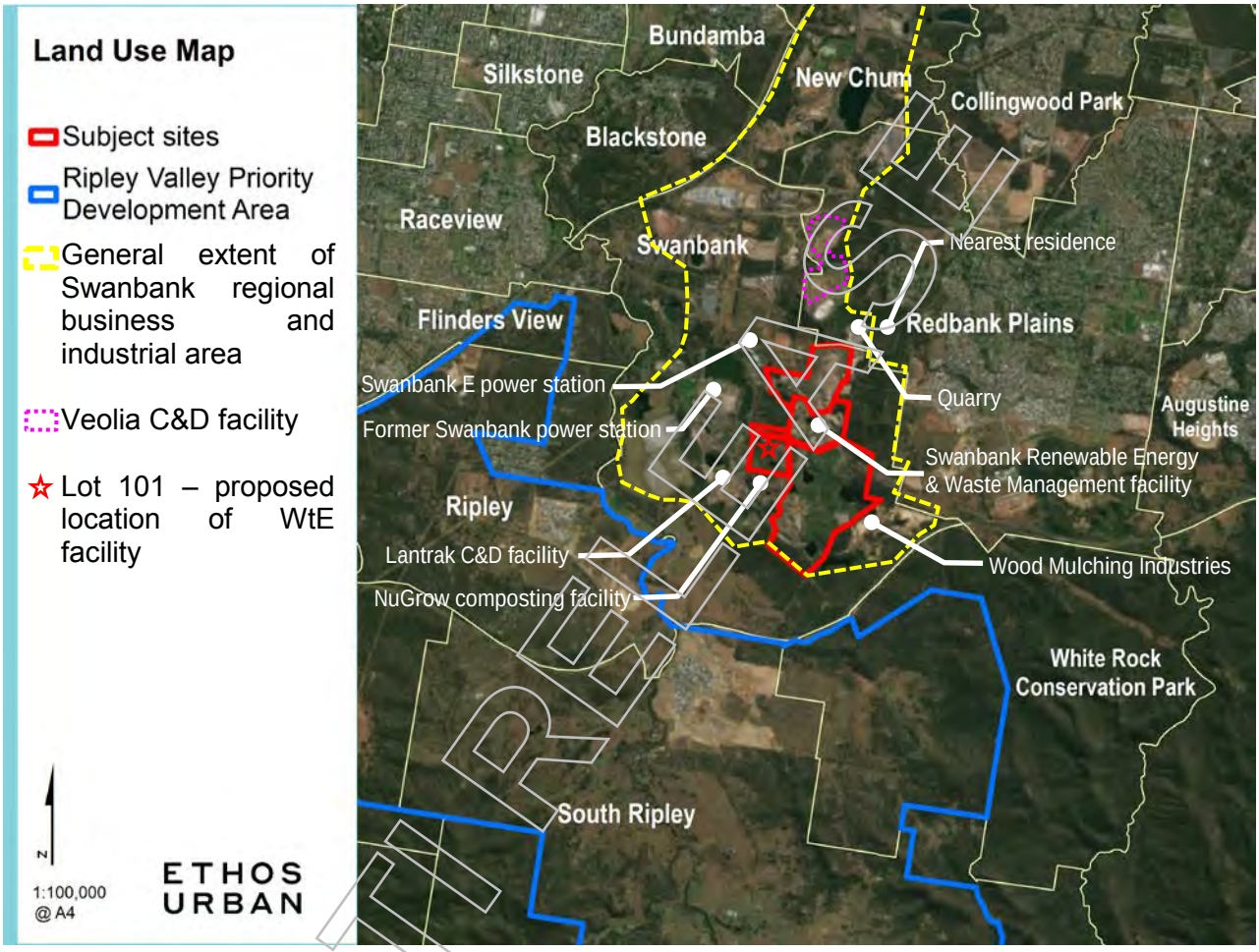

Figure 17 Surrounding features

Ripley Valley to the south, in its current form, exists as a small community of under 1,000 residents. The Ripley Valley Priority Development Area (PDA) has been identified by Economic Development Queensland (EDQ) is an opportunity to provide approximately 50,000 dwellings to house a population of approximately 120,000 people however the implementation plan for the does not envisage the forecast population to eventuate for upwards of 25-30 years.

The more established suburb of Redbank Plains is located to the east of the SREWMF, beyond the Regional Business and Industry Buffer zone to nearby sensitive land uses, as shown in **Figure 20** below.

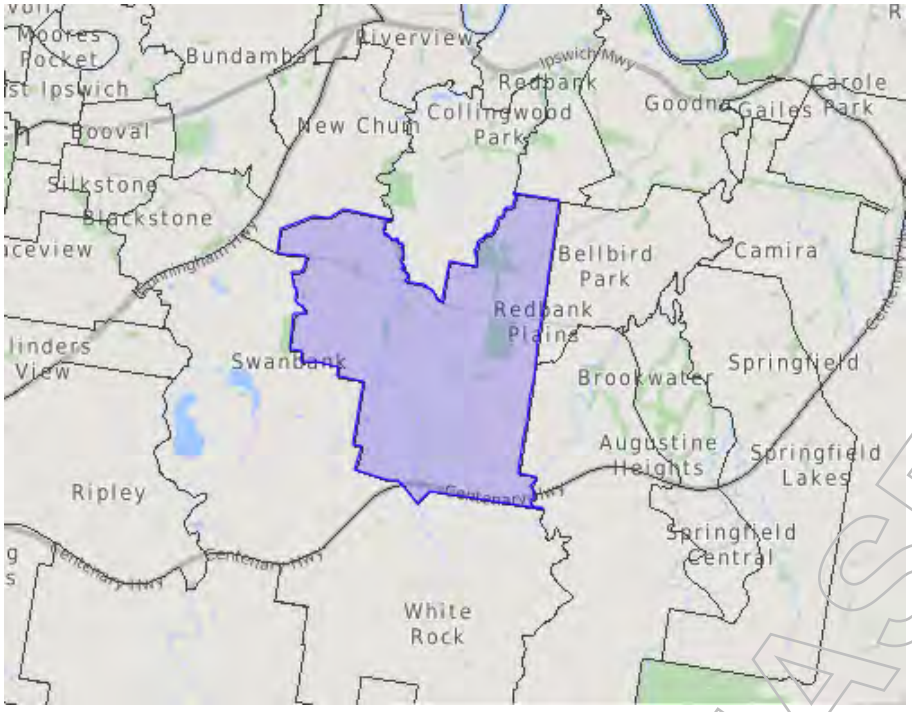

Figure 18: Redbank Plains ABS

In review of the 2016 Australian Bureau of Statistics Census Data for Redbank Plains:

- There were 19,299 people in Redbank Plains;
- The median age of people in Redbank Plains (State Suburbs) was 27 years;
- 6,367 private dwellings.

The Estimated Resident Population growth percentage in Redbank Plains has been 4.4% since 2011, marginally more than the 3.2% for the Ipswich City Local Government Area (LGA).

This population growth data, both for nearby impacted communities and the wider Ipswich LGA, indicates that there will be continued impacts associated with waste management unless an alternative to existing practices can be implemented. In preparation of this IAS, REMONDIS has reviewed the European Union's paper; '*The Role of Waste To Energy in the Circular Economy 2017'.* A circular economy is defined as 'one in which the value of products, materials and resources is maintained for as long as possible, minimising waste and resource use'. The paper recognises that WtE processes can play a role in the transition to a circular economy provided that the waste hierarchy is used as a guiding principle and that choices made do not preclude higher levels of prevention, reuse and recycling.

As demonstrated within this report, the proposed WtE facility will form a single component of the wider 'Swanbank Recycling Park' and REMONDIS is committed to ensuring that existing waste feedstock that is currently being transported to site will be separated that firstly, higher order waste management opportunities (reduce, re-use and recycle) will be prioritised and that the processing of waste through the proposed technology will only occur when all alternative recovery opportunities are exhausted.

Accommodation and housing

There is not anticipated to be any material impacts on accommodation and housing as a result of the Project. The Project is located within an identified Regional Business & Industry Investigation zone and will not result in a loss of accommodation or housing.

5.2.1 Cultural heritage (Indigenous and non-indigenous)

Aboriginal cultural heritage is recognised, protected and conserved under the provisions of the *Aboriginal Cultural Heritage Act 2003,* which is administered by the Department of Aboriginal and Torres Strait Islander Partnerships (DATSIP).

A search of the DATSIP Cultural Heritage Database and Register did not identify any cultural heritage site points in proximity of the Subject Site.

The *Queensland Heritage Act 1992* provides for the conservation of Queensland's cultural (non-indigenous) heritage. No recorded places were identified within proximity to the Subject Site (i.e. that have achieved registration under the provisions of the *Queensland Heritage Act 1992*).A search of the Australian Heritage Register was also undertaken. There are no places of heritage significance recorded in proximity of the Subject Site.

5.3 Built environment

The proposal is entirely consistent with the nature of land uses within the locality. The Swanbank Regional Business and Industry Investigation Zone has been identified by Council for land uses consistent with the SREWMF and has applied an appropriate Regional Business and Industry Buffer zone to nearby sensitive land uses to help to reduce potential amenity impacts associated with industrial activities with he nearest future and proposed residential locations approximately 1,500 metres from the proposed site (Lot 101).

There are no existing declared coordinated projects within the Ipswich City Local Government Area.

5.4 Traffic and transport

The project area is serviced by a range of State controlled roads and Council roads as shown in **Figure 21** below.

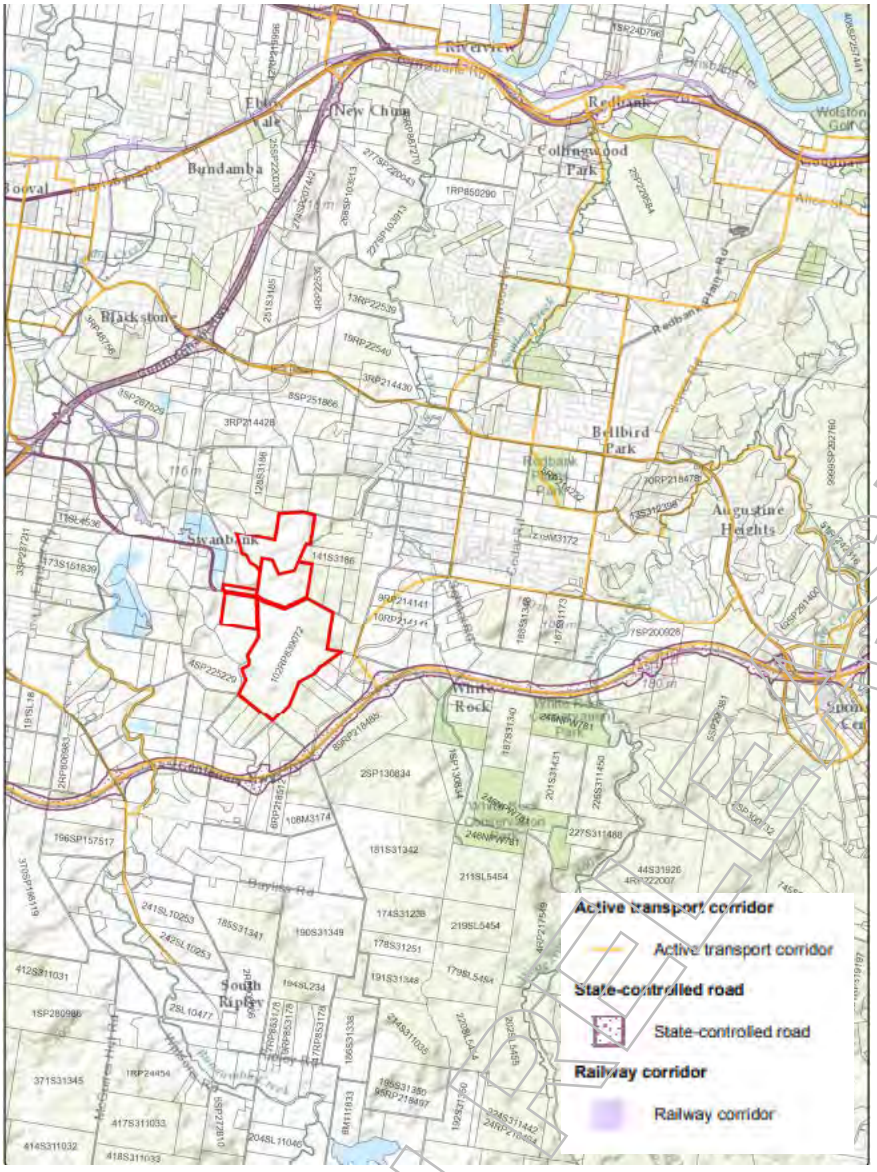

Figure 19: State controlled roads and council roads

Access to the site will continue to be via Swanbank Road and Cunningham Highway, with the proposal incorporating a new weighbridge and entry to Lot 101 on RP 839072.

Average Annual Daily Traffic (AADT) count data prepared by the Department of Transport and Main Roads (DTMR), indicates heavy vehicles accounted for approximately 33% of the 1,455 AADT estimated along Swanbank Road in 2013. This relatively high proportion of heavy vehicle traffic is largely due to the industrial nature of developments in the area. Since 2013, the coal-fired section of Swanbank Power Station was decommissioned. This is expected to have resulted in some reduction in AADT along Swanbank Road (GHD, 2015).

These vehicles use of Swanbank Road/Swanbank Coal Road and the Swanbank Road/Site Access/ Unnamed Road intersections and the associated numbers are not envisaged to change significantly as a result of the Project given the fuel for the WtE facility is from the same source as existing landfill waste.

5.5 Land use and tenure

5.5.1 Key local and regional land tenures

The Swanbank Renewable Energy and Waste Management Facility is freehold and is surrounded by freehold land as shown in **Figure 20** below.

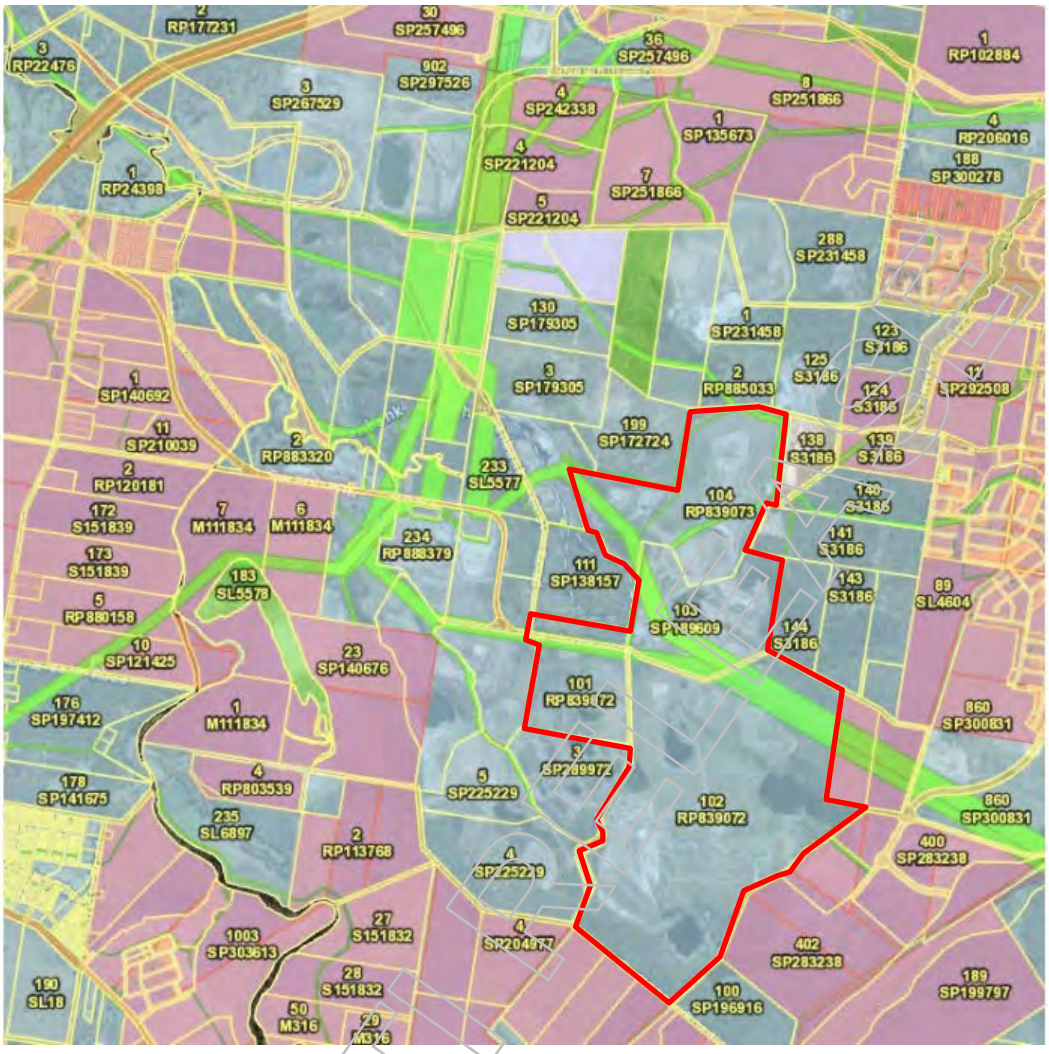

Figure 20: Tenure map for the Swanbank Renewable Energy and Waste Management Facility

The SREWMF is located within an area characterised by and planned for industrial land use under the planning scheme.

Areas of residential development exist and are proposed to the east and south, although most of this is more than 2 km from the SREWMF.

The footprint areas are zoned Regional Business and Industry Investigation under the Ipswich City planning scheme.

The SREWMF is separated from the nearest proposed residential areas by the Regional Business and Industry Buffer, which would help to reduce potential amenity impacts associated with industrial activities.

Areas to the east of the site are zoned as an emerging community, and are forecast to be developed within the next ten years.

The Ripley Valley PDA is located to the south of the SREWMF and some areas of the PDA are expected to be developed over the next ten years.

5.5.2 Native title

There is currently no registered Cultural Heritage Body for the subject site, on which the Project works will occur. The identified lots subject to the Project are all freehold title and are not identified as unallocated crown land.

5.6 Planning instruments, government policies

The following section provides an overview of the key legislation, policies and plans considered relevant to the Project. A detailed list of the likely project approvals, and the relevant legislation is provided at **Appendix A**.

5.6.1 Commonwealth

Environment Protection and Biodiversity Conservation Act 1999

The *Environment Protection and Biodiversity Conservation Act (Cth) 1999* (EPBC Act) is the Commonwealth Government's central piece of environmental legislation. The EPBC Act protects nine Matters of National Environmental Significance (MNES) including:

- listed threatened species and communities;
- listed migratory species;
- Ramsar wetlands of international importance;
- Commonwealth marine environment;
- world heritage properties;
- national heritage places;
- the Great Barrier Reef Marine Park;
- nuclear actions;
- a water resource, in relation to coal seam gas development and large coal mining development.

The EPBC Act provides a process for environmental assessment and approval of proposed actions that may have a significant impact on MNES, known as 'controlled actions'.

Under the EPBC Act, proponents proposing an action that may impact upon a MNES must refer the proposal to the Commonwealth Department of the Environment and Energy (DEE). This referral is used by the Commonwealth Minister for Environment to assist in deciding whether the proposal requires assessment and approval under the EPBC Act.

If the Project is deemed to be a controlled action it will be assessed under the EPBC Act in accordance with the Bilateral Agreement between the Commonwealth and the State of Queensland under Section 45 of the EPBC Act relating to environmental assessment.

The application of the EPBC Act to this Project is discussed further in **Section 7.5**.

Native Title Act 1993

The *Native Title Act (Cth) 1993* (NT Act) provides for the recognition and protection of native title rights for Australia's Indigenous people, as well as providing a legislative approach to address issues concerning native title. The legislation provides for the determination of native title claims, the treatment of future acts, which may impact on native title rights, and consultation and/or notification of relevant native title claimants where future acts are involved.

Aboriginal and Torres Strait Islander Heritage Protection Act 1984

The purpose of this act is to preserve and protect places, areas and objects of particular significance to Aboriginal people. This act is normally implemented through the provisions of the *Queensland Aboriginal Cultural Heritage Act 2003*.

5.6.2 State

The following Queensland state legislation could be triggered by the Project and will be considered in the approvals process.

Aboriginal Cultural Heritage Act 2003

The purpose of the *Aboriginal Cultural Heritage Act 2003* (ACH Act) is to provide for the effective recognition, protection and conservation of Aboriginal cultural heritage.

Biosecurity Act 2014

The *Biosecurity Act 2014* came into effect on 1 July 2016 and is designed to ensure consistent, modern, risk based and less prescriptive approach to biosecurity in Queensland.

Environmental Protection Act 1994

The *Environmental Protection Act 1994* (EP Act) is the principal environmental regulatory framework for environmental management and protection in Queensland. The EP Act objective is to protect the natural environment and associated ecological systems and processes while allowing for continued sustainable development.

The EP Act requires the Project's potential environmental impacts to be assessed and that measures be proposed to avoid or minimise any adverse impacts. To achieve this, the EP Act regulates activities that will or may have the potential to cause environmental harm.

Environmental Protection Regulation 2008

The EP Regulation supports and supplements the environmental assessment process outlined under the EP Act. It also specifies environmentally relevant activities (ERAs) that require approval, associated thresholds, specific approval details and reporting requirements.

Environmental Offsets Act 2014

The *Environmental Offsets Act 2014* (EO Act) coordinates the delivery of environmental offsets across jurisdictions. The EO Act purpose is to offset significant residual impact on prescribed environmental matters.

The *Environmental Offsets Regulation 2014* provides details on prescribed activities regulated under existing legislation and prescribed environmental matters to which the Act applies.

Land Act 1994

The Land Act 1994 (Land Act) provides the framework for State land, such as leasehold, roads and reserves and their subsequent management.

Under Chapter 4, Part 4 of the Land Act, a permit to occupy is required for the occupation of a reserve, road or area of unallocated State land. An application for a temporary road closure may also be required.

Local Government Act 2009

The purpose of the *Local Government Act 2009* (LG Act) is to outline the extent of local government responsibilities and powers within their respective jurisdictions. The Act provides local governments with the power to enact and enforce laws within the relevant local government area. These laws usually relate to the protection of amenity or other values important to communities including local roads, noise, light, waste management, vegetation, animals, parks and fencing.

Nature Conservation Act 1992

The *Nature Conservation Act 1992* (NC Act) is administered by EHP and regulates the environmental impacts on plants and animals through the protected plants framework and species management program requirements.

Developments in areas mapped as a Priority Koala Assessable Development Area or Koala Assessable Development Area need to be assessed under the *South East Queensland Koala Conservation State Planning Regulatory Provisions* which was developed under the *Sustainable Planning Act 2009.*

The subject site is not located within either of these priority area types, and as such the *South East Queensland Koala Conservation State Planning Regulatory Provisions* will not be triggered.

Nevertheless, requirements identified by the *Nature Conservation (Koala) Conservation Plan 2006* should be considered, including sequential clearing, having a koala spotter in attendance, and limits on the amount of habitat that can be cleared at any one time.

Planning Act 2016

The *Planning Act 2016* (Planning Act) establishes a system of land use planning (planning), development assessment and related matters that facilitates the achievement of ecological sustainability in Queensland. The Act coordinates development assessment in association with many of the other acts outlined below.

The Planning Act:

- manages the process by which development takes place, including ensuring the process;
- is accountable, effective and efficient and delivers sustainable outcomes;
- manages the effects of development on the environment (including managing the use of premises);
- coordinates and integrates planning at local, regional and state levels.

The assessment of the Project will consider the State Planning Policy (including the Queensland Plan) and South East Queensland Regional Plan, which applies to the area in which the Project is located.

South East Queensland Regional Plan 2017 – ShapingSEQ

The proposal will be assessed against the relevant aspects of the South East Queensland City Plan 2017 ShapingSEQ.

ShapingSEQ is the regions pre-eminent strategic land use plan given effect by the Planning Act 2016. The primary purpose of *ShapingSEQ* is to provide the regional framework for growth management, land use and development in South East Queensland (SEQ). The document sets the long-term planning direction for sustainable growth, a globally competitive economy, and high-quality living for SEQ.

ShapingSEQ provides the 50-year vision of the region and is supported by five (5) key themes which underpin the vision including, Growth, Prosper, Connect, Sustain and Live.

The subject site is within the urban footprint and as such will assist in meeting the needs of the Ipswich locality through the provision of critical infrastructure. The proposed infrastructure investment aligns with the Regional Plans desire to prioritise infrastructure investment and enhance regional infrastructure.

The proposal will be further assessed in greater detail against the relevant provisions of ShapingSEQ as part of the IAR process.

Queensland Heritage Act 1992

The *Queensland Heritage Act 1992* (Heritage Act) protects heritage areas that are considered to be of State significance and are placed on the Queensland Heritage Register, administered by the Queensland Heritage Council. Local heritage is also addressed in the Act, with local governments being required to establish their own heritage registers.

State Development and Public Works Organisation Act 1971

The *State Development and Public Works Organisation Act 1971* (SDPWO Act) provides a framework for coordinated and environmentally responsible infrastructure planning and development to support Queensland's economic and social progress. The SDPWO Act provides the Queensland Coordinator General with the power and responsibility to assess and authorise the most significant and complex projects.

Section 26 of the SDPWO Act permits the Queensland Coordinator General to declare a project to be a 'coordinated project' for the purpose of requiring the proponent to prepare an EIS or an IAR.

The preparation of an IAR or EIS in accordance with Part 4 of the Queensland SDPWO Act also satisfies the requirements of Section 8 of the Commonwealth EPBC Act.

Vegetation Management Act 1999

The *Vegetation Management Act 1999* (VM Act), in conjunction with the Planning Act, regulates the conservation and management of vegetation communities and clearing of vegetation. The VM Act provides a State-wide system for the management of native vegetation on freehold and leasehold land based on the concept of regional ecosystem (RE) areas. The conservation status of each RE is assigned as one of three categories: 'endangered', 'of concern' or 'least concern', based upon an estimate of the regional ecosystem's pre-clearing distribution, and how much of it remains.

Schedule 10, part 3 of the *Planning Regulation 2016* makes clearing of native vegetation on prescribed land assessable development which requires a development permit, unless the clearing is otherwise exempt.

Waste Reduction and Recycling Act 2011

The main objectives of the Act in relation to waste management are to: promote waste avoidance and reduction; reduce the overall impact of waste generation; promote resource recovery and efficiency actions; promote the sustainable use of natural resources; encourage the use of recovered resources; and ensure a shared responsibility between government, business and industry and the community.

The Act is supported by the Waste Reduction and Recycling Regulation 2011, which provides mechanisms to achieve the objectives of the Act.

Water Act 2000

The *Water Act 2000* (Water Act) provides a framework for the sustainable management of Queensland's non-tidal water resources and riverine quarry material.

With respect to the Project, the Water Act establishes systems for the planning, allocation and use of non-tidal water, including regulation of impoundments. Allocation of quarry material and riverine protection provided for by the Act will be of relevance.

5.6.3 Local

Temporary Local Planning Instrument No. 1 of 2018 (Waste Activity Regulation)

Ipswich City Council resolved to make a temporary local planning instrument (TLPI) which took effect, subject to the agreement of the Minister on 29 May 2018 (and amended on 31 August 2018).

This TLPI provides an interim policy response to address concerns raised by the Ipswich City Council and the local community in respect to landfill and waste industry uses occurring in the Swanbank / New Chum industrial area.

In accordance with section 9(3)(a) of the Planning Act 2016 (the Planning Act) the effective day for the TLPI is the day on which public notice of the TLPI is published in the Queensland Government Gazette. This TLPI will have effect in accordance with the Planning Act for a period not exceeding two years from the effective day or such longer period as may be permitted by law or unless otherwise repealed sooner.

The TLPI specifically relates to the regulation of a subset of waste management uses which it defines as a "waste activity use". Such a use would include:

a) *"Compost Manufacturing Enclosed";*
b) *"Compost Manufacturing Unenclosed";*
c) *"Landfill"; and*
d) *"Rehabilitating a mining void".*

Attachment C of the TLPI contains Table 1 – Table of Assessment and Relevant Criteria specifically states that any use not identified above will remain subject to the existing assessment category and assessment benchmarks under the Ipswich Planning Scheme. Accordingly, the TLPI is not directly relevant to REMONDIS' WtE facility. It will remain code assessable and subject to the normal provisions of the Ipswich Planning Scheme.

The TLPI does, however, show part of the subject land as falling within a waste activity buffer area in which the TLPI acts to preclude landfilling and composting activities. While the proposed facility does not cut across these new controls, REMONDIS is concerned this designation may cause some confusion to community stakeholders and unnecessarily complicate the assessment process.

The proposed WtE facility does not fall within the definition of *"Waste Activity Use"* as defined under the TLPI and as such the proposal will remain Code Assessable development as per Table 6.1 of the Ipswich Planning Scheme.

5.6.4 Also for Consideration

Queensland Waste Avoidance and Resource Recovery Productivity Strategy (2014-2024)

The Waste Avoidance and Recovery Productivity Strategy provides a high-level direction for waste management and resource recovery in Queensland over a 10 year period, and predominantly focuses on waste from all sectors, such as household, agricultural, mining, commercial and industrial waste and sold and liquid hazardous (or regulated) waste (DEHP, 2014).

The strategy sets a framework of guiding principles and objectives, and priority areas which underpin the development of action plans. The strategy is also informed by the waste and resource management hierarchy, which sets out an order of preference for options for managing waste – from avoiding, the reusing, recovering, treating and disposing of waste (DEHP, 2014).

While no specific incentives are stated in the strategy, it does acknowledge that Queensland has around 450 MW of installed WtE capacity, and included WtE as part of the waste resource management hierarchy.

The proposal is considered to align with the intent of the strategy and will be assessed against the strategy in greater detail as part of the future application should the project be declared.

Transforming Queensland's Recycling and Waste Industry Directions Paper

On 20 March 2018, the Queensland Government announced the development of a comprehensive waste management strategy underpinned by a waste disposal levy to increase recycling and recovery and create new jobs.

The Directions Paper outlined the directions for Queensland's new resource recovery, recycling and waste management strategy that will support the Government's Advance Queensland agenda by promoting growth and jobs in the resource recovery and recycling industry.

The strategy is intended to provide the waste and resource recovery sector with the policy certainty that has been lacking, resulting in significant under investment in new and expanded resource recovery infrastructure in Queensland.

The key principles of the strategy include:

- Attract industry investment and innovation;
- Create new jobs for our communities;
- Have no direct impact on Queensland households;
- Deliver long-term value to our environment; and
- Move Queensland towards a circular economy.

Part B of the paper outlines the direction the Government will take to reinvigorate Queensland's waste strategy. The development of a new waste strategy will fulfil the statutory requirement under the Waste Reduction and Recycling Act 2011 (the Act). The final comprehensive waste strategy will be released following the statutory consultation process required by the Act.

The Strategy identifies that the Queensland Government will explore the development of waste to-energy.

It is recognised that there are a range of technological solutions that are already available commercially, and a host of new and emerging innovative technologies.

There is also a significant body of literature on WtE reducing the amount of waste that goes to landfill, and the role that WtE plays in a transition towards a more circular economy.

The proposal aligns with the intent of the strategy to transition towards a more circular economy through the provision of a WtE facility at Swanbank. Given the extensive knowledge available to REMONDIS through their existing WtE operations, the proposal will take on board the lessons learned from other jurisdictions and to ensure the most appropriate types of waste are used for WtE.

REMONDIS are committed to continued engagement with the Department of Environment and Science (DES) as part of the application process should the project be declared to ensure the proposal aligns with the strategy as it continues to be refined.

6.0 Potential project impacts

6.1 Natural environment

6.1.1 Land

The impact on land based environmental values is anticipated to be minimal, given the sites location in an established Industrial Precinct. Any impacts on this environmental value will largely relate to construction activities, where the footprint of these activities is generally isolated to Lot 101 on RP 839072 and located on REMONDIS property with existing infrastructure, as well as some road reserve land also affected.

Soils and geology are not expected to be significant concerns because the Project will be largely constrained to the existing disturbed areas of the SREWMF.

Visual amenity will be minimal due to the significant buffer distance to nearby sensitive land uses and the site topography. The impact assessment undertaken as part of the IAR will identify key land values within the Project area and determine any associated potential impacts. Identified mitigation measures will be outlined in the IAR.

6.1.2 Water

Potential environmental impacts in relation to water, arising from Project activities, comprise:

- increased sediment in surface water bodies resulting from earthwork activities, leading to changes in surface water quality;
- inadvertent release of potential pollutants to surface water bodies from activities such as vehicle refuelling/wash-down and uncontrolled or controlled release of contaminated water or treated/untreated sewage leading to changes in surface water quality;
- potential effects to groundwater flow (although the site has a history of highly disturbed groundwater due mining activities),

Due to the nature of the Project, there may be a range of impacts on water values. These impacts will range from typical construction project impacts (e.g. construction impacts on water quality) to more complicated site-specific impacts. Based on the variety of potential impacts and complexity/unknowns around some areas, REMONDIS proposes focused assessment to inform mitigation measures.

6.1.3 Air

This environmental value is anticipated to be a key environmental concern that would require focused assessment as the Project has the potential to produce a number of air emissions through the processing and combustion of waste streams. The assessment of the air quality and suitable mitigation measures will be outlined in the Project IAR.

The flue gas treatment system involves several treatment steps which include scrubbing (for acidic gases and heavy metals), selective non catalytic reduction (to remove NOx gases), the utilisation of activated carbon (removing dioxin, furans, other organic pollutants and heavy metals – especially mercury) and a baghouse filter (removes particulates) to minimise emissions.

Flue gas treatment technologies have developed and improved significantly over the last 50 years and are now highly efficient in reliably meeting strict standards such as the EU IED.

In relation to potential greenhouse gas emissions from the WtE facility, the proposal offers the potential benefit of reducing the production of GHG emissions, based on waste being diverted from landfill (thereby reducing methane production).

The cumulative effect GHG emissions produced and avoided will be determined through the engagement of a GHG emissions assessment in the detailed assessment phase of the application.

6.1.4 Ecosystems

The Project will require localised vegetation removal for construction, which may include some vegetation mapped as Regional Ecosystem (RE), subject to localised assessment. Nevertheless, the area of vegetation removal will be minimal, constrained to REMONDIS existing land, and is unlikely to fragment any habitat or create isolated patches of vegetation in the area.

Detailed ecological and vegetation studies will be engaged by REMONDIS to determine potential impacts and suitable mitigation measures will be outlined in the detailed assessment.

6.1.5 Flora and Fauna

The proposal has the potential to result in the following environmental impacts:

- Vegetation clearing and fragmentation;
- Direct fauna injury and mortality during earthworks;
- Disturbance to fauna;
- Direct loss of habitat and breeding places;
- Importation and/or spread of weeds;
- Introduction and/or proliferation of pest fauna;
- Degradation of habitat through dust, sedimentation and erosion;
- Degradation of aquatic environments; and
- Impacts on adjacent bushland.

Direct impacts from the proposal will consist of clearing vegetation (subject to localised site investigations) has the potential to result in localised habitat fragmentation however the extent of any impact will need to be determined through detailed ecological and vegetation studies and outline suitable mitigation measures.

6.2 Amenity

Noise

The Project has the potential to have an impact on noise and vibration values as a result of:

- increased vehicular movements;
- foundation works, including piling;
- excavation works;
- earthworks;
- concrete batching;
- other construction activities.

The Project site is not located in proximity to sensitive receptors, and so construction noise is not anticipated to impact on receptors (however can be appropriately managed). The assessment of the Project's noise and vibration aspects and suitable mitigation measures will be outlined in the Project IAR.

Odour

The Project has the potential to be a source of odour from waste stored in the tipping hall and from opening and closing roller doors. The tipping hall will be operated under negative pressure to minimise possible odour emissions. Further the tipping hall air will be used as combustion air in the process. If the unlikely situation occurs where waste is still present in the tipping hall during shutdowns the air will pass via the negative pressure flow and through filters. Sophisticated and proven flue gas treatment systems prevent stack odour emissions. Stack height will be determined by dispersion modelling.

It should be added that the intensity of odour is very low, in particular, the offensiveness of odours is minimal in waste incineration plants compared to other waste treatment plants or especially landfill. Additionally, odour does not occur during normal operations of waste incineration, when a sophisticated flue gas treatment system is utilised.

Although, modern WTE plants have distinct advantages over other waste treatment processes in terms of odour emissions, cumulative impacts in relation to odour in the context of the existing SREWMF need to be carefully considered throughout the design and assessment phase of the proposal. Taking into account the location of the Project in an established Industrial Precinct, local climatic conditions and distance/buffer from the Project to nearby sensitive land uses, it is considered that the potential impacts associated with odour can be mitigated.

6.3 Social and economic impact

Social and Economic Impacts have been discussed here as these extend across the entire life of project. The economic and social impacts during the construction phase, which will attract a peak work force estimated at 200 persons to the Ipswich region over the construction phase, are significantly different from the operational impacts of a workforce likely to be sourced from personnel permanently settled to service the needs of this project.

A rigorous social impact assessment process will analyse potential social impacts in detail, with input from the community through ongoing consultation. This will identify how positive social impacts can be enhanced and negative impacts mitigated and/ or managed.

The REMONDIS SREWMF has a proven operational track record within the Swanbank locality for best practice waste management since commencement of site operations in 1998 which should provide comfort to nearby residents that the highest standards to mitigate impacts will be incorporated into the design and operation of the WtE facility.

REMONDIS know the local community well through their 20 year operations on site and has a good working relationship with nearby businesses within the Swanbank Regional Business and Industrial Precinct and residents of adjoining suburbs. REMONDIS will continue to consult with key stakeholders to ensure any community concerns are promptly addressed.

As a major industrial and waste management project, the Project is forecast to deliver a range of positive socio-economic impacts targeting the Ipswich LGA but extending to the wider South East Queensland population.

6.4 Built environment

The design of the facility with respect to building form and heights has largely evolved in response to operational nature of the technology.

Figure 21: Artist's impression of the Waste to Energy Facility at Swanbank, Ipswich

The building design has a graduated form and scale with the heights of various elements stepping up in height as they move into the site. This design approach overcomes the potential for adverse impacts associated with bulk and scale at the street and provides a site responsive design.

The assessment of the Project's visual aesthetics and suitable mitigation measures will be outlined in the Project IAR.

6.5 MNES under the EPBC Act

An EPBC Act Protected Matters search has been undertaken for the Project site (**Appendix B).** The search report indicates that MNES are likely to occur in the Project area and may be affected by the proposed works.

Matters of National Environmental Significance	Comment
World Heritage Property	None
National Heritage Places	None
Ramsar Wetlands of International Significance	None
Nuclear actions.	None
Commonwealth Marine Area	None
Listed Threatened ecological communities	3
Listed Threatened species	31
Listed Migratory Species	16

Table 2: EPBC Matters of National Environmental Significance

Based on the above, the proposed development is not considered to be a 'controlled action' pursuant to the *EPBC Act* however the construction and operational impacts will need to be assessed in greater detail by a suitably qualified ecologist as part of the IAR to confirm this position.

Should the potential for Project impacts warrant an EPBC Act referral to address legislative requirements in relation to MNES, REMONDIS will submit an EPBC referral for the project shortly after submission of the coordinated project application. Should the Project be declared a 'controlled action', REMONDIS requests the use of a bilateral assessment process.

7.0 Environmental management and mitigation measures

7.1 Natural environment

7.1.1 Land

Earthworks related to the Project will require an erosion and sediment control plan (ESCP) which will be a sub-plan of the CEMP.

The ESCP will be consistent with current practice for construction projects and align with International Erosion Control Association (IECA) guidance. Impacts on environmental values of land (soils and geology) are not expected to be a material issue during construction. Any impact mitigation measures are expected to be relatively typical of a construction project and conform to industry best practice.

7.1.2 Water

Focused assessment will be required to confirm the Project impacts on water values and appropriate mitigation measures, such as:

- Implementation of groundwater drainage system around the entirety of the proposed waste bunkers to assist groundwater re-entering the strata;
- Monitoring of groundwater surrounding the waste bunkers, by incorporation of inspection manhole to enable periodic inspection of groundwater levels surrounding the waste bunkers;
- A surface water quality monitoring program;
- The process will use demineralised water for steam production for the turbine. This water will be reused through the process and will incur minimal losses;
- Cooling water may be used for the plant. The options between using air cooling and water cooling will be considered for the project.

7.1.3 Air Quality

The primary emissions from the WtE facility, as defined by emission limits for waste incineration set by the European Union (EU) Industrial Emissions Directive (IED; Directive 2010/75/EU), are anticipated to be as follows:

- Particulate matter (PM), assumed to be emitted as PM10 and PM2.5a;
- Hydrogen Chloride (HCl);
- Hydrogen Fluoride (HF);
- Carbon Monoxide (CO);
- Sulfur Dioxide (SO_2);
- Oxides of nitrogen (NOx) (expressed as Nitrogen Dioxide (NO2);
- Heavy metals (including Mercury (Hg), Cadmium (Cd), Arsenic (As) and Chromium (Cr);
- Gaseous and vaporous organic substances (expressed as total organic carbon (TOC));
- Dioxins and furans.

In addition to the atmospheric emissions identified in the EU IED, other potential emissions that have been addressed include:

- Hydrogen sulfide (H_2S);
- Chlorine (Cl_2);
- Ammonia (NH_3);
- Polycyclic -aromatic hydrocarbons (PAHs).

A summary of the EU IED limits are listed in Table 3:

EU Industrial Emissions Directive 2010/75 - Emission Limits for Waste Incinerators				
Substance	**Unit**	**30 min Average**	**24 hour average**	**Periodic limit**
Total dust	mg/Nm3	30	10	none
Gaseous and vaporous organic substances, expressed as total organic carbon (TOC)	mg/Nm^3	20	10	none
Hydrogen chloride (HCl)	mg/Nm3	60	10	none
Hydrogen fluoride (HF)	mg/Nm3	4	1	none
Sulphur dioxide (SO2)	mg/Nm3	200	50	none
Nitrogen monoxide (NO) and nitrogen dioxide (NO2), expressed as NO2	mg/Nm^3	400	200	none
Carbon Monoxide	mg/Nm^3	100	50	none
Cadmium and its compounds (Cd)	mg/Nm^3	None	none	0.05
Thallium and its compounds (Tl)	mg/Nm^3	None	none	0.05
Mercury and its compounds (Hg)	mg/Nm^3	None	none	0.05
Arsenic and its compounds (As)	mg/Nm^3	None	none	0.5
Lead and its compounds (Pb)	mg/Nm^3	None	none	0.5
Chromium and its compounds (Cr)	mg/Nm^3	None	none	0.5
Cobalt and its compounds (Co)	mg/Nm^3	None	none	0.5
Copper and its compounds (Cu)	mg/Nm^3	None	none	0.5
Manganese and its compounds (Mn)	mg/Nm^3	None	none	0.5
Nickel and its compounds (Ni)	mg/Nm^3	None	none	0.5
Vanadium and its compounds (V)	mg/Nm^3	None	none	0.5
Dioxins & Furans	ng/Nm^3	None	none	0.1

Table 3: EU Industrial Emissions Directive 2010/75/EU (Annex VI – Technical provisions relating to waste incineration plants and waste co-incinerations plants)

Emissions from WtE facilities are primarily controlled by the flue gas treatment process. The flue gas treatment proposed is designed to safely meet the in-stack concentrations limits for waste incineration set by the European Union Industrial Emissions Directive.

Stack emissions will be continuously monitored by a computer controlled system for the following compounds:

- Carbon monoxide;
- Hydrogen chloride;
- Hydrogen fluoride;
- Nitrogen oxides;
- Ammonia;
- Volatile organic compounds (VOC's);
- Particulates;
- Sulphur dioxides.

Spot testing will take place at regulated frequencies for metals and dioxins/furans.

The proposed WtE Project is based on existing facilities in Europe and will incorporate best available technology for flue gas treatment, designed to meet the stringent in-stack concentrations limits for waste incineration set by the EU IED. REMONDIS operate numerous such facilities in Europe.

To manage air quality the following mitigations measures are proposed:

- Implement best practice monitoring processes;
- Implement an appropriate maintenance schedule to ensure that FGT systems operate appropriately;
- The facility shall be managed by a duly qualified specialist and trained personnel;
- Implement continuous monitoring system to ensure facility operates within optimal parameters;
- Management of incoming waste fuels received from external sources.

In addition, it is expected that human health risk studies will be conducted during the IAR process that will incorporate various relevant analyses based on normal and upset conditions scenarios on recognised sensitive receptors.

7.2 Flora and Fauna

Despite the identified impacts, the cumulative effect is considered acceptable in the context of the broader site that is used as an active industrial premises and is appropriately zoned for the intended development. In this circumstance, it is not possible to avoid the impact therefore measures such as the following will be developed to mitigate and offset impacts:

- Appointment of a project ecologist to undertake and oversee all flora and fauna pre-clearing, management and revegetation works;
- Preparation of a vegetation management plan;
- Measures to prevent tree impacts during construction and prevent clearing where possible;
- Revegetation where required.

7.3 Built environment

It is not envisaged, with the availability of existing infrastructure within the Swanbank Industrial Precinct and the existing SREWMF that the Project will have a significant effect on the built environment.

The existing Council and State Controlled Road network will continue to be the main mode of transporting machinery and infrastructure during construction and the vehicular movements associated with the operation and comparable to the current levels associated with the operation of the existing SREWMF.

7.4 Cultural heritage management plan (Indigenous)

The project will be assessed under the Cultural Heritage Duty of Care Guidelines (Queensland Aboriginal Cultural Heritage Act 2003).

It is not anticipated that a cultural heritage management plan (CHMP) will be required however will be undertaken should the findings of the assessment warrant its inclusion.

7.5 Non-Indigenous cultural heritage management

A non-indigenous cultural heritage survey of the Project site will be undertaken as part of the IAR process. No heritage listed sites are located in proximity to the site and due to the relatively modern age of the existing dam and water treatment structures, the heritage values of the site are expected to be negligible. However, any finds will be handled in accordance with the legislative requirements.

7.6 Greenhouse gas management plan

A greenhouse gas management plan will be developed as part of the proposal to ensure best practice standards are achieved in relation to GHG emissions.

- Use of Best Available Technology in flue gas treatment;
- Continuous emissions monitoring to ensure they are within acceptable limits;

- Reporting of emissions to Regulators.

The associated CO_2 emissions is reduced when generating power from WTE plants in comparison to using fossil fuels. Additionally, studies have shown that emissions of sulfur dioxide, particulate matter and nitrogen oxides were lower from WtE facilities than from coal-fired plants[12].

7.7 Hazard and risk, and health and safety

Hazard and risk and health and safety assessments and management plans will be developed as required for the construction and operation phase of the Project.

7.8 Environmental management

Several management plans will be developed as part of the Project's environmental assessment and approvals phase.

These management plans will reflect REMONDIS's ongoing commitment to environmental management during construction and will incorporate management measures identified during the assessment process.

As part of the construction phase of the Project, and as referred to throughout section 8, a Construction Environmental Management Plan (CEMP) will be developed and will form an important management tool for the Project's impacts and mitigation measures.

The CEMP will incorporate environmental and social mitigation measures from the IAR as a framework for the ongoing management, monitoring, reporting and improvement during construction. Its primary purpose will be to identify the environmental values potentially affected by the Project and detail measures to manage the risk of potential adverse impacts to these environmental values. For each component, the CEMP will outline the following:

- environmental values;
- potential impacts;
- environmental protection objectives;
- management controls;
- monitoring programs.

7.9 Public Concerns

It is acknowledged that stakeholders hold concerns regarding the proposed Project, in particular, the issues raised in a petition titled "*Rejection of incinerator to be built within city limits*". REMONDIS is committed to undertaking a thorough stakeholder engagement process as part of the approval process (refer to Section 10.0).

The following section provides an initial response to the concerns raised to date. Further information and management practices will be provided by REMONDIS as the approval process continues and as detailed reporting is undertaken as part of the IAR:

Issue/Concern	Initial Response
• Pollution control technologies have not proven capable of appropriately managing emissions • Uncertainty in relation to air quality and impacts of air quality and water quality • Uncertainty in relation to the human health risks and site suitability • Such a facility in urban areas contravene efforts of environmental regulations regarding air quality • Incinerators are primary sources of persistent organic pollutants, which contaminate food chains, building up dangerous levels in humans, and sources of lead, mercury, dioxins and furans.	REMONDIS has extensive experience in managing emissions from similar WtE plants. REMONDIS has in place technologies and processes which meet the EU IED. REMONDIS proposes to implement similar technologies and processes for the Project, resulting in positive and controlled emission and air quality outcomes. Further details on the process are available in section 7.1.3.
• The project is not in the public interests, 500,000 tonnes of waste per year is required to feed an incinerator for 24 hours operation, which means more trucks, more traffic and more pollution	REMONDIS currently operates the SREWMF at Swanbank. This facility is expected and approved to continue operating for many decades. It is proposed that the waste volumes that are currently received into the facility will be redirected for recycling and material that cannot be recycled will be used as a fuel source for the Project.
• Every four tonnes of waste create one tonne of toxic ash	Fly ash represents around 3% of the input fuel source. Please refer to section 3.6 for further details.
• Undermines genuine clean, safe renewable energy solutions; is not in line with a circular economy	The European Commission confirms that WtE has a role to play in a circular economy (refer to "*The role of Waste to Energy in a circular economy*").

Table 4: Public Concerns

8.0 Approvals required for the project

As per Section 34G (2) of the SDPWO Act, a draft IAR must contain a statement about whether or not any of the following approvals (each of which is notifiable approval) is required for the Project:

- a development approval if the development application for the approval would, under the Planning Act, require impact assessment;
- an environmental authority if the application for the authority would, under the Environmental Protection Act 1994, chapter 5, part 4, require public notification;
- another approval under an Act if—
  - the application for the approval requires, other than under the Planning Act or the Environmental Protection Act, chapter 5, an EIS or a similar statement to address the environmental effects of the approval; and
  - the application for, or the granting of, the approval requires public notification under the relevant Act.

The table at **Appendix A** provides a summary of approvals applicable to the project in accordance with these requirements. This will continuously be reviewed as the project is development and in consultation with the relevant State departments.

REMONDIS seeks declaration of the Project as a coordinated project pursuant to the SDPWO Act (Qld). As part of this declaration, REMONDIS seeks to utilise the IAR process. **Section 7.6** outlines the Acts and policies that were assessed as relevant to the Project.

Once the Project description has been sufficiently completed, following concept design optimisation and commencement of detailed design, a finalised list of required approvals will be presented as part of the IAR. As a result, further approvals may be identified, while others that were identified at the preliminary stage (**Appendix A**) may not be required.

The approvals that REMONDIS intends to be coordinated during the IAR process are identified in **Appendix A**. Note that these are based on the assessment of required approvals at the concept design stage of the Project. The required approvals are subject to change during detailed design development, as described above.

9.0 Cost and benefits summary

9.1 Local, state and national economies

An Economic Impact Assessment (EIA) will be submitted with the IAR. An EIA will assess benefits, values and potential impact areas resulting from the construction and operational phases of the Project.

The Project will bring some additional short term economic benefits to the regional economy during construction through the provision of construction and engineering services, along with long term cost benefits for Queensland households and businesses through the generation of up to 50MW of baseload renewable electricity.

9.2 Natural and social environments

The primary Project benefit is to provide an alternative waste management solution to landfilling. It is widely recognised that if Queensland maintains a "business as usual" approach to waste management, most of South East Queensland's landfills will have no capacity by 2040. The project provides a direct solution to this key State issue and an opportunity to divert thousands of tonnes of suitable waste (non-recyclable wastes) away from landfill and into a best-practice WtE facility that will extend the life of south east Queensland's constrained landfills.

The SREWMF is an integrated waste facility, comprising landfill, recycling and, in the future, the proposed WtE facility. Adopting WtE technology will ensure that wastes with recoverable value are not sent to landfill and, instead, are put to beneficial use. The world leader in waste management policy, the European Union, encourages construction of "state-of-the-art energy-efficient" WtE plants to "create new capacity for the treatment of residual waste" in member states.

It is the intention of the IAR process to investigate the possible impacts and define suitable environmental mitigation strategies to be incorporated into management protocols and plans in support of anticipated approvals.

REMONDIS will implement mitigation strategies as part of the construction and operation of the Project. Where impacts are unavoidable, the intent will be to offset such impacts to land-based and ecological values.

An assessment of the existing social environment and possible impacts associated with the Project will be submitted in the IAR. Most of the potential social impacts are anticipated to be positive for the area including economic diversification and increased economic, employment and training opportunities. The proponent believes that this will in turn raise the level of confidence in the region.

The social environments will benefit from increased local expenditure in Ipswich and the broader region due to additional expenditure. Strategies will be developed through the Social Impact Assessment conducted as part of the IAR process to avoid or mitigate against social impacts.

10.0 Community and stakeholder consultation

REMONDIS has commissioned specialist consultants, Three Plus, to draft a Community and Stakeholder Engagement Plan in preparation for an IAR process. The draft Plan will be reviewed and amended, as required, if the Project achieves Coordinated Project status.

As part of its early engagement activities, REMONDIS has activated a website to provide information on the proposed project and to provide opportunities for interested parties to review the proposal, register for updates and provide initial feedback.

Plan Structure

The Community and Stakeholder Engagement (C&SE) Plan is based on a four-stage approach:

- Stage 1: Active support for the draft TOR advertising phase (if required)
- Stage 2: IAR research and preparation, including technical investigations and community consultation
- Stage 3: Active support for the IAR public comment phase, and finalisation of the IAR
- Stage 4: Post-IAR stakeholder follow-up

The purpose of the consultation will be to engage stakeholders in informed discussion about what the project may mean to the local area and the region. This will require the provision of information about the project design and potential impacts, and the establishment of a number of opportunities and avenues for stakeholders to participate in consultation.

Objectives

The community and stakeholder engagement objectives for the IAR will be to:

- Add value to the study's decision-making process
- Inform stakeholders about the study objectives, drivers, processes and consultation opportunities
- Provide easy and accessible ways for stakeholders to participate in the consultation process, and
- Inform the IAR project team.

Principles

The following strategic principles will guide the IAR community and stakeholder engagement:

- Positioning: The IAR will be positioned in the context of investigating the environmental impacts (including social, cultural and economic) of the Project.
- Open and transparent: IAR stakeholder engagement will be in accordance with the International Association for Public Participation (IAP2) spectrum.
- Responsiveness: Stakeholders' ideas, issues and comments will be identified through consultation activities. To demonstrate an open, two-way process is being undertaken, the IAR team will close the loop with stakeholders to inform them how their views have been considered. The IAR team will also manage stakeholder expectations about what the IAR can deliver by effectively communicating the study negotiables and non-negotiables.
- Integration with related activities: The IAR team will recognise stakeholders' previous contributions by linking the IAR with submissions received during the public comment phase on the draft Terms of Reference.
- Issues management: The IAR team will identify as early as possible, and proactively manage, any issues that may influence the IAR.

Stage 1: Active support for the Office of Coordinator General draft Terms Of Reference advertising phase (if public input into TOR is required)

In addition to the community and stakeholder engagement activities planned for the IAR phase, REMONDIS has determined that it will support the public comment phase on the Coordinator General's draft Terms of Reference (TOR).

To help ensure comprehensive and well-supported Terms of Reference are developed, REMONDIS will undertake a dedicated round of stakeholder engagement to support the draft TOR public advertising period which will provide information about the project and encourage feedback on the draft TOR (to the Coordinator General).

Stage 2: Baseline Studies – IAR research and preparation, including technical investigations and community consultation

Should the project be declared a Coordinated Project, REMONDIS and its project team will commence the preparation of an IAR and documentation requirements nominated by the Office of Coordinator General.

During this stage, REMONDIS will continue with stakeholder engagement to update key stakeholders and provide additional information on the progress of the proposal. Potential issues and concerns raised during the engagement process will inform the detailed design and the documentation phase of the IAR.

Stage 3: Active support for the IAR public comment phase, and finalisation of the IAR

REMONDIS will support the IAR public comment phase by implementing a dedicated stakeholder engagement program to ensure stakeholders have an opportunity to inform themselves of the IAR outcomes and recommendations, and to provide comment via formal channels.

The specific methodologies for this phase will be determined during Stage 3 and provided to the Office of the Coordinator General for review prior to roll-out.

Stage 4: Post IAR stakeholder follow-up

Once the IAR has been finalised, REMONDIS will "close the loop" and inform stakeholders about final IAR, conditions of approval and project timelines. The appropriate methodologies will be determined, but may include briefings to summarise the IAR outcomes and to report on community and stakeholder engagement activities.

11.0 References and data sources

1. AECOM. (2008). *Swanbank Landfill Stage 1A and 1B - Flora and Fauna Assessment.*
2. Applied Ecology. (1998). *Swanbank Landfill Extension of the Facility - Environmental Report.*
3. DEE (2018). EPBC Act Protected Matters Report. Commonwealth Department of the Environment, Canberra. Report created: 25/09/18.
4. Department of State Development, Manufacturing, Infrastructure and Planning, *Social Impact Assessment Guideline*, March 2018.
5. KBR. (2012). *Bundamba Creek Flood Study and Risk Management Plan.* Ipswich: Ipswich City Council.
6. Sattler, P. S. and Williams, R.D. (Eds) (1999). The Conservation Status of Queensland's Bioregional Ecosystems, Environmental Protection Agency.
7. Vegetation Survey of Proposed Dump Site, Swanbank (Bostock and Forster, 1988)
8. Swanbank Landfill Stage 2 (Oxbow Consulting, 1998)
9. Swanbank Landfill Extension of the Facility – Environmental Report (Applied Ecology, 1998)
10. Swanbank Landfill Stage 1A and 1B - Flora and Fauna Assessment (AECOM, 2008)
11. Flinders Karawatha Corridor - Environmental Values and Land Use Data Report (EHP, 2013)
12. "Emissions from Waste-to-Energy: A comparison with Coal-fire Power Plants" (DOI: 10.1115/IMECE2003-55295)
13. https://www.researchgate.net/publication/242108296_Emissions_from_Waste-to-Energy_A_Comparison_with_Coal-fired_Power_Plants
14. "The role of waste-to-energy in the circular economy". Communication from the Commission to the European Parliament, The Council, The European Economic and Social Committee and the Committee of the Region.
15. Directive 2010/75/EU of the European Parliament and of the Council of 24 November 2010 on industrial emissions (integrated pollution prevention and control). Available from: https://eur-lex.europa.eu/legal-content/EN/TXT/HTML/?uri=CELEX:32010L0075&from=AUS

Appendix A. Approvals required for the project

Legislation and Administering Authority	Approval Trigger	Approval	Relevance to the Project	Applicability
Commonwealth				
Environment Protection and Biodiversity Conservation Act 1999 (EPBC Act) **DEE**	Actions that have, or are likely to have, a significant impact on a MNES	EPBC Act Referral – controlled action or not a controlled action	Due to the presence of High Value Koala Habitat and the potential occurrence of threatened species, the Project *may* need to be referred to DEE to determine if the proposed works constitute a 'controlled action' under the EPBC Act.	Unlikely Applicable
Native Title Act 1993 **Native Title (Queensland) Act 1993** **National Native Title Tribunal**	Works to be undertaken on land subject to Native Title	An Indigenous Land Use Agreement (ILUA) is required if works are to be undertaken on land subject to Native Title	The site consists of freehold titles not subject to Native Title	No
State				
Non-Planning Act and Regulation Approvals				
State Development and Public Works Organisation Act 1971 **Coordinator General**	A project with one or more of the following characteristics may apply to have it declared a 'Coordinated Project' under the *State Development and Public Works Organisation Act 1971*(SDPWO Act): • complex approval	Coordinated Project Declaration	As outlined within this Initial Advice Statement (IAS), the project is considered of strategic significance to the Region for the economic and social benefits, capital investment and employment opportunities it would provide. By obtaining 'coordinated project'	Yes

Legislation and Administering Authority	Approval Trigger	Approval	Relevance to the Project	Applicability
	requirements, involving local, state and federal governments • significant environmental effects • strategic significance to the locality, region or state, including for the infrastructure, economic and social benefits, capital investment or employment opportunities it may provide • significant infrastructure requirements		declaration from the Coordinator General, the project would benefit from: • a clear approvals framework for the Project; • coordinated and targeted whole-of-government advice with respect to scoping technical investigations and/or environmental assessments necessary to facilitate Project approvals. The Proponent considers the IAR process as suitable for the Coordinator General to assess the project in the event that the project is declared a 'Coordinated Project'. As outlined within this IAS, the potential environmental impacts of the project are well defined and low-medium risk and do not warrant an EIS. Furthermore, the project would	

Legislation and Administering Authority	Approval Trigger	Approval	Relevance to the Project	Applicability
			previously have been subject to code assessment under the Planning Act 2016, recognising its acceptance in principle. The Proponent has resolved, in any event, to adopt best practice measures to minimise and mitigate any potential environmental impacts associated with the project.	
Land Act 1994 DNRME	Temporary or permit road closure Permit to occupy	Road closure permit or permit to occupy	An application for a temporary road closure may be required to facilitate the works. Requirements will be confirmed through detailed design.	Yes, if required
Nature Conservation Act 1992 **DES**	Clearing protected plants or tampering with animal breeding places	Clearing Permit – Protected plants Permit to tamper with animal breeding places	A clearing permit may be required for clearing within a high risk area on the Protected Plants Flora survey trigger map. Clearing requirements will be determined through detailed design. Additionally the removal or disturbance of native animal breeding places by earthwork activities, requires	Yes, if required.

Legislation and Administering Authority	Approval Trigger	Approval	Relevance to the Project	Applicability
			a permit with approved species management programme.	
Aboriginal Cultural Heritage Act 2003 **Torres Strait Islander Cultural Heritage Act 2003** **DATSIP**	Duty of care to not harm cultural heritage sites or items of significance	Cultural Heritage Management Plan	All persons must take all reasonable and practicable measures to ensure their activities do not harm Aboriginal cultural heritage. The duty of care applies regardless of the tenure of the land and regardless of whether it has been identified or recorded in a database. Development may require assessment against the Duty of Care Guidelines. Additionally, if an EIS is required, an approved Cultural Heritage Management Plan (CHMP) is mandatory.	Unlikely applicable
Water Act 2000 **DNRME**	Taking of water	Licence to take water	Development may require a licence to take water. Requirements will be confirmed through detailed design.	Yes, if required
Waste Reduction and Recycling Act 2011 **Waste Reduction and**	Using a resource for an industrial activity	End of waste approval	A waste can be approved as a resource if it meets specified quality criteria for its specific use. As the project	Yes

Legislation and Administering Authority	Approval Trigger	Approval	Relevance to the Project	Applicability
Recycling Regulation 2011 **DNRME**			involves the use of waste as a resource for generating electricity it is considered that an end of waste approval is required.	
Electricity Act 1994 **Electricity Regulation 2006** **DNRME**	If the WtE plant exceeds 30MW in capacity a General Authority is required. If less than 30MW a Special Approval is required. A transmission authority is also required to connect the proposed plan to a transmitting grid	A General Authority Or A Special Approval permit (s130) And A Transmission Authority	The type of permit is contingent upon the capacity of the proposed WtE plant. A transmission authority is required irrespective of the capacity in order to connect to the grid.	Yes
Planning Act and Planning Regulation and associated Legislative Approvals				
Planning Act 2016 **DSDMIP**	Development Assessment (DA) Rules under Section 68(1) of the Planning Act		The assessment process in the DA Rules involves the following parts: • Part 1 – Application • Part 2 – Referral • Part 3 – Information Request • Part 4 – Public notification (if required) • Part 5 – Decision An Applicant is required to identify the development	Yes

Legislation and Administering Authority	Approval Trigger	Approval	Relevance to the Project	Applicability
			type, applicable assessment manager and relevant referral agencies as prescribed under the Planning Regulation.	
Planning Regulation 2017, Schedule 10, Part 3 **Vegetation Management Act 1999** **DNRME**	Clearing native vegetation	Development Permit – Operational Works for clearing native vegetation	A development permit for operational works may be required for clearing certain vegetation. Clearing requirements will be confirmed through detailed design.	Yes, if required
Planning Regulation 2017, Schedule 10, Part 4 **Environmental Protection Act 1994** **DES**	Material change of use on contaminated land	Development Permit – Material Change of Use on contaminated land	A development permit for material change of use may be required for the proposed use as the premises are listed on the contaminated land register/environmental management register and may involve an accessible underground facility. This will be confirmed through detailed design.	Yes, if required
Planning Regulation 2017, Schedule 10, Part 5 **Environmental Protection Act**	Material change of use for an environmentally relevant activity	Development Permit – Material Change of Use for an environmentally relevant activity	A development permit for a material change of use may be required for certain environmentally	Yes

Legislation and Administering Authority	Approval Trigger	Approval	Relevance to the Project	Applicability
1994 **DES**			relevant activities, including ERA 14 (electricity generation), ERA 15 (Fuel Burning), ERA 55 (regulated waste recycling or reprocessing), ERA 56 (regulated waste storage) and ERA 57 (regulated waste transport). The full list of applicable ERAs will be confirmed through detailed design.	
Planning Regulation 2017, Schedule 10, Part 19 **Water Act 2000** **DNRME**	Taking or interfering with water	Development Permit – Operational Works that involves taking or interfering with water	A development permit for operational works may be required for the project if it involves taking or interfering with a watercourse, lake or spring; or a dam ; underground water or taking overland flow water. The extent of taking or interfering with water will be confirmed through detailed design.	Yes, if required
Ipswich Planning Scheme 2006 **Ipswich City Council**	Material change of use assessable against the planning scheme	Development Permit – Material Change of Use	A development approval is required for a material change of use for Special Industry and Major Utility (full extent of land use definitions to be confirmed).	Yes

Appendix B. Desktop searches and mapping

REMONDIS®
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F +61 (07) 3715 1546
Sch. 4(4)(6)@remondis.com.au

17 December 2018

Coordinator General
The Department of State Development
Executive Building
1 William Street
Brisbane Qld 4000

Dear Mr Broe

RE: REMONDIS Australia Pty Ltd: Application for Coordinated Project Declaration for a Waste to Energy Facility located at Swanbank Road, Ipswich

Following the recent success of pre-lodgment meetings with your office, please find attached REMONDIS Australia Pty Ltd application for its proposed Waste to Energy Infrastructure development to be considered for declaration as a Coordinated Project under Part 4 of the *State Development And Public Works Organization Act 1971.*

In addition to REMONDIS' expansive experience within the Waste, Water and Recycling sectors, REMONDIS has established a team of suitably qualified advisors and contractors to complete the reporting and community consultation components of the IAR or EIS process.

REMONDIS' team will include (but not limited to):

- Ethos Urban: Design and Planning Specialists
- Three Plus: Strategy and communication consultants
- Suitably qualified and experienced Environmental Engineering firm (to be nominated)

REMONDIS confirms that it has the fincancial capacity to fund the IAR or EIS process.

If you have any queries regarding the application or wish to further discuss any aspect of the submission, please do not hesitate to contact either Sch. 4(4)(of my office or myself.

Yours faithfully
REMONDIS Australia Pty Ltd

Sch. 4(4)(6) - Disclosing per

General Manager QLD - Operations and Business Development

Pages 530 through 547 redacted for the following reasons:
- -
Sch. 4(4)(7)(1)(c) - Disclosing trade secrets, business affairs or research

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REMONDIS Australia Pty Ltd
PO Box 885
Mascot NSW 1460
Phone: 1800 174 751
Email: accountspayable@remondis.com.au

Remittance Advice

Payment made to:

THE CO-ORDINATOR GENERAL

Vendor Number: 21770
Email to: Sch. 4(4)(6) - D@remondis.com.au

BSB : Sch. 4(4)(7)(1)(c) - Disclosing trade secre
Payment Date : 13/12/2018
Bank Statement Reference : Swanbank WtE I

Payment has been made for the following invoices:

Invoice Number	Date	Invoice Amount ($)	Amount Paid ($)	Voucher Number
Swanbank_WtE_Project_IAS	12/12/2018	18,086.00	18,086.00	VIJ00677117
		Total Payment Amount ($) :	**18,086.00**	**VPJ00192247**

COORDINATOR-GENERAL CORRESPONDENCE

ACKNOWLEDGEMENT

- ☐ CG

ACTION REQUIRED

- ☐ Prepare Minister response
- ☐ Prepare briefing note to Minister
- ☐ Prepare CG response
- ☐ Prepare briefing note to CG
- ☐ OCG Group for direct response/action
- ☒ OCG Group for assessment
- ☐ No response required (noted and to file)
- ☐ Discuss at project meeting

RESPONSE TIME

- ☐ Priority – *5 days*
- ☐ Routine – *15 days*
- ☐ Statutory timeframe
- ☐ Other _____

COPY TO

- ☐ Coordinator-General
- ☐ Minister's Office
- ☐ Director-General's Office

Ref: OGC18/1631

File No: F17/310

Date sent to division

18 December 18

Date response due

_____

Division

- ☑ Coordinated Project Delivery
- ☐ State Development Areas
- ☐ Land Acquisition & Project Delivery
- ☐ CG Directorate
- ☐ Legal Services

RECEIVED
Office of the Coordinator General
17 DEC 2018

NOTES TO THE DEPARTMENT

CPD Rec 18/12

Reviewed by: E Stenk **Date:** 17/12/18

D15/23950

☐ Correspondence Finalised

Pages 550 through 579 redacted for the following reasons:
- -
Duplicate
s. 73(1) - Not relevant/ Out of scope

REMONDIS®
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Initial Advice Statement

Waste to Energy Facility
Swanbank Road, Swanbank

Submitted by REMONDIS Australia Pty Ltd
29 April 2020

Contents

Contents

Figures

Contents

Tables

Contents

Abbreviations

Abbreviation	Descriptions
AADT	Annual average daily traffic
AHD	Australian Height Datum
BGL	Below Ground Level
CEMP	Construction Environmental Management Plan
Cth	Commonwealth
IAR	Impact Assessment Report
IED	Industrial Emissions Directive
IPS	Ipswich Planning Scheme
EIS	Environmental Impact Statement
EPBC	Environmental Protection and Biodiversity Act 1999 (Cth)
EPP (Noise)	Environmental Protection (Noise)Policy 2008
EPP (Air)	Environmental Protection (Air) Policy 2008
GHG	Greenhouse Gas
LGA	Local Government Area
NC Act	Nature Conservation Act 1992
Planning Act	Planning Act 2016
PDA	Priority Development Area
REMONDIS	REMONDIS Australia Pty Ltd
SREWMF	Swanbank Renewable Energy and Waste Management Facility
The Site	The location of the proposed development including the proposed WtE facility referred to as the 'Site'.
WtE	Waste to Energy
VM Act	Vegetation Management Act 1999 (Qld)

Appendices

Executive Summary

REMONDIS is one of Europe's largest privately owned operators of WtE facilities that produce heat, steam and generate energy. REMONDIS Australia is proposing to build Resource Recovery Infrastructure and a Waste to Energy (WtE) facility on its site at Swanbank, in area zoned for heavy industry (under the Ipswich City Plan) and adjacent to the Swanbank E gas-fired power station.

Currently, REMONDIS' Swanbank facility supplies around 12,000 MWh per annum of renewable energy to the Queensland electricity grid through a methane capture and electricity generation project.

This development will include processes to allow for the recovery of a range of recyclable products for processing and recycling. Waste material which cannot be recovered or recycled with be utilised for WtE activities rather than landfill. The proposed WtE facility will form a single component of the wider 'Swanbank Recycling Park'. The WtE technology is proven and currently operates reliably in Europe and many other countries and has a successful track record in treating the same waste streams proposed as fuel as part of this application. REMONDIS will be able to undertake recycling and recovery activities on the current waste being received at Swanbank and use the non-recyclable component to generate up to 50MW of baseload renewable electricity for Queensland households and businesses.

REMONDIS is committed to ensuring that higher order waste management opportunities (reduce, re-use and recycle) are prioritised and that the processing of waste through the proposed WtE facility will only occur when alternative recovery opportunities have been undertaken. A WtE facility which is synergistic with an existing waste disposal and recycling facility will be able to use the power and heat generated within the immediate business precinct and to attract investment, development and employment generating activities.

This Initial Advice Statement (IAS) demonstrates the suitability for 'coordinated project' determination as set out in section 26 (2), 27 and 27 (AC) of the *State Development and Public Works Organisation Act 1971* (SDPWO Act). This IAS provides information regarding the proposal and a brief description of the elements that comprise it. The IAS has been developed to provide an overview of the nature and extent of the potential environmental, social and economic impacts that may be associated with the construction and operation of the proposed project as far as they can be foreseen at this time. The IAS also identifies the key statutory approvals that may be required for the project to proceed, and identifies further environmental studies that may be required to support the project.

As a major Resource Recovery Infrastructure and Energy project requiring an investment of approximately $400 million, the Project is expected to deliver a range of positive socio-economic impacts targeting the region but extending to other population centres in South East Queensland. These include:

- Creation of employment opportunities during the planning, design, construction and operation of the Project – with current estimates of 200 Full Time Equivalent jobs during construction and up to 80 Full Time Equivalent jobs during operation;
- Project will assist the retention of jobs in the Ipswich LGA as a result of new investment and economic activity;
- Project is a strategically significant development for Ipswich in terms of supporting the city's industrial diversification;
- Facilitation of critical infrastructure to the State in advancing the resource recovery, recycling and waste management strategy;
- Assist to achieve the Queensland State Government target for 50 per cent renewable energy by 2030;
- Project adopts technology to ensure that wastes with recoverable value are not sent to landfill and, instead, are put to beneficial use; and
- Supply base load power to the domestic market.

On the basis that the Project's scale and extent is anticipated to have known environmental impacts that are able to be managed through well understood environmental risk mitigation measures, the use of an Impact Assessment Report (IAR) process under the SDPWO Act is requested as the prudent coordinated project

pathway. Given the existing approval of the wider SREWMF, the current site operations, the infrastructure that currently caters to waste storage and treatment (both on site and within the locality) and the industrial nature of the Swanbank precinct, the proposal is well suited to progress under an IAR pathway.

An aerial map of the Swanbank Renewable Energy and Waste Management Facility (SREWMF) is shown at **Figure 1**.

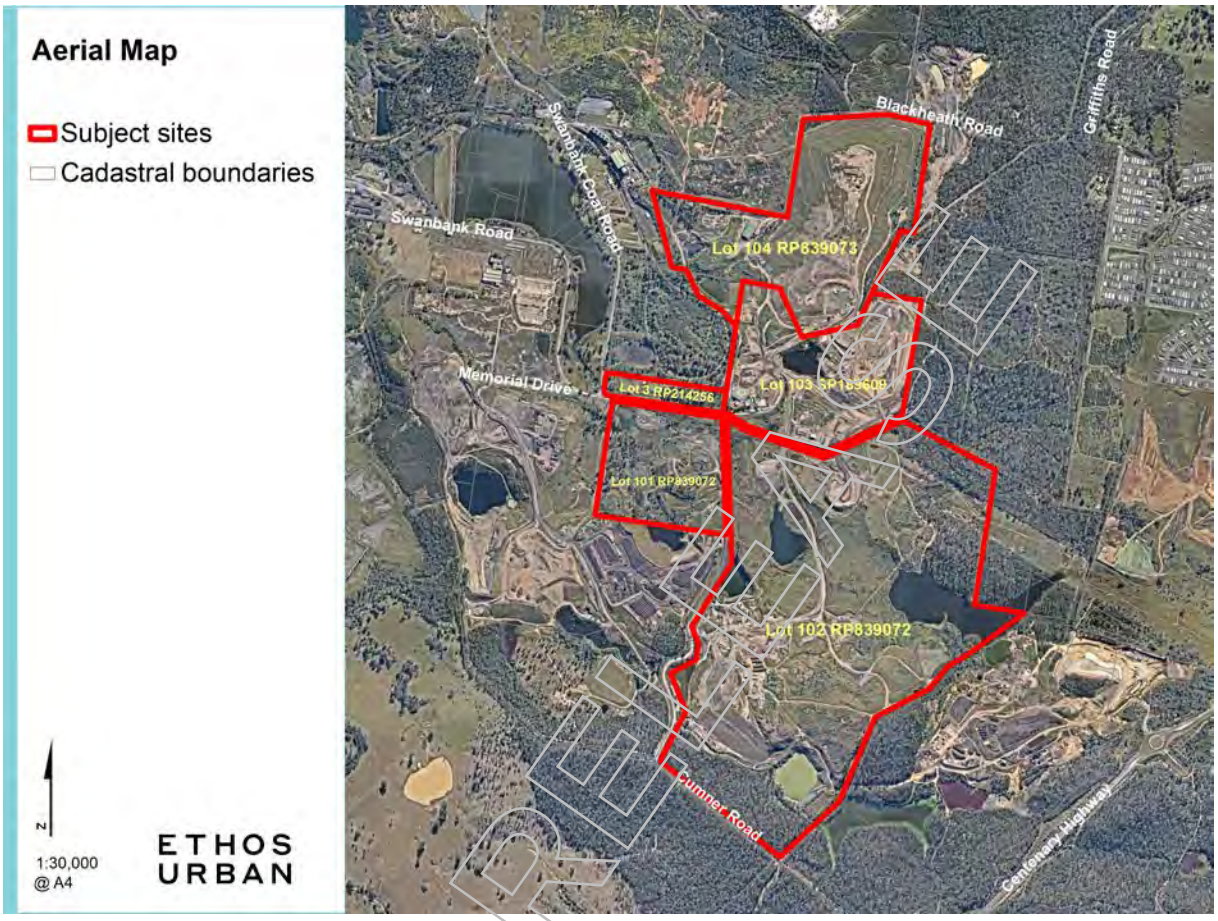

Figure 1: Site Aerial

REMONDIS has commenced implementing its Stakeholder Engagement program and will broaden the execution of this program after the Project is declared as a Coordinated Project.

This proposed WtE facility presents an opportunity for Queensland to benefit from REMONDIS' global experience, and other successful European and UK facilities, and incorporate WtE as part of the solution to sustainable, best practice waste management. Although the proposed technology is new in the context of Queensland, based on existing operational experience, REMONDIS is in a unique position to be able to provide the Coordinator General with certainty regarding the technology and provide assurance that the performance of the facility will meet Industrial Emissions Directive (IED) emissions limits and nearby sensitive receivers will not be at any risk in terms of air quality and human health.

REMONDIS has a proven track record in the Ipswich region in relation to resource recovery and waste management and the proposal is considered to be well suited for declaration as a Coordinated Project.

1.0 Introduction

1.1 Background

REMONDIS Australia (REMONDIS) is committed to diverting waste from landfill and revolutionising recycling and resource recovery at its Swanbank Renewable Energy and Waste Management Facility (SREWMF).

Waste disposal at SREWMF (Stage 1) commenced in 1998 and the landfill currently comprises seven cells, which were constructed progressively between 1997 and 2018. Although the site has operated as a landfill for many years, the subject site was previously used for open cut mining activities and is surrounded primarily by extractive industries and other waste management operations.

REMONDIS has identified that the biggest waste management issue for South East Queensland Councils is the cost of cheap landfill, which results in little incentive to look for other waste management options. Further, a business as usual approach to waste management may see most of South East Queensland's landfills with no capacity by 2040.

Waste-to-energy technology is used across the world, with countries including Germany, Japan, China and Finland using waste to generate electricity. Diverting thousands of tonnes of suitable waste away from landfill and into a best-practice WtE facility will extend the life of South East Queensland's constrained landfills and also provide an additional, baseload electricity source for Queensland residents and businesses.

Queensland has the opportunity to benefit from successful European and UK experiences and incorporate WtE as part of the solution to sustainable, best practice waste management.

1.1.1 Site Details

The SREWMF is located at 66-114 Blackheath Road SWANBANK QLD 4306 and is legally described as:

- Lot 101 on RP839072
- Lot 102 on RP839072
- Lot 103 on SP189609
- Lot 104 on RP839073
- Lot 3 on RP214256

The SREWMF includes the approved landfill footprints identified as Stage 1 and 2:

- Stage 1 is made up of Lot 103 on SP189609 and Lot 104 on RP 839073.
- Stage 2 is identified as Lot 101 and 102 on RP 839072 and Lot 3 on RP 214256.
- Stage 1 of the landfill operation comprises a number of approved individual landfill cells along with a major power easement which runs along the western and southern boundary of Stage 1B on SP 152158 and SP 127335.

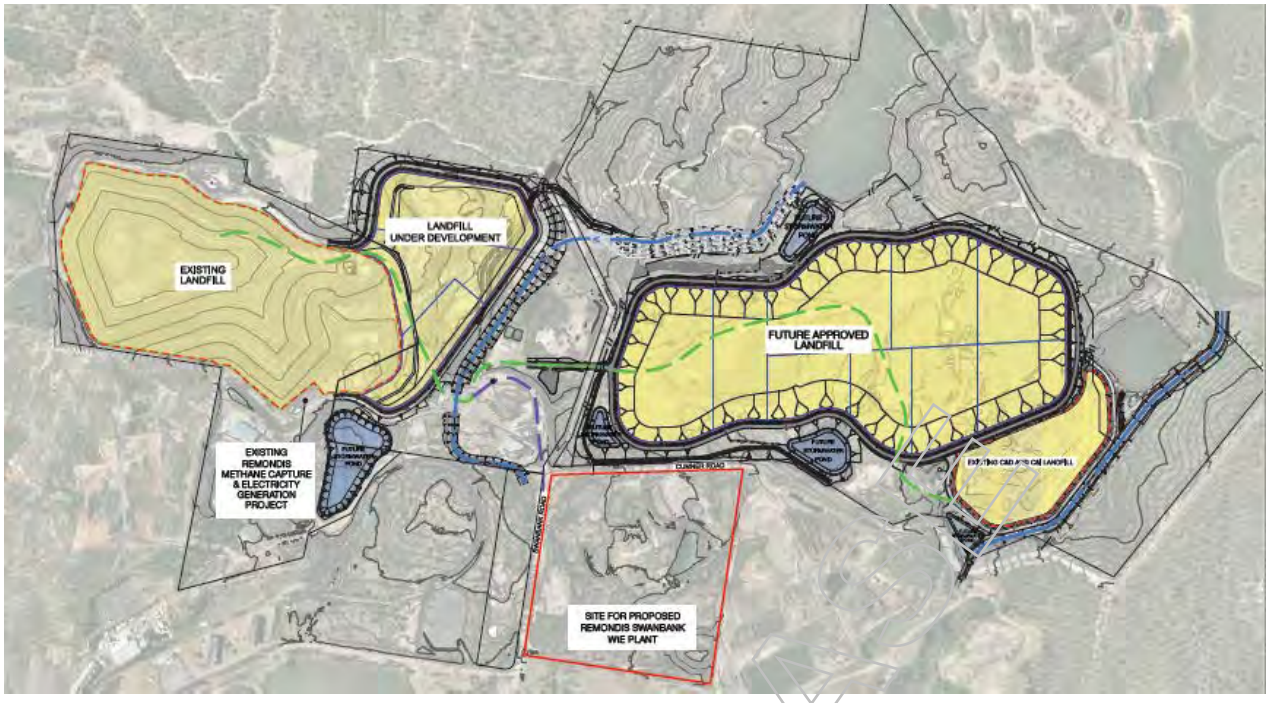

Figure 2: Swanbank Landfill – Approved Landfill Footprints – Stage 1 and 2

As identified in **Figure 3** below, the site falls within the Swanbank Approved Land Use Precincts (3 and 4) under the Ipswich City Plan for the following purposes:

1. Waste Processing, Treatment and Disposal (in accordance with Plan of Development No. 10556/001C).
2. Waste Recycling, Composting and Disposal, Land Rehabilitation, Truck Depot and Park with ancillary uses of Leachate Collection, Landfill, Gas Collection, Treatment, Storage and Disposal, Crushing of Spoil Pile Material, Vegetation Propagation for Rehabilitation and Caretakers Flat (Generally in Accordance with Plan of Development TP-61/90).

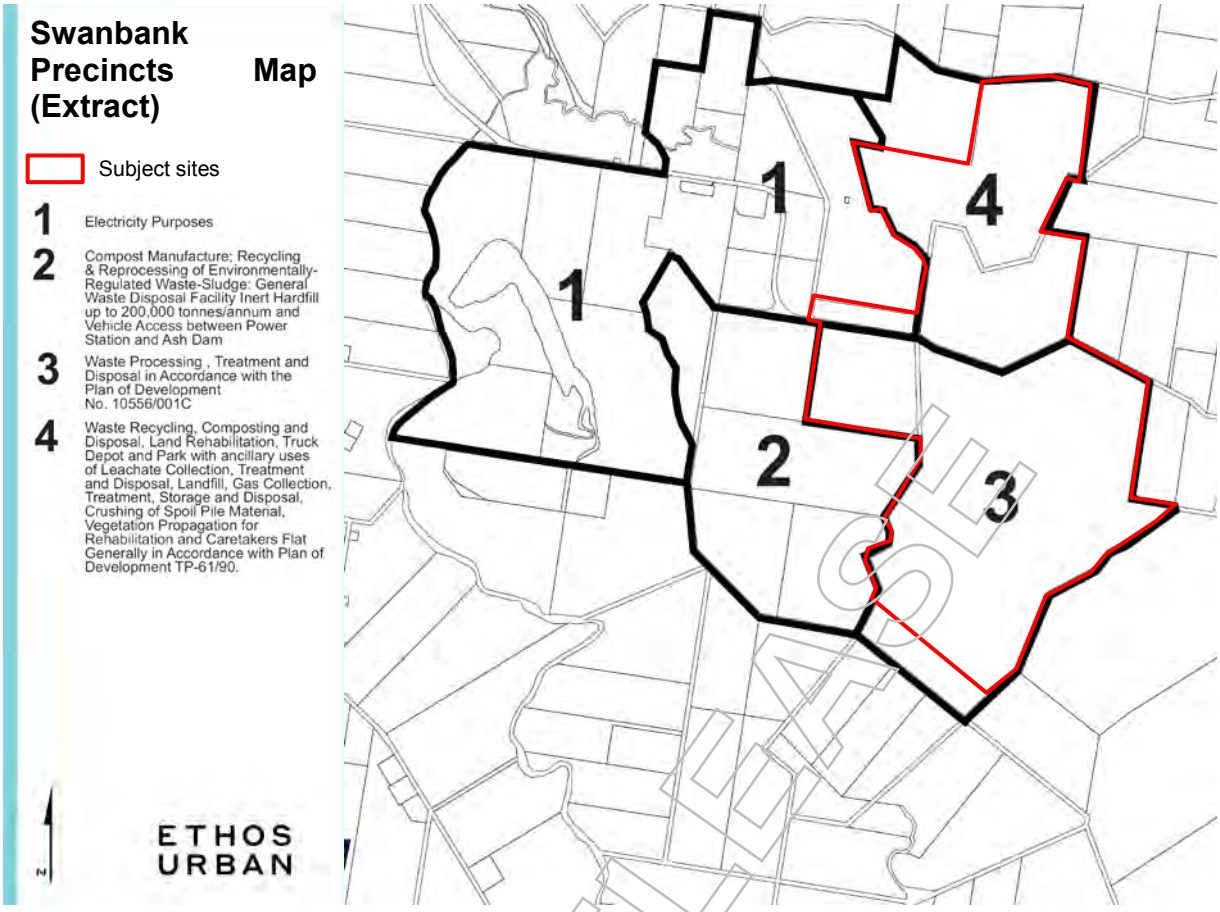

Figure 3: Swanbank Approved Land Use Precincts (Ipswich Planning Scheme)

1.2 Site Approvals

In 1990, the former Moreton Shire local government agency issued an approval for the rezoning of land identified as Stage 1 of the Swanbank site under the Moreton Shire Planning Scheme (TP-61/90).

Although subsequent planning schemes have changed zoning regimes, the wording of the original rezoning continues to be reflected in the current planning scheme. This wording indicates appropriate activities on the land as including:

- Waste recycling, composting and disposal;
- Leachate collection, treatment and disposal;
- Landfill gas collection, treatment and disposal; and
- Crushing of spoil pile material.

Land comprising of the Stage 2 of SREWMF area was granted zoning and development approval in 1990 by Ipswich City Council for activities of waste processing, treatment and disposal in accordance with plan of development 10556/001C.

The current environmentally relevant activities (ERA) approvals over the SREWMF site allow for a wide range of activities, including the following:

- Waste disposal;
- Soil conditioner manufacturing;
- Composting;
- Regulated waste storage;
- Regulated waste treatment; and
- Fuel burning.

The site has been subject to a number of planning approvals since it commenced operation as a Renewable Energy and Waste Management Facility with each extension, expansion and construction of the landfill cells requiring a subsequent approval.

It is noted that the proposed WtE facility will be located on Lot 101 on RP 839072 which forms Stage 2 of the SREWMF.

The subject site is identified within the Swanbank New Chum Land Use Concept Master Plan as shown in **Figure 4** below. The Swanbank New Chum master plan (as described within the ICC Planning Scheme Part 6.7D) is an indicative footprint for future development and is not intended to prescribe the precise boundaries of the indicative land use designations and structural elements.

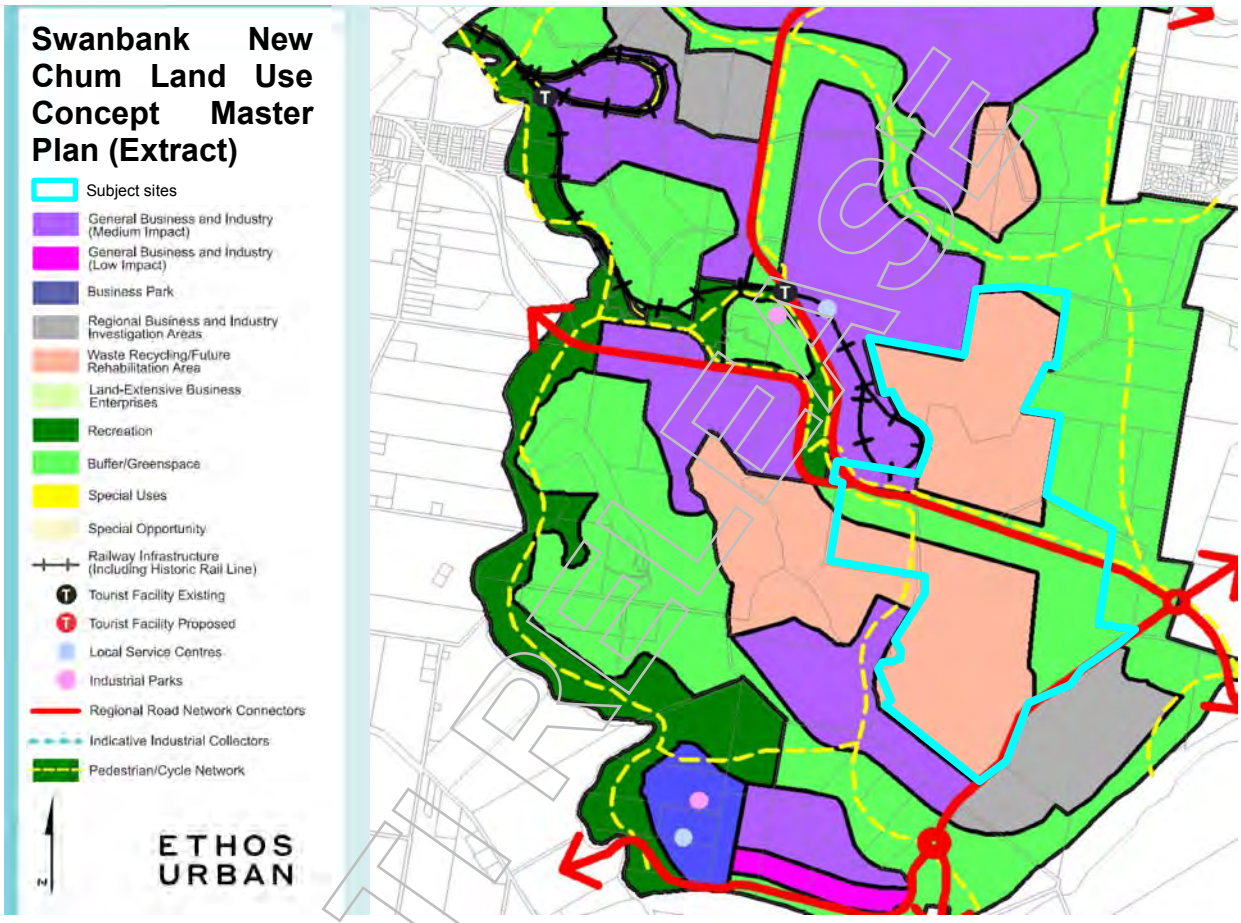

Figure 4: Swanbank New Chum Land Use Concept Master Plan (Extract)

1.3 Purpose and scope of Initial Advice Statement

The purpose of this Initial Advice Statement (IAS) is to assist the Coordinator General in determining whether the project should be declared a 'coordinated project' under Part 4 of the *State Development and Public Works Organisation Act 1971* (SDPWO Act) and the level of assessment required. The IAS identifies the potential Project impacts (positive and negative) to be investigated in detail in either the Project Impact Assessment Report (IAR) or Environmental Impact Statement (EIS).

Accordingly, the IAS provides the Project information to interested and affected stakeholders and the general public. It identifies additional approvals that may be required for the implementation of the Project once the Coordinator General assessment is complete.

1.4 Coordinated project declaration

Due to the importance of the Project, the need for a viable long term solution to waste management in South East Queensland and an alternative to traditional landfill waste management, REMONDIS believes the Project would benefit from declaration as a Coordinated Project by the Coordinator General under Part 4 of the SDPWO Act.

The proposed approach to build and operate the resource recovery WtE facility within the existing SREWMF site is expected to significantly reduce the environmental, social and economic impacts of the Project.

REMONDIS seeks confirmation from the Office of Coordinator General that the proposal's declaration as a 'Coordinated Project' is appropriate under section 27(2)(b) of the SDPWO Act as the IAS confirms that the Project will:

Require complex State or Commonwealth government approval requirements

A number of approvals from or referrals to local, State and the Commonwealth government will be required for the Project. This will require coordination of the input of a number of regulatory agencies, which are likely to include:

- Department of Natural Resources, Mines and Energy (DNRME);
- Department of Environment and Science (DES);
- Workplace Health and Safety, Queensland (WHSQ);
- Department of Transport and Main Roads (DTMR);
- Hazardous Industries and Chemicals Branch (HICB);
- Ipswich City Council (ICC); and
- Department of Environment and Energy (DoEE).

Further, SREWMF holds a current Environmental Authority (EA) for a number of Environmentally Relevant Activities (ERA's). The operation of a WtE facility at SREWMF (Lot 101) will require an application to amend an EA to include the following ERA's:

- ERA 14 – Electricity Generation (for all WtE technology operations);
- ERA 15 – Fuel Burning (for all WtE technology operations);
- ERA 55 – Regulated Waste Recycling or Reprocessing.

Be of Strategic significance to the locality, region or the State

As a major Resource Recovery Infrastructure and Energy project requiring an investment of approximately A$400 million, the Project is expected to deliver a range of positive socio-economic impacts targeting the region but extending to other population centres in South East Queensland. These include:

- Creation of employment opportunities during the planning, design, construction and operation of the Project – with current estimates of 200 Full Time Equivalent jobs during construction and up to 80 Full Time Equivalent jobs during operation;
- Project will assist the retention of jobs in the Ipswich LGA as a result of new investment and economic activity;
- Project is a strategically significant development for Ipswich in terms of supporting the city's industrial diversification;
- Facilitation of critical infrastructure to the State in advancing the resource recovery, recycling and waste management strategy;
- Assist to achieve the Queensland State Government target for 50 per cent renewable energy by 2030;
- Project adopts technology to ensure that wastes with recoverable value are not sent to landfill and, instead, are put to beneficial use; and
- Supply base load power to the domestic market.

There will be several key environmental matters that require focused assessment to fully identify impacts and develop appropriate mitigation measures.

On the basis that the Project's scale and extent is anticipated to have known environmental impacts that are able to be managed through well understood environmental risk mitigation measures, the use of an Impact

Assessment Report (IAR) process under the SDPWO Act is requested as the prudent coordinated project pathway.

Given the existing approval of the wider SREWMF, the current site operations, the infrastructure that currently caters to waste storage and treatment (both on site and within the locality) and the industrial nature of the Swanbank precinct, the proposal is well suited to progress under an IAR pathway.

The IAR pathway is also consistent with the assessment category that would be applicable to the proposal if approval were to be sought through the normal pathway under the Planning Act 2016. Under normal circumstances, the proposal would require only a code assessable application to Ipswich City Council, although that application would involve a number or referral triggers to the State as indicated above.

This code assessable status is established by Part 6, Division 5 of the Ipswich Planning Scheme, which contains the Assessment Categories and Relevant Assessment Criteria for Regional Business and Industry Investigation Zone (Table 6.4 – Making a Material Change of Use).

Table 6.4 identifies that any specified use listed in Table 6.1 for the specified precincts within Sub Area RBIA2, Swanbank New Chum have the following assessment category:

- Exempt, if located within an existing building approved or lawfully used for a specified use listed in Table 6.2 for the specified Sub Area.
- Code Assessable otherwise.

The site falls within the Swanbank Approved Land Use Precincts (3 and 4) under the Ipswich City Plan for the following purposes (as per Table 6.1 of the Ipswich Planning Scheme):

3. *Waste Processing, Treatment and Disposal (in accordance with Plan of Development No. 10556/001C).*
4. *Waste Recycling, Composting and Disposal, Land Rehabilitation, Truck Depot and Park with ancillary uses of Leachate Collection, Landfill, Gas Collection, Treatment, Storage and Disposal, Crushing of Spoil Pile Material, Vegetation Propagation for Rehabilitation and Caretakers Flat (Generally in Accordance with Plan of Development TP-61/90).*

This wording in the Ipswich Planning Scheme reflects longstanding approvals over the REMONDIS land at Swanbank which envisage a wide range of waste related activities.

Drawing upon their extensive international experience in building and operating WtE plants (described in greater detail in Section 2 of this report), REMONDIS can provide the Coordinator General with comfort that the WtE technology and process is well understood and with limited environmental effects, the Project should be considered suitable for the IAR pathway.

Although the proposed technology is new in the context of Queensland, based on existing operational experience, REMONDIS is in a unique position to be able to provide the Coordinator General with certainty regarding the concentrations and mixes of emissions associated with the technology to provide assurance that the performance of the facility will meet Industrial Emissions Directive (IED) emissions limits and nearby sensitive receivers will not be at any risk in terms of human health. The IED details rules for integrated prevention and control of pollution arising from industrial activities[15].

It also lays down rules designed to prevent or, where that is not practicable, to reduce emissions into air, water and land and to prevent the generation of waste, in order to achieve a high level of protection of the environment.

The proposal will be in a position to provide direct reference to fully operational facilities that incorporate the thermal treatment of the same type of waste feedstock proposed at Swanbank to provide the Coordinator General with certainty with regard to potential environmental impacts (such as air quality impacts and human risk estimates).

REMONDIS can demonstrate that the nominated waste streams will be separated. Higher order waste management opportunities (reduce, re-use and recycle) will be prioritised and that the processing of waste through the proposed technology will occur after alternative recovery opportunities have been undertaken.

REMONDIS has a proven track record in the Ipswich region in relation to resource recovery and waste management. When the proposal is considered in the context of the existing operation and the fact that

REMONDIS is one of Europe's largest privately owned operators of WtE plants, it is demonstrated that the proposal is a well-defined, low to medium risk project where the likely impacts are highly predictable. REMONDIS has a well-defined proposal to avoid, minimise, mitigate and/or offset those impacts that are accepted best-practice in the WtE industry. The proposal is therefore well suited to progress via the IAR pathway.

Justification for using the more targeted IAR process is summarised in Section 7.1 (potential project impacts) and Section 8.1 (Environmental Management and Mitigation Measures).

2.0 The proponent

REMONDIS is one of the world's largest waste, water and environmental management organisations, managing recyclable material, general waste, organic matter, liquids and more problematic wastes. It has been operating since 1934.

The company employs more than 30,000 staff in over 800 business locations across 30 countries and generates revenues valued at approximately AUD$11.5 billion per annum.

REMONDIS has a network of more than 800 plants and facilities that service more than 200,000 commercial and industrial customers and collect, process and market more than 30 million tonnes of recyclable materials every year.

Sustainability and the conservation of natural resources are the central features of the company's philosophy and directly influence all of REMONDIS' business activities. Across the world, REMONDIS promotes and advances efforts to sustainably improve living conditions.

REMONDIS Australia was founded in 1982 with its first operation in Penrith, NSW. Since then, REMONDIS Australia has grown steadily, with operations in Sydney, Melbourne, Brisbane, Adelaide, Perth and in regional Australia.

In Queensland, REMONDIS employs approximately 180 people, servicing more than 7,000 commercial customers, including 9 councils, and working with a network of domestic customers. REMONDIS is one of Europe's largest privately owned operators of WtE facilities that produce heat, steam and generate energy.

REMONDIS has extensive international experience in building and operating WtE plants. They own and/or operate large WtE plants that utilise various types of fuel including municipal waste, refused derived fuel and biomass. Examples of some of these plants include:

GMVA Oberhausen, Germany
The 720,000 tonnes per year WtE plant in Oberhausen Germany which produces up to 262 MW of thermal power input which is converted into electricity and additional heat production for heat supply from municipal solid waste.

Environmental control systems include SNCR, wet scrubber, entrained flow absorber.

RETA Staßfurt, Germany
The 300,000 tonnes per year WtE plant in Staßfurt Germany which produces up to 111 MW of thermal power in the form of electricity and additional heat production for heat supply from municipal solid waste.

Environmental controls include SNCR, semi-dry adsorption reactor, fabric filter.

AVG Cologne, Germany
The 700,000 tonnes per year WtE plant in Cologne Germany which produces up to 264 MW of thermal power in the form of electricity and additional heat production for heat supply from municipal solid waste.

Environmental control systems include spray drier, fabric filter, SCR catalytic reactor, wet scrubber, fixed bed hearth furnace coke filter.

BMK Biomass Plant in Lunen, Germany
A 150,000 tonnes per year biomass plant which produces 46 MW of

thermal power primarily from wood waste.

MHKW Frankfurt, Germany
525,000 tonnes per year WtE plant in Frankfurt City, Germany. The plant produces 250 MW of thermal power in the form of steam for district heating and power production for Frankfurt.

Environmental control systems include SNCR, entrained flow adsorption, fabric filter.

BEG Bremerhaven
300,000 tonnes per year plant treating MSW located near Bremerhaven, Germany. The plant produces up to 139 MW of thermal power for electricity and district heating.

Environmental control systems include SNCR, EP, quench, Entrained flow adsorption, wet scrubber, fabric filter.

In Germany, REMONDIS' Lippe Plant is the focal point and the hub of its recycling activities, where more than 330,000MWh of energy (electricity and steam) is produced each year, including 158,600MWh from a biomass-fired power plant. The Lippe Plant is Europe's largest recycling site, where annually more than one million tonnes of waste is recycled/recovered and converted into recycled raw materials, other products or energy. Along with exporting a large amount of energy, the Lippe Plant creates sufficient energy to power the whole site. Details of the Lippe Plant can be found at https://www.remondis-sustainability.com/en/acting/lippe-plant/

REMONDIS has engaged the services of Ethos Urban (Planning Consultants) to assist with the preparation of the IAS and Three Plus (Communications Consultants) to assist with the preparation of a Community and Stakeholder Engagement Plan.

The proponent's Queensland head office is located in Rocklea at the following address:

69 Grindle Road,
Rocklea QLD 4106

3.0 Nature of the proposal

3.1 Scope of the project

The project is proposed to comprise of an integrated waste receiving, processing, recovery, and power generation facility which includes a Waste to Energy (WtE) facility. WtE plants recover energy through the combustion of waste as the fuel for generating power, just as other power plants use coal or natural gas. The burning fuel creates steam to drive a turbine to create electricity. Unlike wind and solar systems, WtE plants can generate renewable baseload electricity for households and businesses irrespective of weather patterns.

At Swanbank, diverting suitable waste away from landfill (as shown in **Figure 2** below) and into a best-practice WtE facility, REMONDIS can generate up to 50MW of electricity and extend the life of constrained landfills.

REMONDIS' existing Swanbank landfill does not take any of the NSW waste streams that has been the subject of recent media coverage and public interest, and REMONDIS' WtE proposal does not rely on additional waste streams coming to the Swanbank site. Instead, REMONDIS will divert existing waste streams to a beneficial use (recovered energy).

The proposal does not seek or require further approval to the existing REMONDIS operations on site (as described in detail in Section 1.2 of this report).

Waste will be received to the facility either for recovery and recycling, or directly for use of suitable materials as a fuel source in a WtE plant. Residues from the plant's flue gas treatment system and the boiler will be processed in an on-site facility or disposed to a suitable landfill. Resulting bottom ash from the plant will be processed through a recovery facility to extract valuable resources such as metals and reused potentially as a construction material or disposed to a suitable landfill.

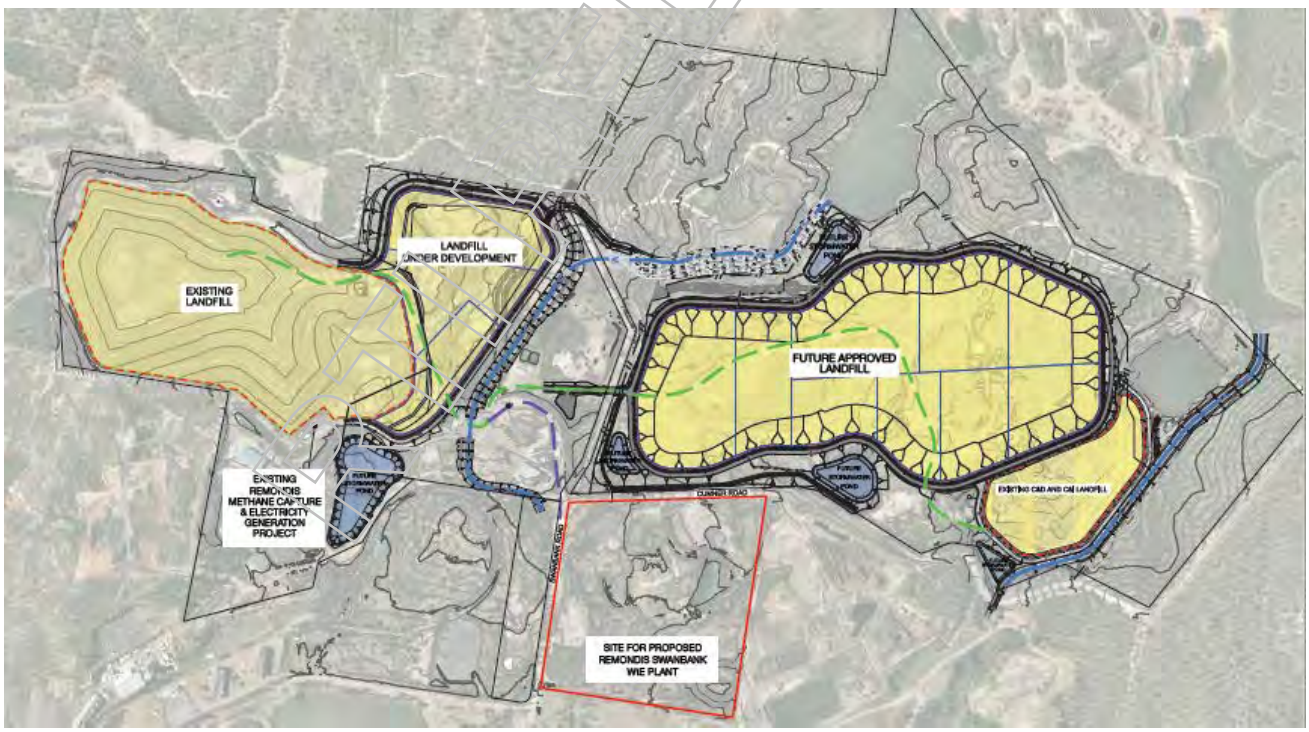

Figure 5: Swanbank landfill with proposed site for REMONDIS WtE facility shown in red

Figure 6: Artist's impression of the Waste to Energy Facility at Swanbank, Ipswich.

Figure 7: Artist's impression of the Waste to Energy Facility.

3.2 Land uses

Activities currently approved on the Stage 1 and 2 of the subject land include the following:

- Waste disposal;
- Resource recovery and recycling of waste;
- Waste volume reduction and separation;
- Biological treatment processing;
- Chemical waste treatment (including sewerage sludge treatment);
- Thermal treatment technologies; and
- Composting and organic processing.

3.3 Project need, justification and alternatives considered

The main objectives of the proposed facility are as follows:

- To manage or reduce the need/dependency for landfill in South East Queensland.
- To improve resource recovery from waste and to divert recyclables away from landfill.
- To help solve the energy and waste needs of South East Queensland.

South East Queensland faces a significant existing landfill challenge, with landfill disposal accounting for about 40% of total waste management in Australia. There are 11 landfills in South East Queensland which receive nearly four million tonnes of household rubbish, commercial and industrial waste, and construction and demolition waste a year.

The diversion of waste from landfill, reducing the potential for methane emissions, while also providing a form of low carbon, renewable energy, is now recognised by Government as making an important contribution to the targets for dealing with waste.

It is therefore considered that the 'Do Nothing' scenario is not appropriate given the established need for new energy generation, including a need for low carbon generation. The alternative to the proposed Development proceeding would be continued operation of traditional landfill waste management operations which have been found to be inefficient as a long term sustainable solution to South East Queensland's expanding population and waste generation.

The selection of the site for the proposed Development is directly related to its proximity to the Cunningham Highway, local electricity grid, and the direct synergies between the proposed Development and the adjoining REMONDIS SREWMF currently in operation which will provide a high percentage of the waste fuels.

The WtE facility does not rely on additional waste streams coming to the Swanbank site, instead it will divert existing waste streams to a beneficial use. REMONDIS does not take any of the NSW waste streams that were the subject of recent media coverage and public interest.

The Swanbank area is designated and zoned as a significant business and industrial area of the city of Ipswich and is identified as having preferred development outcomes for industry with high energy uses.

WtE technology is used across the world, with countries including Germany, France, Swiss, USA, Japan, China, Denmark, Norway and Finland using waste to generate electricity. Diverting thousands of tonnes of suitable waste away from landfill and into a best-practice WtE facility will extend the life of South East Queensland's constrained landfills and also provide an additional, baseload electricity source for Queensland residents and businesses. Queensland has the opportunity to benefit from successful European and UK experiences and incorporate WtE as part of the solution to sustainable, best practice waste management. Examples of plants operated by REMONDIS are provided in Section 2.0.

It should also be noted that other Australian States have WtE facilities progressing through the approval stages, with some facilities expected to be operational within the next few years. Examples of Australian facilities include:

Australian Paper

- Location: Latrobe Valley Victoria
- Proposal: 225MW thermal energy from waste
- Input: 650,000 tonnes per annum of MSW and C&I waste
- Status: Works approval application submitted with EPA Victoria.

Recovered Energy Australia

- Location: Laverton North, Victoria
- Proposal: 10MW gasification to energy plant
- Input: 200,000 tonnes per annum of MSW
- Status: Design and application stage.

Mt. Piper (Energy Australia and RE Group)

- Location: Portland, New South Wales
- Proposal: 27MW energy from waste
- Input: 200,000 tonnes per annum of waste
- Status: Planning / EPA decision pending. Expected 2019.

Phoenix Energy Australia

- Location: Naval Base, Western Australia
- Proposal: 36MW energy from waste
- Input: 400,000 tonnes per annum
- Status: Approved. Expected to be operational by 2021

New Energy Corporation Pty Ltd

- Location: East Rockingham, Western Australia
- Proposal: 27.8MW energy from waste
- Input: 300,000 tonnes per annum from MSW, C&I and C&D waste
- Status: Currently awaiting approval

New Energy Corporation Pty Ltd

- Location: Port Headland, Western Australia
- Proposal: 18.5MW energy from waste
- Input: 70,000-130,000 tonnes per annum
- Status: Approved. Operational 2019.

3.4 Components, developments, activities, and infrastructure that constitute the project to be declared coordinated

The proposed development involves the construction and operation of resource recovery infrastructure and WtE Facility on the REMONDIS SREWMF, in an area appropriately zoned for heavy industry and adjacent to the Swanbank power station and with the infrastructure in place to operate a power station.

WtE plants recover energy through the combustion of waste as the fuel for generating power, as shown in a simple process diagram in **Figure 8** below.

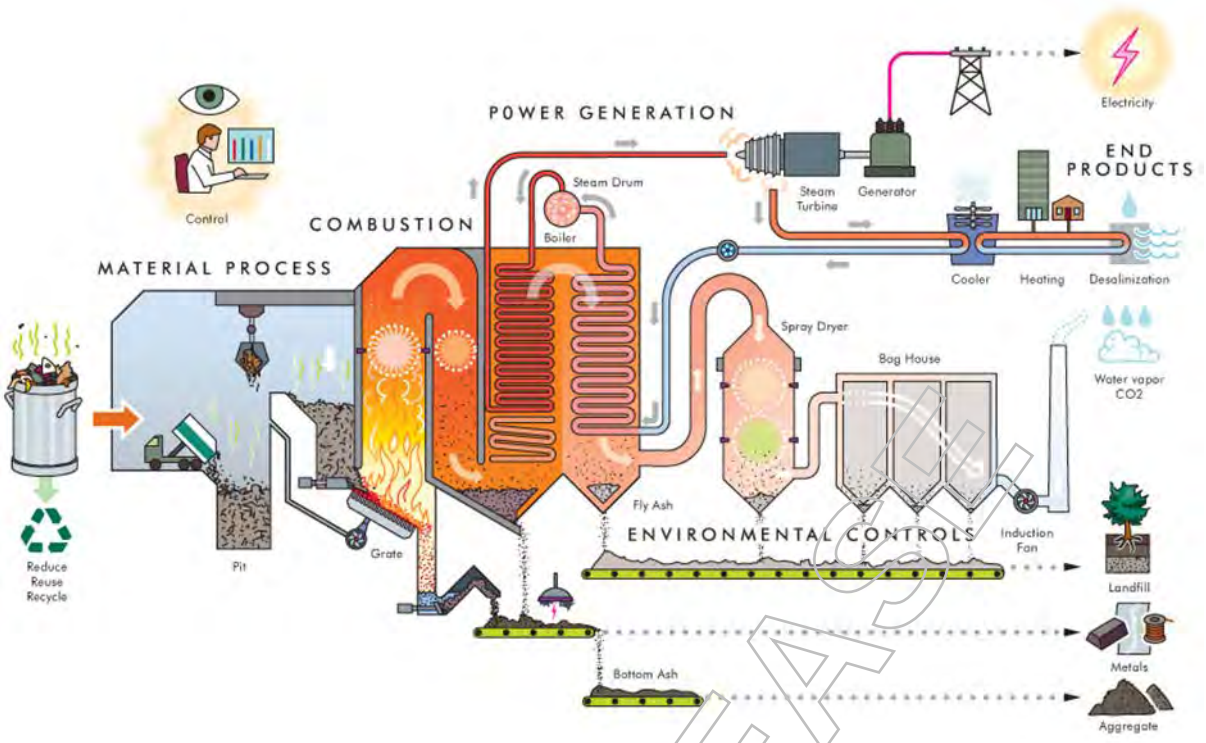

Figure 8: Simple Waste to Energy process

(Source:https://www.ct.gov/deep/lib/deep/waste_management_and_disposal/solid_waste/transforming_matls_mgmt/resources_recovery_task_force/cra_operational_review_report_110813.pdf)

3.5 Process Description

Resource Recovery / Sorting Facility

Waste received to site in a resource recovery / sorting area where the waste is sorted into recoverable and non-recoverable fractions. Recoverable waste will be collected and transported to suitable recycling facilities and non-recoverable wastes will be further sorted and transferred into the Receival / Tipping Hall.

Receival or Tipping Hall

Waste is received at the facility into the receiving or tipping hall. This hall is fully enclosed and maintained under negative pressure to minimise dust and odour emissions. The air in the tipping hall and waste bunker area is used as combustion air for the process to effectively prevent emissions.

Waste Bunker

The waste is tipped via multiple unloading bays into a large waste bunker which has enough capacity for storage of waste for several days. While no waste deliveries take place, the unloading bays are closed and sealed. Waste is fed directly by crane from this bunker into the combustion chamber.

Grate / Combustion Chamber

The combustion chamber is a highly specialised and large piece of equipment that utilises the reciprocating grate technology to move the waste through the combustion chamber while allowing combustion air to flow through the waste. Multiple combustion zones, that are separately controlled and supplied with combustion air, ensure an entire burnout of the waste. The hot flue gas from the combustion chamber goes through a secondary combustion chamber (post-combustion chamber) to finally ensure complete combustion.

Bottom Ash Conveyer

The entirely burned out waste falls as ash from the end of the combustion grate into the deslagger. The deslagger not only cools down the hot ash with water but also insulates the combustion chamber from the surrounding area, therefore preventing emissions. The bottom ash conveyer subsequently transports the ash out of the system, where it is taken away for re-processing and re-use.

Boiler or Heat Exchange Unit

This boiler unit (which comprises of a multi-pass heat exchanger system) takes the hot flue gas from the combustion chamber and transfers its thermal energy to the water-steam-cycle, where water evaporates and turns into steam. The steam is super-heated, normally to around 400 – 430°C and high pressures of about 40 bar. The super-heated steam is then utilised in a steam turbine to generate electricity.

Flue Gas treatment

The flue gas, after passing through the boiler units, will pass through several treatment steps which include selective non catalytic reduction (SNCR) by utilizing urea or ammonia waster to remove NOx gases, injection of lime and activated carbon to remove acidic gases, heavy metals, dioxins / furans and other organic pollutants and a baghouse filter to remove reaction products and particulates. The flue gas treatment system will be fully compliant with current European emission limits for WtE plants. It will meet the requirements of the IED.

Water Steam Cycle with Steam Turbine

The turbine and generator units turn the super-heated steam into electricity. The steam is condensed back and re-used in the process. Depending on the design of the turbine, steam can be extracted in various pressure levels depending on the intended end use.

Stack

Purified flue gases will be emitted via a stack. The height of the stack will be determined by dispersion modelling.

Plant Outputs

Apart from electricity, steam and heat, there are three main outputs from the WtE process:

Bottom Ash

The bottom ash is processed to recover metals and the resulting aggregate is re-used in various applications (for example: road base). Bottom ash volumes are generally 16-22% of the input waste volumes.

Fly Ash

The fly ash is collected from the boiler and flue gas treatment system. The ash is stabilised, if required, and disposed to REMONDIS' licenced landfill. Fly ash volumes are generally 2-3% of the input waste volumes.

Flue Gas Emissions

The gas emissions leaving the stack will be monitored continuously by a computerised system that complies with IED regulations. They will also be spot tested as required by relevant regulations for various contaminants such as heavy metals, dioxins and furans. In Europe, it is best practice and common for real time gas emissions data to be transferred to the local Environmental Authority responsible for the regulatory supervision of the facility. It is also recommended to continuously measure mercury to obtain a best practice removal efficiency.

3.6 External infrastructure requirements

The SREWMF site can be accessed from the Cunningham Highway via Swanbank Road. Construction traffic will primarily occur via this road.

Existing power and water supply on site will suitably meet the requirements of construction activities.

The activities of the WtE facility will require connection to the existing power grid system. This connection will be negotiated with the relevant parties prior to project commencement as it will be required to finalise design plans.

These connections will be undertaken in line with all necessary state and federal guidelines and permit systems. It is expected that this connection will extend past the boundaries of the existing Swanbank facility as required by the infrastructure system.

3.7 Timeframes for the project

The proposed commencement and completion of the WtE facility is outlined in the table below.

Table 1: Timeframe

Activity	Timeframe
Coordinated project and DES approvals.	2018-2019
Detailed Design and Approvals.	2019-2020
Construction and quality control.	2021-2023
Implementation and site operations commence.	2024-2025

3.8 Construction and operational processes

Overview of key construction and operational requirements:

- Access to water supply;
- Road network;
- Waste feedstocks;
- Connection to power grid;
- Environmental testing and guidelines.

The key project components and activities required to provide the Resource and Recovery and WtE facility at Swanbank include:

- Construction and Enabling Works:
  - Site establishment;
  - Bulk earthworks;
  - Piling and foundations;
  - Services location and reticulation;
  - Internal and external road works; and
  - Car parking and other civil infrastructure.
- Main Construction Works:
  - Site layout and building works;
  - Structure works:
    - Resource Recovery / Sorting Facility;
    - Transport/loading infrastructure for the transport of recyclables;
    - Tipping hall;
    - Waste bunker;
    - Grate / Combustion Chamber;
    - Boiler and boiler house;
    - Flue Gas treatment;
    - Turbine / turbine hall;
    - Deslagger;
    - Ash conveyor belt;
    - Stack;
    - Ash processing.
- Weighbridges;
- Building Materials/Finishes;
- Office and amenities for staff and contractors;
- Parking and traffic management infrastructure;
- Landscaping and environmental development to support local ecosystems.

3.9 Workforce requirements during the construction and operation

Workforce numbers are estimated to be up to 200 Full Time Equivalent jobs during construction and up to 80 Full Time Equivalent jobs during operation.

3.10 Economic indicators

Based on concept design work undertaken to date, the Project's capital expenditure is approximately $400 million. The cost estimate will be further developed as part of the Project's detailed design process.

3.11 Financing requirements and implications

The proposed REMONDIS WtE facility will be a private sector investment. The project is not reliant on the Queensland State Government Resource Recovery Industry Development Program (RRIDP). REMONDIS has the necessary capacity to fund the project.

4.0 Location of the key project elements

4.1 Location

The SREWMF is located at 66-114 Blackheath Road SWANBANK QLD 4306 and is legally described as:

- Lot 101 on RP 839072;
- Lot 102 on RP 839072;
- Lot 103 on SP 189609;
- Lot 104 on RP 839073;
- Lot 3 on RP 214256.

The project area is located within the local context is shown below in **Figure 9.**

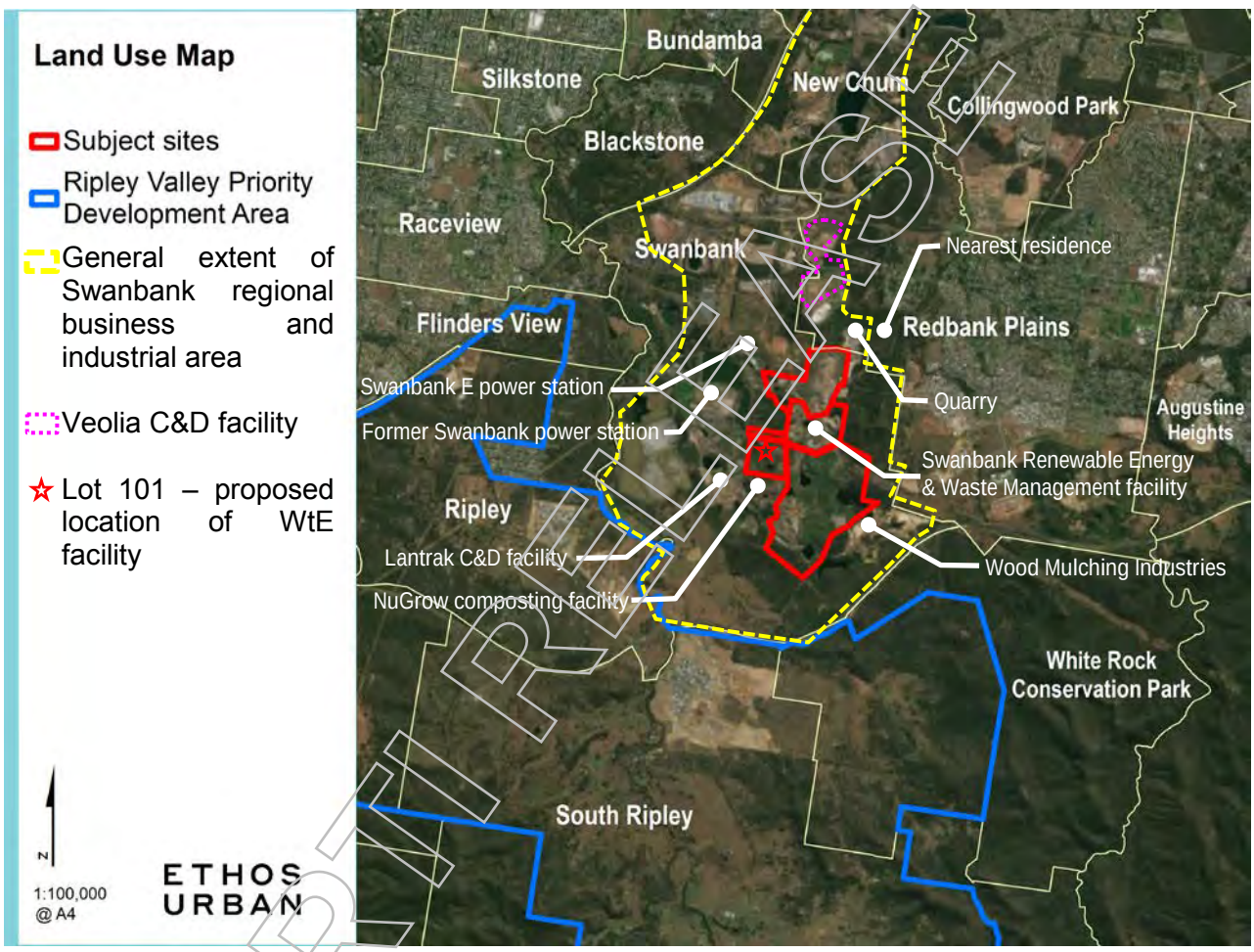

Figure 9: Surrounding features

4.2 Tenure

The proposed WtE facility is to be located on Lot 101 on RP 839072 however the proposal will include the wider SREWMF which includes Stage 1 (Lot 103 on SP 189609 and Lot 104 on SP 839073) and Stage 2 (Lot 101 and 102 on RP 839072 and Lot 3 on RP 214256).

The SREWMF is owned freehold by REMONDIS and is surrounded by freehold land. The site is zoned RBIA02 - Regional Business & Industry Investigation (New Chum) under the provisions of the Ipswich Planning Scheme, located within the City of Ipswich Local Government Area.

5.0 Description of the existing environment

5.1 Natural environment

5.1.1 Land

The SREWMF and the area around the Project site are located within the Swanbank regional business and industrial area as defined in the Ipswich City Plan and are characterised by disturbance from former coal mining operations and other ongoing industrial activities.

The entire site is included in the Regionally Significant Business Enterprise and Industry Area under the planning scheme. Within this area, Lots 101, 103 and 104 are located within the Regional Business and Industry Investigation Zone. Lot 102 is also partly included in this zone, with the eastern part of this lot included in the Regional Business and Industry Buffer Zone. Lot 3 is included in the Regional Business and Industry (Medium Impact Sub Area) Zone.

These areas primarily accommodate regional business enterprise and industry employment opportunities, as well as the buffer areas for these uses, that are generally compatible and create a high standard of amenity. Although the proposed land use is not typically associated with high amenity, it is consistent with and will form part of the existing on-site Swanbank landfill operations.

The zoning for the site, as shown below in **Figure 10**, is also consistent with the inclusion of the site in the Swanbank New Chum Land Use Concept Master Plan, where the site is identified as being part of the waste recycling/future rehabilitation, general business and industry (medium impact) and buffer/greenspace areas.

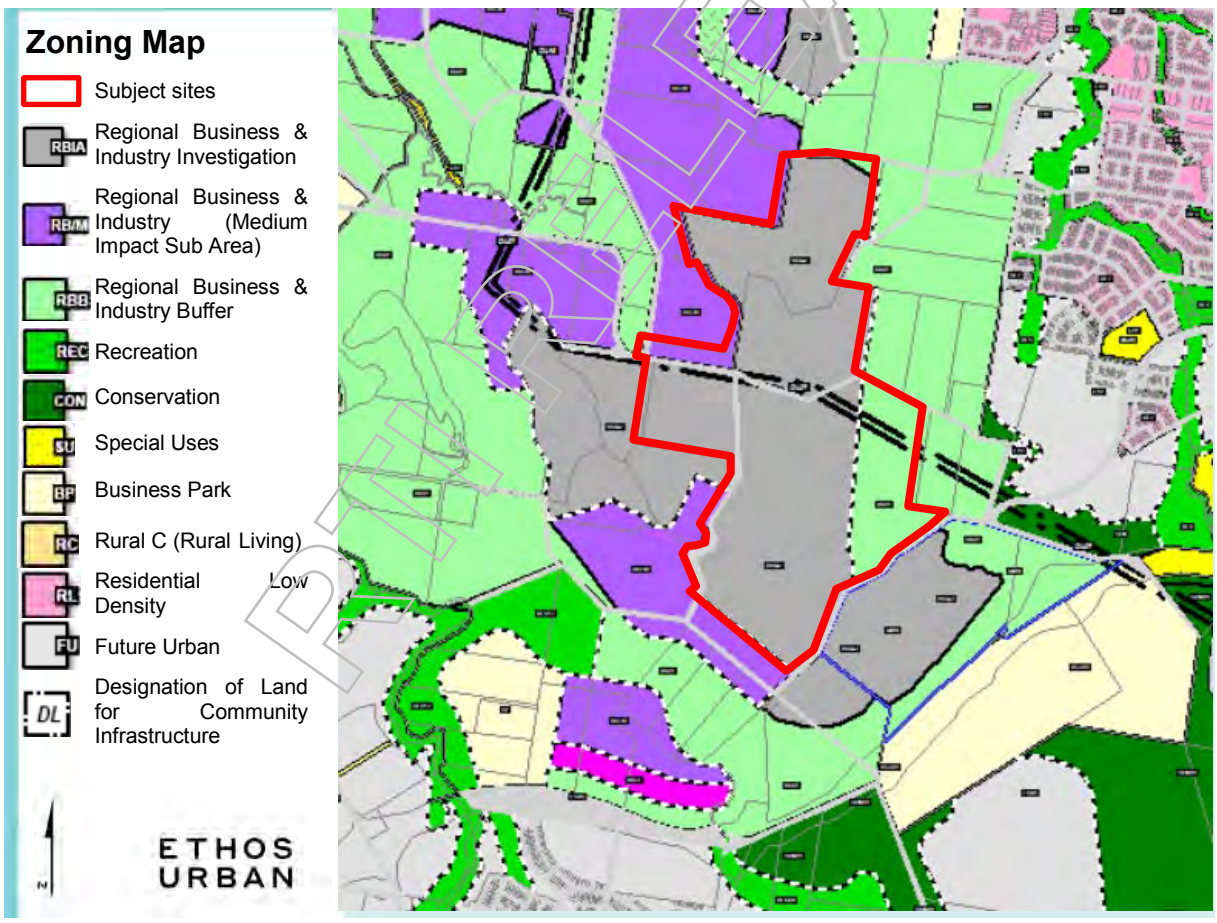

Figure 10: Zoning Map

Figure 11 Site Aerial with Approved Stages of SREWMF

The subject site is also included in the following planning scheme overlays:

- Key Resource Areas, Buffers and Haul Routes (OV02): The subject site includes key resource areas and haul routes/buffers;
- Mining Influence Areas (OV03): The subject site includes mining influence constrained areas, areas of surface disturbance (including open cut mining) and areas that have been affected by underground mining (including shafts and tunnels);
- Difficult Topography (OV04): The subject site includes slopes >25%;
- Defence (Area Control) Regulations and Obstruction Clearance Surfaces (OV7a): The subject site is included in the 45 and 90 metre maximum building height limitation areas;
- Operational Airspaces, Wildlife Attraction and Lighting Issues (OV07b);
- Swanbank Power Station Buffer (OV10);
- High Pressure Oil and Gas Pipeline (OV11): Lot 104 includes a gas pipeline and associated buffer area; and
- High Voltage Electricity Transmission Lines (OV13).

As previously identified, the site incorporates the following lots the form the existing operations:

- Lot 103 on SP 189609 – is currently used for landfill support operations including site offices, weighbridge and works depot;

- Lot 104 on RP 839073 – is currently used for Stage 1 operations, including waste disposal and landfill gas electricity generation;
- Lot 102 on RP 839072 - the location for the proposed Stage 2 landfill. Some Construction & Demolition (C&D) and Commercial and Industrial (C&I) waste disposal currently occurs within the Stage 2 Hardfill area;
- Lot 101 on RP 839072 – proposed location of the WtE facility;

The following key industrial features surround the SREWMF site:

- Swanbank E gas-fired power station to the west;
- the former Swanbank B coal power station and associated cooling pond is located to the west;
- a construction and demolition (C&D) waste management facility, operated by Lantrak, is located to the south west;
- a C&D waste management facility, operated by Veolia Environmental Services, is located to the north (no longer operational);
- a construction and demolition (C&D) landfill, operated by Biorecycle, is located to the west;
- a waste transfer station, operated by Biorecycle, is located to the west;
- a quarry is located to the northeast, owned by PGH;
- a composting facility, operated by Wood Mulching Industries, is located to the southeast;
- a composting facility, operated by NuGrow, is located to the southwest;
- extractive industries and other waste management operations;
- Other nearby major land uses include electricity generation at the Swanbank Power Station.

As demonstrated above, the proposal is entirely consistent with the nature of land uses within the locality.

The site is located on a low, north to south orientated ridge, which extends from a range of hills (up to 350 metres elevation) to the south of the site. The topography of the area can generally be described as low hills and includes patches of vegetation and several drainage paths, whilst being characterised by the mining activities that previously occurred on the site.

The site is currently connected to the local water reticulation network, electricity and telecommunications.

The SREWMF is separated from the nearest proposed residential areas by the Regional Business and Industry Buffer, which would help to reduce potential amenity impacts associated with industrial activities. The nearest existing and future residential locations are approximately 1,500m from the proposed WtE facility site.

The SREWMF is located within an area characterised by and planned for industrial land use under the planning scheme, as indicated in **Figure 12**.

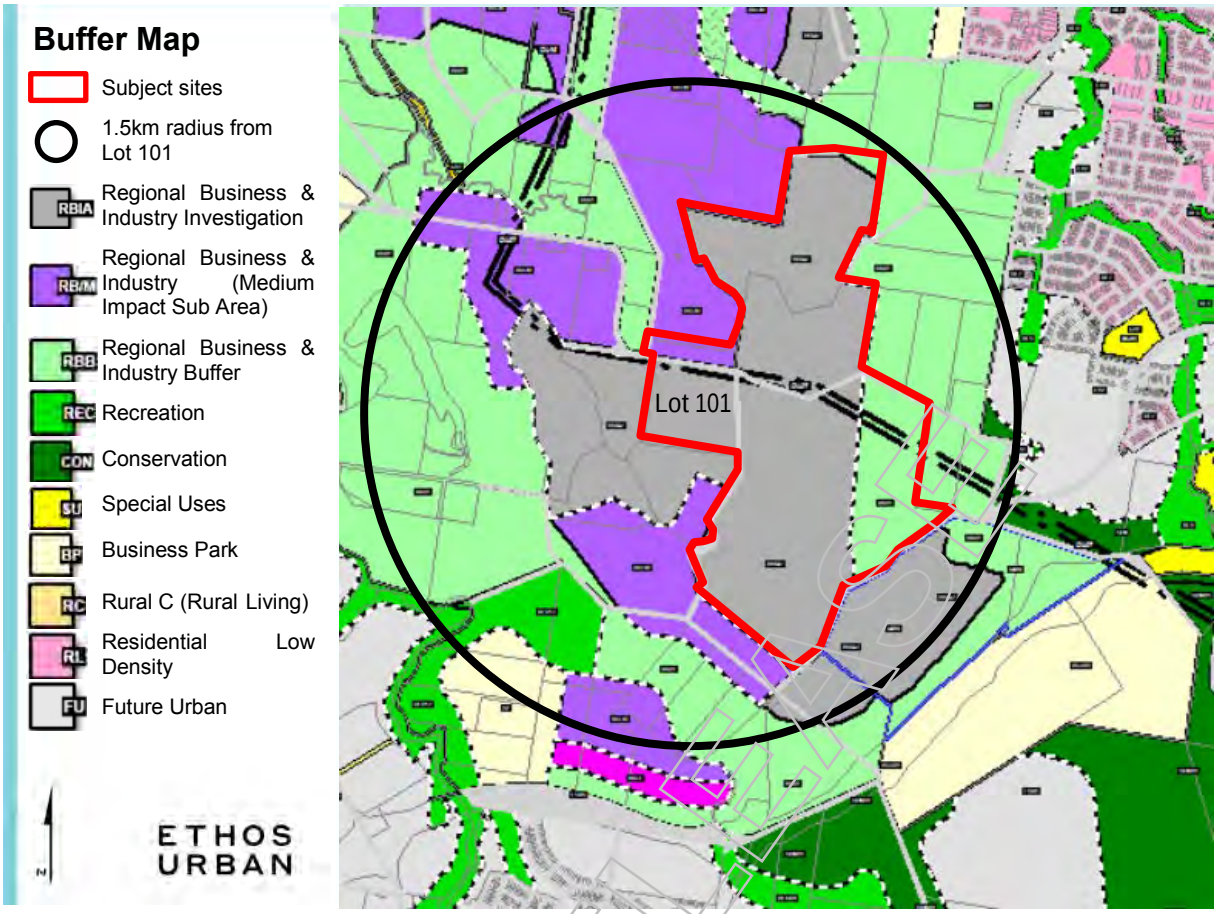

Figure 12: Buffer Map

Areas to the east of the SREWMF are zoned as an emerging community, and are forecast to be developed within the next ten years. The nearest residents are located approximately 1,500 m to the east of the Lot 101.

The Ripley Valley PDA is located to the south of the SREWMF as shown in and some areas of the PDA are expected to be developed over the next ten years.

The visual character and landscape of the SREWMF, located within the Swanbank industrial area, is characterised by former coal mining and more recent industrial activity.

The SREWMF is located at the end of Swanbank Road. Typically, traffic at the site is destined for the facility, and there would be minimal passing traffic. The existing landfill is visible from the end of Blackheath Road, which is a no-through road, and would not receive through traffic.

5.1.2 Water

Surface water features

The SREWMF site is located on a low, north-south running ridge, which extends from a mountain range (up to 350 m elevation) to the south of the site. The Bremer River is located approximately 8.5 km north of the site, and Bundamba Creek is approximately 2.5 km west of the site. The topography of the area can generally be described as low hills.

The site is located in the west-draining catchment of Oaky Creek; runoff form the site flows to the Swanbank Power Station cooling water dam located on Oaky Creek. Oakey Creek flows into Bundamba Creek approximately 1 km downstream of the cooling water dam, and Bundamba Creek flows into the Bremer River approximately 14.5 km downstream from there.

Bundamba Creek flows through a modified catchment consisting of grassland and sections of naturally vegetated channel through urban areas. Six Mile Creek is northeast of the existing SREWMF Stage 1 landfill, and does not receive runoff from the site.

Regional flooding regime

The site is located at the head of the Oaky Creek/Bundamba Creek catchments, and is outside the Bremer River floodplain. Flood modelling undertaken by Ipswich City Council indicates that Lot 101 is not affected by regional flooding from the Bremer River or other waterway.

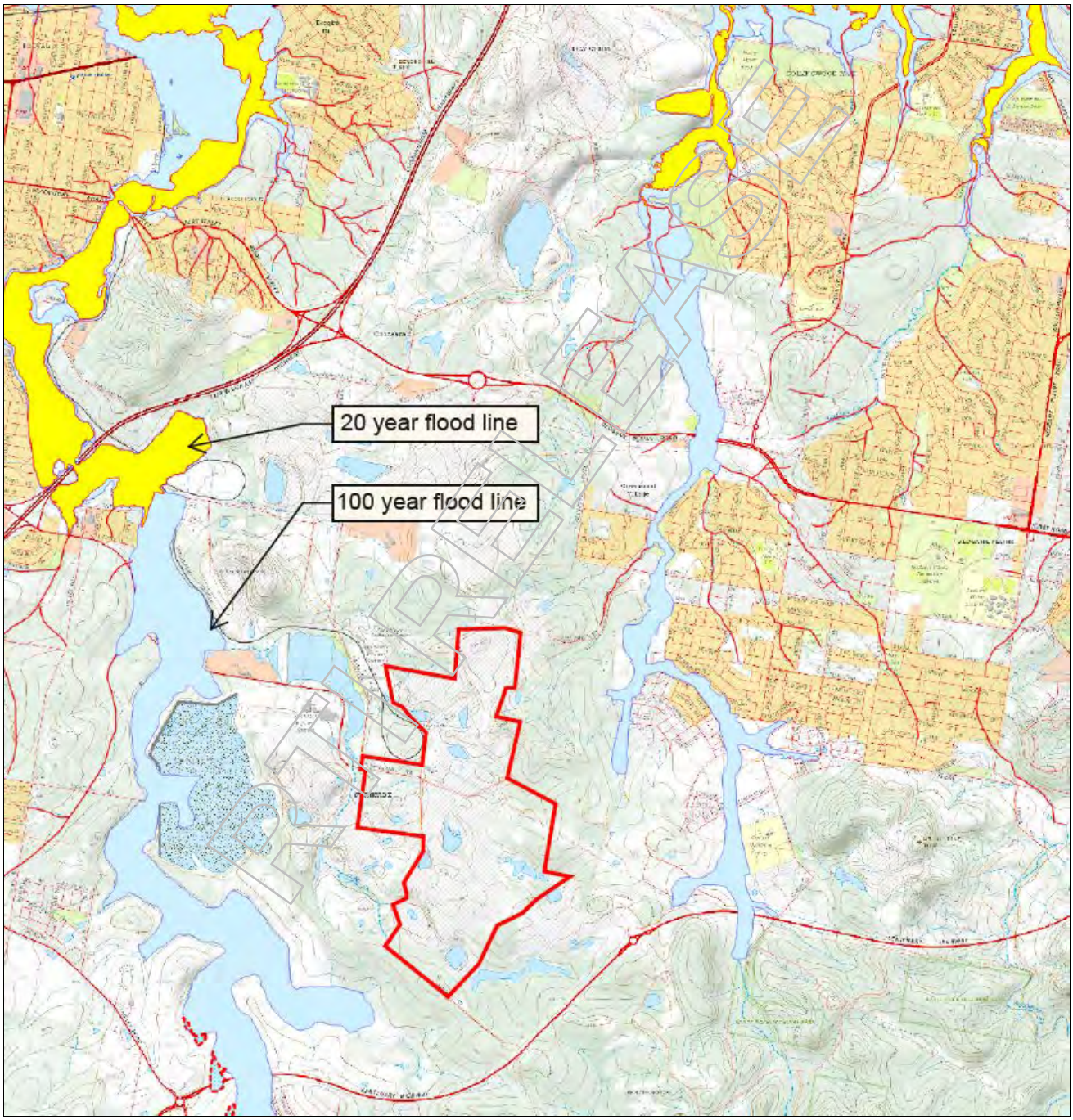

Figure 13: **Regional Flood Plan**

Climate and meteorology

This section describes the existing climate for the Swanbank area. Climate data is readily available from the Bureau of Meteorology (BOM) from the Amberley Allied Meteorological Office (AMO) weather station, situated 11 km west of the SREWMF. Records of climate data are available for the AMO weather station from 1941; this significant historical collection of data provides a reliable understanding of climatic averages.

Temperature

The Swanbank facility is located in a subtropical region of Australia and experiences varying climates over the year. Warm and humid summers are experienced with temperatures typically varying from approximately 19°C to 31°C, with highs reaching 44°C and lows reaching 19°C. Winters experienced in this area are typically mild and dry with temperature varying from 5°C to 22°C. Lows experienced during winter have been as low as -5°C and as high as 33°C. Recorded monthly temperatures are represented in **Figure 14**.

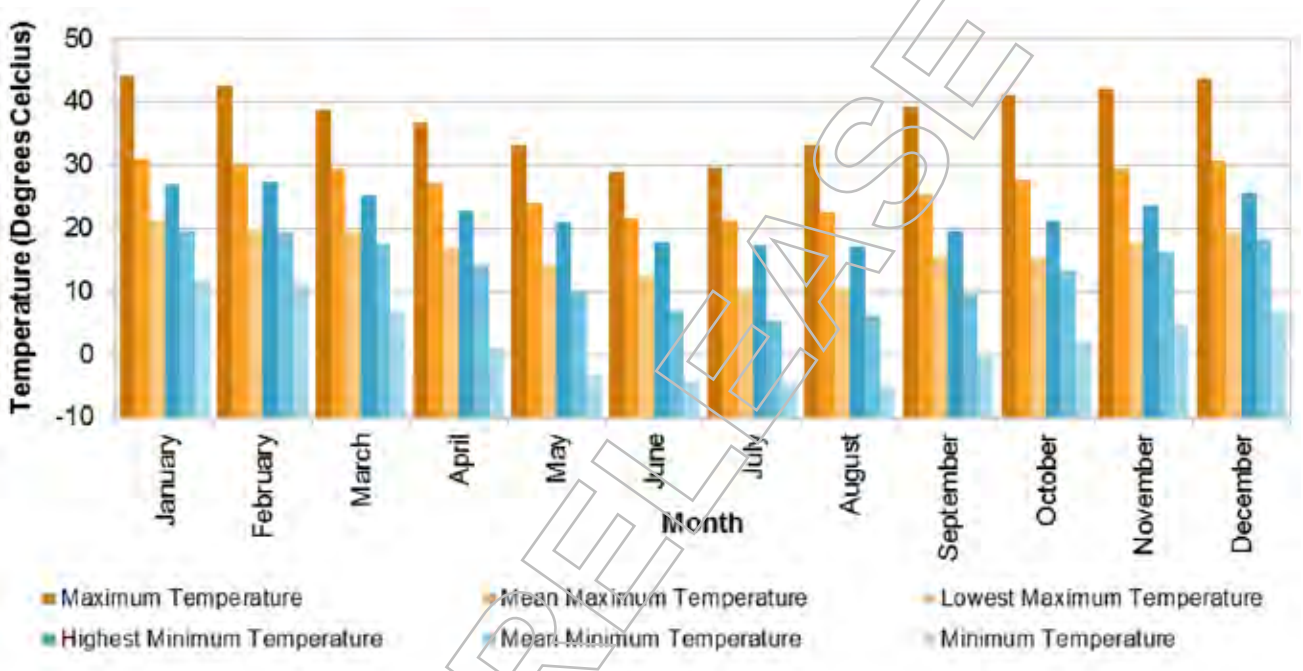

Figure 14 Monthly temperature statistics

Precipitation

The area receives greater volumes of rainfall in the warmer months and less in the cooler months, although this can vary and the cooler months can be known to produce wet periods, particularly in autumn. The warmer months in southeast Queensland typically produce a wetter climate because of the increased humidity in the atmosphere.

The highest daily rainfall for this region was in January 1974 with 240 mm. The monthly rainfall data for Amberley AMO is provided in **Figure 15**.

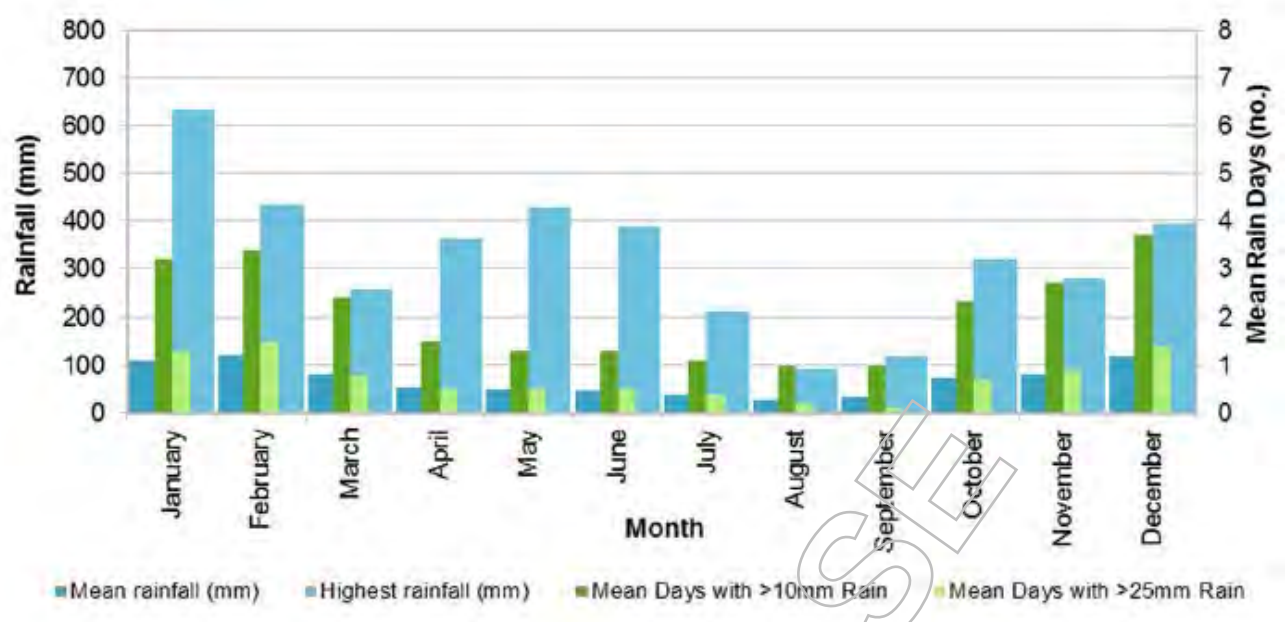

Figure 15 Monthly rainfall statistics

Wind

Wind speeds vary by season and throughout the day. The mean wind speeds for 9 am and 3 pm are provided in **Figure 16** to show the variation of wind speeds throughout the year and between morning and afternoon.

Afternoon wind speeds are typically 6 to 10 km/h greater than those in the morning, as shown in **Figure 17**. The historical records indicate a seasonal variation in wind speed, similar to temperature and rainfall. Typically east to south easterly winds are more dominant in the warmer months in the morning, shifting to east to north easterly in the afternoons. The cooler months receive more dominant winds from the south and west.

Figure 16 Monthly wind statistics

Noise / Vibration, light and air quality

A further Air Quality Impact Assessment will be prepared as part of the next phase of the application.

5.1.3 Flora and Fauna

A detailed Ecological Impact Assessment in relation to the proposed use of Lot 101 for the purpose of a WtE facility will prepared as part of the detailed documentation phase of the application.

5.2 Social and economic

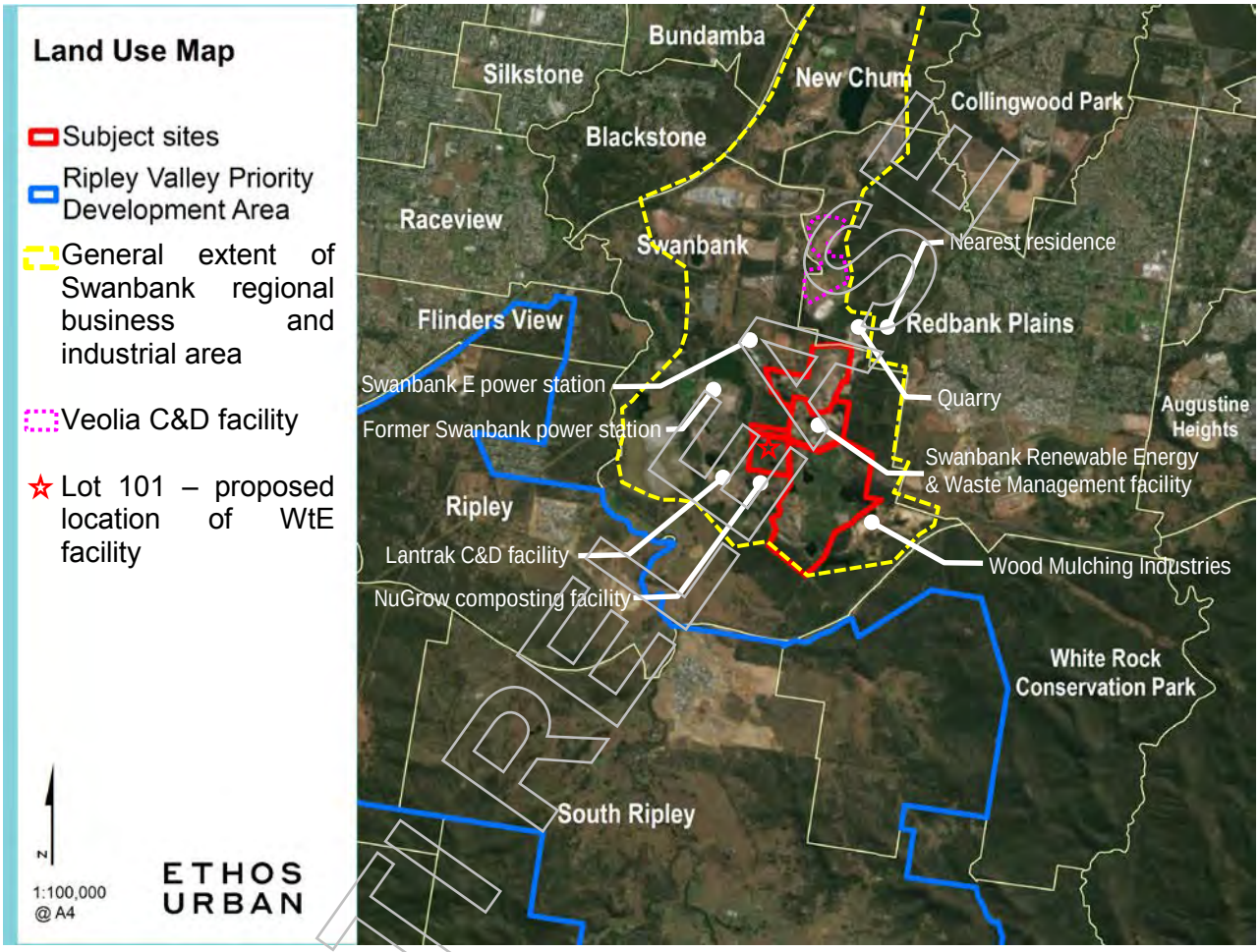

Figure 17 Surrounding features

Ripley Valley to the south, in its current form, exists as a small community of under 1,000 residents. The Ripley Valley Priority Development Area (PDA) has been identified by Economic Development Queensland (EDQ) is an opportunity to provide approximately 50,000 dwellings to house a population of approximately 120,000 people however the implementation plan for the does not envisage the forecast population to eventuate for upwards of 25-30 years.

The more established suburb of Redbank Plains is located to the east of the SREWMF, beyond the Regional Business and Industry Buffer zone to nearby sensitive land uses, as shown in **Figure 20** below.

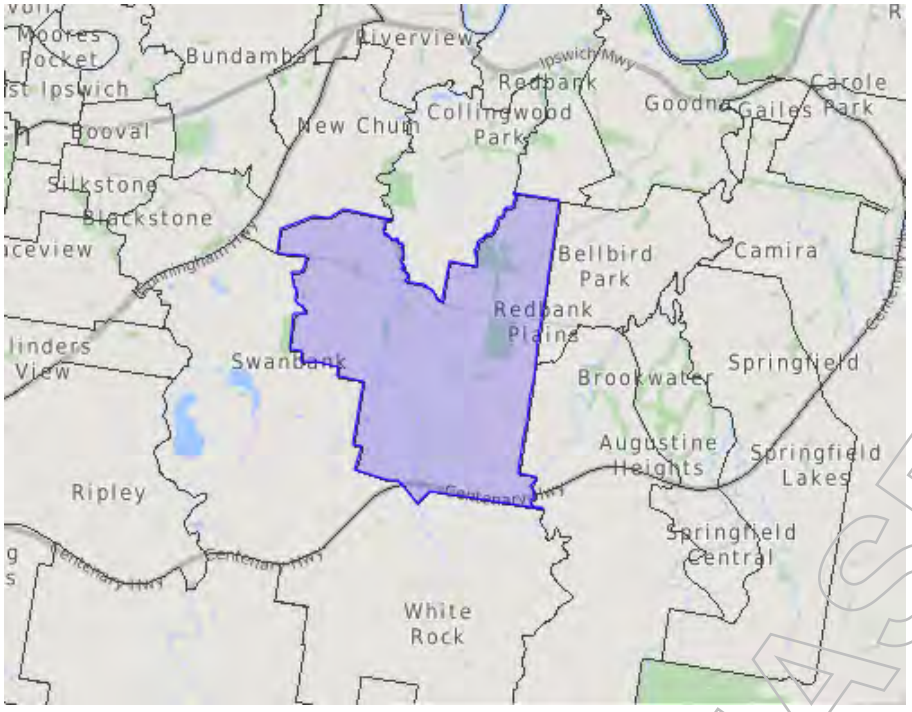

Figure 18: Redbank Plains ABS

In review of the 2016 Australian Bureau of Statistics Census Data for Redbank Plains:

- There were 19,299 people in Redbank Plains;
- The median age of people in Redbank Plains (State Suburbs) was 27 years;
- 6,367 private dwellings.

The Estimated Resident Population growth percentage in Redbank Plains has been 4.4% since 2011, marginally more than the 3.2% for the Ipswich City Local Government Area (LGA).

This population growth data, both for nearby impacted communities and the wider Ipswich LGA, indicates that there will be continued impacts associated with waste management unless an alternative to existing practices can be implemented. In preparation of this IAS, REMONDIS has reviewed the European Union's paper; '*The Role of Waste To Energy in the Circular Economy 2017'.* A circular economy is defined as 'one in which the value of products, materials and resources is maintained for as long as possible, minimising waste and resource use'. The paper recognises that WtE processes can play a role in the transition to a circular economy provided that the waste hierarchy is used as a guiding principle and that choices made do not preclude higher levels of prevention, reuse and recycling.

As demonstrated within this report, the proposed WtE facility will form a single component of the wider 'Swanbank Recycling Park' and REMONDIS is committed to ensuring that existing waste feedstock that is currently being transported to site will be separated that firstly, higher order waste management opportunities (reduce, re-use and recycle) will be prioritised and that the processing of waste through the proposed technology will only occur when all alternative recovery opportunities are exhausted.

Accommodation and housing

There is not anticipated to be any material impacts on accommodation and housing as a result of the Project. The Project is located within an identified Regional Business & Industry Investigation zone and will not result in a loss of accommodation or housing.

5.2.1 Cultural heritage (Indigenous and non-indigenous)

Aboriginal cultural heritage is recognised, protected and conserved under the provisions of the *Aboriginal Cultural Heritage Act 2003,* which is administered by the Department of Aboriginal and Torres Strait Islander Partnerships (DATSIP).

A search of the DATSIP Cultural Heritage Database and Register did not identify any cultural heritage site points in proximity of the Subject Site.

The *Queensland Heritage Act 1992* provides for the conservation of Queensland's cultural (non-indigenous) heritage. No recorded places were identified within proximity to the Subject Site (i.e. that have achieved registration under the provisions of the *Queensland Heritage Act 1992*).A search of the Australian Heritage Register was also undertaken. There are no places of heritage significance recorded in proximity of the Subject Site.

5.3 Built environment

The proposal is entirely consistent with the nature of land uses within the locality. The Swanbank Regional Business and Industry Investigation Zone has been identified by Council for land uses consistent with the SREWMF and has applied an appropriate Regional Business and Industry Buffer zone to nearby sensitive land uses to help to reduce potential amenity impacts associated with industrial activities with he nearest future and proposed residential locations approximately 1,500 metres from the proposed site (Lot 101).

There are no existing declared coordinated projects within the Ipswich City Local Government Area.

5.4 Traffic and transport

The project area is serviced by a range of State controlled roads and Council roads as shown in **Figure 21** below.

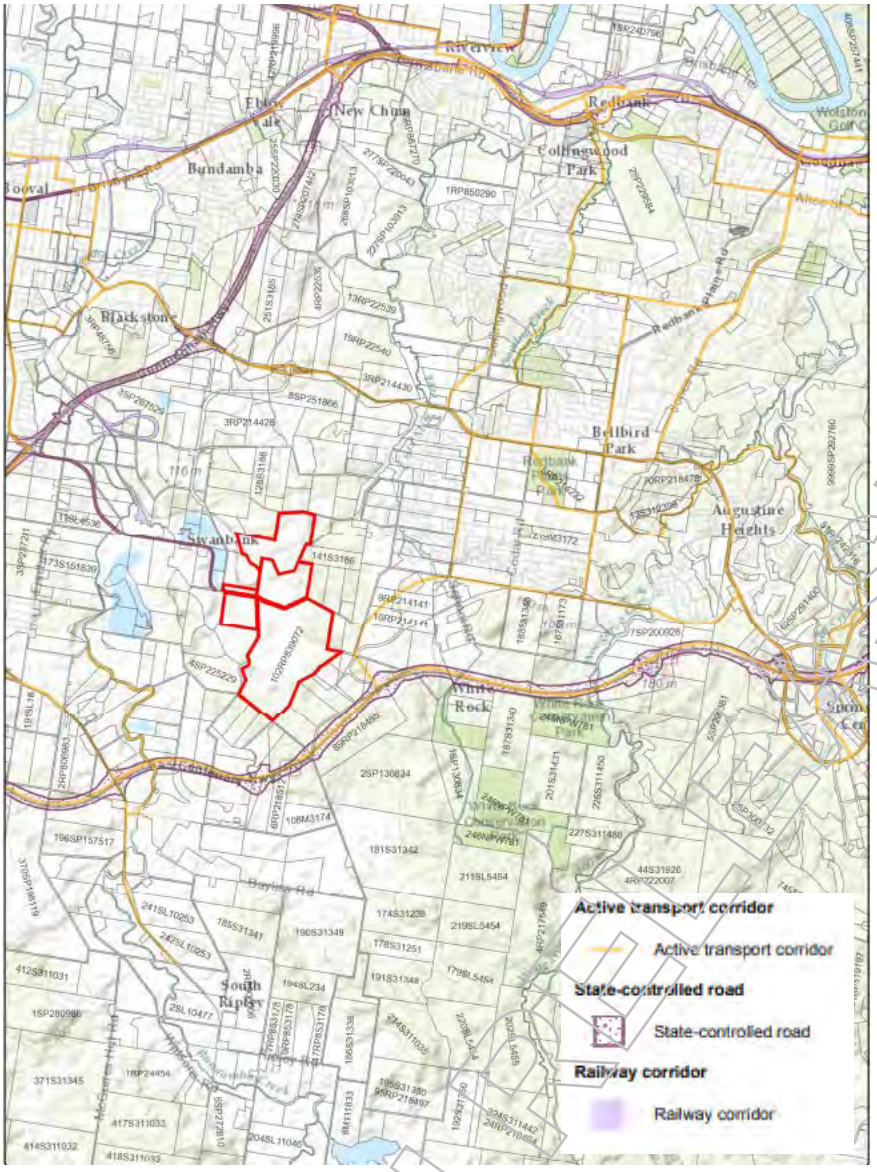

Figure 19: State controlled roads and council roads

Access to the site will continue to be via Swanbank Road and Cunningham Highway, with the proposal incorporating a new weighbridge and entry to Lot 101 on RP 839072.

Average Annual Daily Traffic (AADT) count data prepared by the Department of Transport and Main Roads (DTMR), indicates heavy vehicles accounted for approximately 33% of the 1,455 AADT estimated along Swanbank Road in 2013. This relatively high proportion of heavy vehicle traffic is largely due to the industrial nature of developments in the area. Since 2013, the coal-fired section of Swanbank Power Station was decommissioned. This is expected to have resulted in some reduction in AADT along Swanbank Road (GHD, 2015).

These vehicles use of Swanbank Road/Swanbank Coal Road and the Swanbank Road/Site Access/ Unnamed Road intersections and the associated numbers are not envisaged to change significantly as a result of the Project given the fuel for the WtE facility is from the same source as existing landfill waste.

5.5 Land use and tenure

5.5.1 Key local and regional land tenures

The Swanbank Renewable Energy and Waste Management Facility is freehold and is surrounded by freehold land as shown in **Figure 20** below.

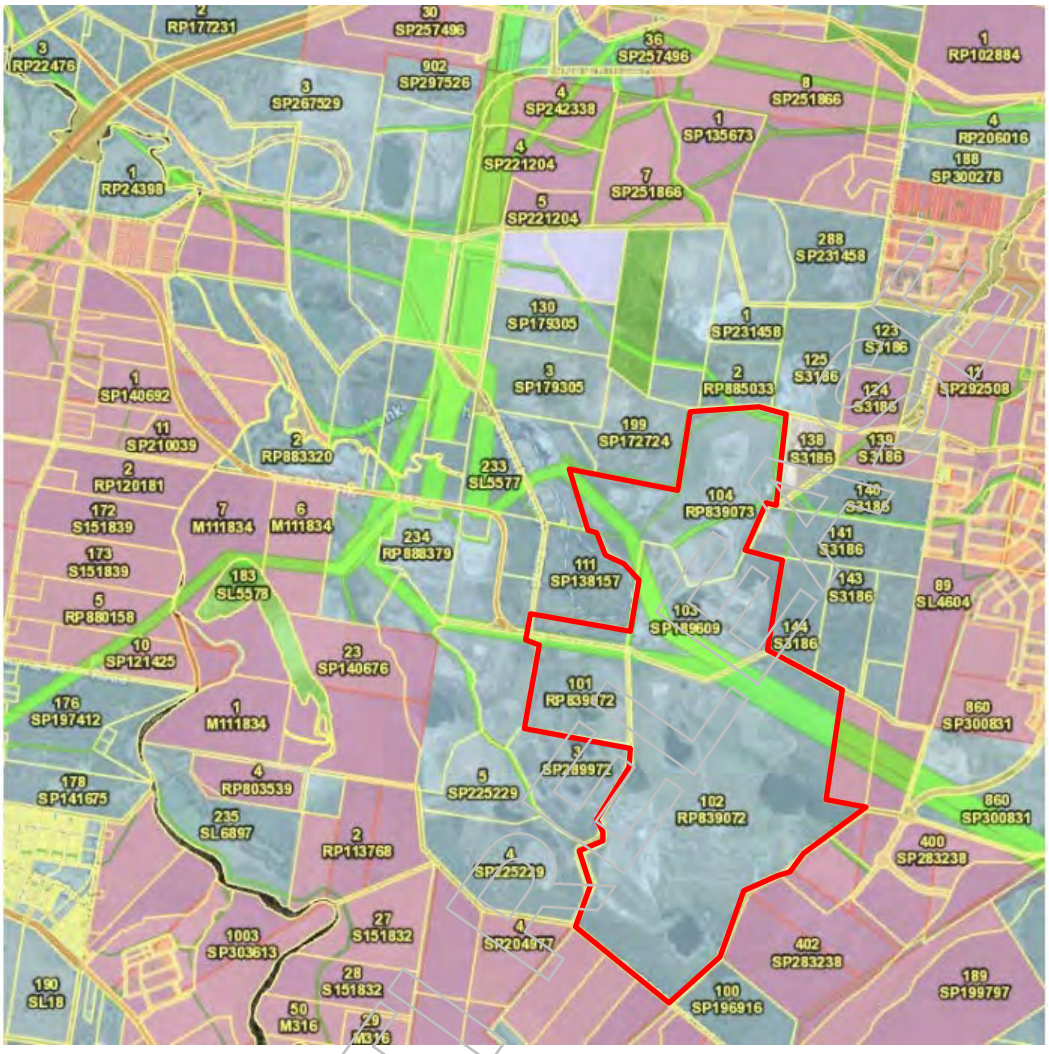

Figure 20: Tenure map for the Swanbank Renewable Energy and Waste Management Facility

The SREWMF is located within an area characterised by and planned for industrial land use under the planning scheme.

Areas of residential development exist and are proposed to the east and south, although most of this is more than 2 km from the SREWMF.

The footprint areas are zoned Regional Business and Industry Investigation under the Ipswich City planning scheme.

The SREWMF is separated from the nearest proposed residential areas by the Regional Business and Industry Buffer, which would help to reduce potential amenity impacts associated with industrial activities.

Areas to the east of the site are zoned as an emerging community, and are forecast to be developed within the next ten years.

The Ripley Valley PDA is located to the south of the SREWMF and some areas of the PDA are expected to be developed over the next ten years.

5.5.2 Native title

There is currently no registered Cultural Heritage Body for the subject site, on which the Project works will occur. The identified lots subject to the Project are all freehold title and are not identified as unallocated crown land.

5.6 Planning instruments, government policies

The following section provides an overview of the key legislation, policies and plans considered relevant to the Project. A detailed list of the likely project approvals, and the relevant legislation is provided at **Appendix A**.

5.6.1 Commonwealth

Environment Protection and Biodiversity Conservation Act 1999

The *Environment Protection and Biodiversity Conservation Act (Cth) 1999* (EPBC Act) is the Commonwealth Government's central piece of environmental legislation. The EPBC Act protects nine Matters of National Environmental Significance (MNES) including:

- listed threatened species and communities;
- listed migratory species;
- Ramsar wetlands of international importance;
- Commonwealth marine environment;
- world heritage properties;
- national heritage places;
- the Great Barrier Reef Marine Park;
- nuclear actions;
- a water resource, in relation to coal seam gas development and large coal mining development.

The EPBC Act provides a process for environmental assessment and approval of proposed actions that may have a significant impact on MNES, known as 'controlled actions'.

Under the EPBC Act, proponents proposing an action that may impact upon a MNES must refer the proposal to the Commonwealth Department of the Environment and Energy (DEE). This referral is used by the Commonwealth Minister for Environment to assist in deciding whether the proposal requires assessment and approval under the EPBC Act.

If the Project is deemed to be a controlled action it will be assessed under the EPBC Act in accordance with the Bilateral Agreement between the Commonwealth and the State of Queensland under Section 45 of the EPBC Act relating to environmental assessment.

The application of the EPBC Act to this Project is discussed further in **Section 7.5**.

Native Title Act 1993

The *Native Title Act (Cth) 1993* (NT Act) provides for the recognition and protection of native title rights for Australia's Indigenous people, as well as providing a legislative approach to address issues concerning native title. The legislation provides for the determination of native title claims, the treatment of future acts, which may impact on native title rights, and consultation and/or notification of relevant native title claimants where future acts are involved.

Aboriginal and Torres Strait Islander Heritage Protection Act 1984

The purpose of this act is to preserve and protect places, areas and objects of particular significance to Aboriginal people. This act is normally implemented through the provisions of the *Queensland Aboriginal Cultural Heritage Act 2003*.

5.6.2 State

The following Queensland state legislation could be triggered by the Project and will be considered in the approvals process.

Aboriginal Cultural Heritage Act 2003

The purpose of the *Aboriginal Cultural Heritage Act 2003* (ACH Act) is to provide for the effective recognition, protection and conservation of Aboriginal cultural heritage.

Biosecurity Act 2014

The *Biosecurity Act 2014* came into effect on 1 July 2016 and is designed to ensure consistent, modern, risk based and less prescriptive approach to biosecurity in Queensland.

Environmental Protection Act 1994

The *Environmental Protection Act 1994* (EP Act) is the principal environmental regulatory framework for environmental management and protection in Queensland. The EP Act objective is to protect the natural environment and associated ecological systems and processes while allowing for continued sustainable development.

The EP Act requires the Project's potential environmental impacts to be assessed and that measures be proposed to avoid or minimise any adverse impacts. To achieve this, the EP Act regulates activities that will or may have the potential to cause environmental harm.

Environmental Protection Regulation 2008

The EP Regulation supports and supplements the environmental assessment process outlined under the EP Act. It also specifies environmentally relevant activities (ERAs) that require approval, associated thresholds, specific approval details and reporting requirements.

Environmental Offsets Act 2014

The *Environmental Offsets Act 2014* (EO Act) coordinates the delivery of environmental offsets across jurisdictions. The EO Act purpose is to offset significant residual impact on prescribed environmental matters.

The *Environmental Offsets Regulation 2014* provides details on prescribed activities regulated under existing legislation and prescribed environmental matters to which the Act applies.

Land Act 1994

The Land Act 1994 (Land Act) provides the framework for State land, such as leasehold, roads and reserves and their subsequent management.

Under Chapter 4, Part 4 of the Land Act, a permit to occupy is required for the occupation of a reserve, road or area of unallocated State land. An application for a temporary road closure may also be required.

Local Government Act 2009

The purpose of the *Local Government Act 2009* (LG Act) is to outline the extent of local government responsibilities and powers within their respective jurisdictions. The Act provides local governments with the power to enact and enforce laws within the relevant local government area. These laws usually relate to the protection of amenity or other values important to communities including local roads, noise, light, waste management, vegetation, animals, parks and fencing.

Nature Conservation Act 1992

The *Nature Conservation Act 1992* (NC Act) is administered by EHP and regulates the environmental impacts on plants and animals through the protected plants framework and species management program requirements.

Developments in areas mapped as a Priority Koala Assessable Development Area or Koala Assessable Development Area need to be assessed under the *South East Queensland Koala Conservation State Planning Regulatory Provisions* which was developed under the *Sustainable Planning Act 2009.*

The subject site is not located within either of these priority area types, and as such the *South East Queensland Koala Conservation State Planning Regulatory Provisions* will not be triggered.

Nevertheless, requirements identified by the *Nature Conservation (Koala) Conservation Plan 2006* should be considered, including sequential clearing, having a koala spotter in attendance, and limits on the amount of habitat that can be cleared at any one time.

Planning Act 2016

The *Planning Act 2016* (Planning Act) establishes a system of land use planning (planning), development assessment and related matters that facilitates the achievement of ecological sustainability in Queensland. The Act coordinates development assessment in association with many of the other acts outlined below.

The Planning Act:

- manages the process by which development takes place, including ensuring the process;
- is accountable, effective and efficient and delivers sustainable outcomes;
- manages the effects of development on the environment (including managing the use of premises);
- coordinates and integrates planning at local, regional and state levels.

The assessment of the Project will consider the State Planning Policy (including the Queensland Plan) and South East Queensland Regional Plan, which applies to the area in which the Project is located.

South East Queensland Regional Plan 2017 – ShapingSEQ

The proposal will be assessed against the relevant aspects of the South East Queensland City Plan 2017 ShapingSEQ.

ShapingSEQ is the regions pre-eminent strategic land use plan given effect by the Planning Act 2016. The primary purpose of *ShapingSEQ* is to provide the regional framework for growth management, land use and development in South East Queensland (SEQ). The document sets the long-term planning direction for sustainable growth, a globally competitive economy, and high-quality living for SEQ.

ShapingSEQ provides the 50-year vision of the region and is supported by five (5) key themes which underpin the vision including, Growth, Prosper, Connect, Sustain and Live.

The subject site is within the urban footprint and as such will assist in meeting the needs of the Ipswich locality through the provision of critical infrastructure. The proposed infrastructure investment aligns with the Regional Plans desire to prioritise infrastructure investment and enhance regional infrastructure.

The proposal will be further assessed in greater detail against the relevant provisions of ShapingSEQ as part of the IAR process.

Queensland Heritage Act 1992

The *Queensland Heritage Act 1992* (Heritage Act) protects heritage areas that are considered to be of State significance and are placed on the Queensland Heritage Register, administered by the Queensland Heritage Council. Local heritage is also addressed in the Act, with local governments being required to establish their own heritage registers.

State Development and Public Works Organisation Act 1971

The *State Development and Public Works Organisation Act 1971* (SDPWO Act) provides a framework for coordinated and environmentally responsible infrastructure planning and development to support Queensland's economic and social progress. The SDPWO Act provides the Queensland Coordinator General with the power and responsibility to assess and authorise the most significant and complex projects.

Section 26 of the SDPWO Act permits the Queensland Coordinator General to declare a project to be a 'coordinated project' for the purpose of requiring the proponent to prepare an EIS or an IAR.

The preparation of an IAR or EIS in accordance with Part 4 of the Queensland SDPWO Act also satisfies the requirements of Section 8 of the Commonwealth EPBC Act.

Vegetation Management Act 1999

The *Vegetation Management Act 1999* (VM Act), in conjunction with the Planning Act, regulates the conservation and management of vegetation communities and clearing of vegetation. The VM Act provides a State-wide system for the management of native vegetation on freehold and leasehold land based on the concept of regional ecosystem (RE) areas. The conservation status of each RE is assigned as one of three categories: 'endangered', 'of concern' or 'least concern', based upon an estimate of the regional ecosystem's pre-clearing distribution, and how much of it remains.

Schedule 10, part 3 of the *Planning Regulation 2016* makes clearing of native vegetation on prescribed land assessable development which requires a development permit, unless the clearing is otherwise exempt.

Waste Reduction and Recycling Act 2011

The main objectives of the Act in relation to waste management are to: promote waste avoidance and reduction; reduce the overall impact of waste generation; promote resource recovery and efficiency actions; promote the sustainable use of natural resources; encourage the use of recovered resources; and ensure a shared responsibility between government, business and industry and the community.

The Act is supported by the Waste Reduction and Recycling Regulation 2011, which provides mechanisms to achieve the objectives of the Act.

Water Act 2000

The *Water Act 2000* (Water Act) provides a framework for the sustainable management of Queensland's non-tidal water resources and riverine quarry material.

With respect to the Project, the Water Act establishes systems for the planning, allocation and use of non-tidal water, including regulation of impoundments. Allocation of quarry material and riverine protection provided for by the Act will be of relevance.

5.6.3 Local

Temporary Local Planning Instrument No. 1 of 2018 (Waste Activity Regulation)

Ipswich City Council resolved to make a temporary local planning instrument (TLPI) which took effect, subject to the agreement of the Minister on 29 May 2018 (and amended on 31 August 2018).

This TLPI provides an interim policy response to address concerns raised by the Ipswich City Council and the local community in respect to landfill and waste industry uses occurring in the Swanbank / New Chum industrial area.

In accordance with section 9(3)(a) of the Planning Act 2016 (the Planning Act) the effective day for the TLPI is the day on which public notice of the TLPI is published in the Queensland Government Gazette. This TLPI will have effect in accordance with the Planning Act for a period not exceeding two years from the effective day or such longer period as may be permitted by law or unless otherwise repealed sooner.

The TLPI specifically relates to the regulation of a subset of waste management uses which it defines as a "waste activity use". Such a use would include:

a) *"Compost Manufacturing Enclosed";*
b) *"Compost Manufacturing Unenclosed";*
c) *"Landfill"; and*
d) *"Rehabilitating a mining void".*

Attachment C of the TLPI contains Table 1 – Table of Assessment and Relevant Criteria specifically states that any use not identified above will remain subject to the existing assessment category and assessment benchmarks under the Ipswich Planning Scheme. Accordingly, the TLPI is not directly relevant to REMONDIS' WtE facility. It will remain code assessable and subject to the normal provisions of the Ipswich Planning Scheme.

The TLPI does, however, show part of the subject land as falling within a waste activity buffer area in which the TLPI acts to preclude landfilling and composting activities. While the proposed facility does not cut across these new controls, REMONDIS is concerned this designation may cause some confusion to community stakeholders and unnecessarily complicate the assessment process.

The proposed WtE facility does not fall within the definition of *"Waste Activity Use"* as defined under the TLPI and as such the proposal will remain Code Assessable development as per Table 6.1 of the Ipswich Planning Scheme.

5.6.4 Also for Consideration

Queensland Waste Avoidance and Resource Recovery Productivity Strategy (2014-2024)

The Waste Avoidance and Recovery Productivity Strategy provides a high-level direction for waste management and resource recovery in Queensland over a 10 year period, and predominantly focuses on waste from all sectors, such as household, agricultural, mining, commercial and industrial waste and sold and liquid hazardous (or regulated) waste (DEHP, 2014).

The strategy sets a framework of guiding principles and objectives, and priority areas which underpin the development of action plans. The strategy is also informed by the waste and resource management hierarchy, which sets out an order of preference for options for managing waste – from avoiding, the reusing, recovering, treating and disposing of waste (DEHP, 2014).

While no specific incentives are stated in the strategy, it does acknowledge that Queensland has around 450 MW of installed WtE capacity, and included WtE as part of the waste resource management hierarchy.

The proposal is considered to align with the intent of the strategy and will be assessed against the strategy in greater detail as part of the future application should the project be declared.

Transforming Queensland's Recycling and Waste Industry Directions Paper

On 20 March 2018, the Queensland Government announced the development of a comprehensive waste management strategy underpinned by a waste disposal levy to increase recycling and recovery and create new jobs.

The Directions Paper outlined the directions for Queensland's new resource recovery, recycling and waste management strategy that will support the Government's Advance Queensland agenda by promoting growth and jobs in the resource recovery and recycling industry.

The strategy is intended to provide the waste and resource recovery sector with the policy certainty that has been lacking, resulting in significant under investment in new and expanded resource recovery infrastructure in Queensland.

The key principles of the strategy include:

- Attract industry investment and innovation;
- Create new jobs for our communities;
- Have no direct impact on Queensland households;
- Deliver long-term value to our environment; and
- Move Queensland towards a circular economy.

Part B of the paper outlines the direction the Government will take to reinvigorate Queensland's waste strategy. The development of a new waste strategy will fulfil the statutory requirement under the Waste Reduction and Recycling Act 2011 (the Act). The final comprehensive waste strategy will be released following the statutory consultation process required by the Act.

The Strategy identifies that the Queensland Government will explore the development of waste to-energy.

It is recognised that there are a range of technological solutions that are already available commercially, and a host of new and emerging innovative technologies.

There is also a significant body of literature on WtE reducing the amount of waste that goes to landfill, and the role that WtE plays in a transition towards a more circular economy.

The proposal aligns with the intent of the strategy to transition towards a more circular economy through the provision of a WtE facility at Swanbank. Given the extensive knowledge available to REMONDIS through their existing WtE operations, the proposal will take on board the lessons learned from other jurisdictions and to ensure the most appropriate types of waste are used for WtE.

REMONDIS are committed to continued engagement with the Department of Environment and Science (DES) as part of the application process should the project be declared to ensure the proposal aligns with the strategy as it continues to be refined.

6.0 Potential project impacts

6.1 Natural environment

6.1.1 Land

The impact on land based environmental values is anticipated to be minimal, given the sites location in an established Industrial Precinct. Any impacts on this environmental value will largely relate to construction activities, where the footprint of these activities is generally isolated to Lot 101 on RP 839072 and located on REMONDIS property with existing infrastructure, as well as some road reserve land also affected.

Soils and geology are not expected to be significant concerns because the Project will be largely constrained to the existing disturbed areas of the SREWMF.

Visual amenity will be minimal due to the significant buffer distance to nearby sensitive land uses and the site topography. The impact assessment undertaken as part of the IAR will identify key land values within the Project area and determine any associated potential impacts. Identified mitigation measures will be outlined in the IAR.

6.1.2 Water

Potential environmental impacts in relation to water, arising from Project activities, comprise:

- increased sediment in surface water bodies resulting from earthwork activities, leading to changes in surface water quality;
- inadvertent release of potential pollutants to surface water bodies from activities such as vehicle refuelling/wash-down and uncontrolled or controlled release of contaminated water or treated/untreated sewage leading to changes in surface water quality;
- potential effects to groundwater flow (although the site has a history of highly disturbed groundwater due mining activities),

Due to the nature of the Project, there may be a range of impacts on water values. These impacts will range from typical construction project impacts (e.g. construction impacts on water quality) to more complicated site-specific impacts. Based on the variety of potential impacts and complexity/unknowns around some areas, REMONDIS proposes focused assessment to inform mitigation measures.

6.1.3 Air

This environmental value is anticipated to be a key environmental concern that would require focused assessment as the Project has the potential to produce a number of air emissions through the processing and combustion of waste streams. The assessment of the air quality and suitable mitigation measures will be outlined in the Project IAR.

The flue gas treatment system involves several treatment steps which include scrubbing (for acidic gases and heavy metals), selective non catalytic reduction (to remove NOx gases), the utilisation of activated carbon (removing dioxin, furans, other organic pollutants and heavy metals – especially mercury) and a baghouse filter (removes particulates) to minimise emissions.

Flue gas treatment technologies have developed and improved significantly over the last 50 years and are now highly efficient in reliably meeting strict standards such as the EU IED.

In relation to potential greenhouse gas emissions from the WtE facility, the proposal offers the potential benefit of reducing the production of GHG emissions, based on waste being diverted from landfill (thereby reducing methane production).

The cumulative effect GHG emissions produced and avoided will be determined through the engagement of a GHG emissions assessment in the detailed assessment phase of the application.

6.1.4 Ecosystems

The Project will require localised vegetation removal for construction, which may include some vegetation mapped as Regional Ecosystem (RE), subject to localised assessment. Nevertheless, the area of vegetation removal will be minimal, constrained to REMONDIS existing land, and is unlikely to fragment any habitat or create isolated patches of vegetation in the area.

Detailed ecological and vegetation studies will be engaged by REMONDIS to determine potential impacts and suitable mitigation measures will be outlined in the detailed assessment.

6.1.5 Flora and Fauna

The proposal has the potential to result in the following environmental impacts:

- Vegetation clearing and fragmentation;
- Direct fauna injury and mortality during earthworks;
- Disturbance to fauna;
- Direct loss of habitat and breeding places;
- Importation and/or spread of weeds;
- Introduction and/or proliferation of pest fauna;
- Degradation of habitat through dust, sedimentation and erosion;
- Degradation of aquatic environments; and
- Impacts on adjacent bushland.

Direct impacts from the proposal will consist of clearing vegetation (subject to localised site investigations) has the potential to result in localised habitat fragmentation however the extent of any impact will need to be determined through detailed ecological and vegetation studies and outline suitable mitigation measures.

6.2 Amenity

Noise

The Project has the potential to have an impact on noise and vibration values as a result of:

- increased vehicular movements;
- foundation works, including piling;
- excavation works;
- earthworks;
- concrete batching;
- other construction activities.

The Project site is not located in proximity to sensitive receptors, and so construction noise is not anticipated to impact on receptors (however can be appropriately managed). The assessment of the Project's noise and vibration aspects and suitable mitigation measures will be outlined in the Project IAR.

Odour

The Project has the potential to be a source of odour from waste stored in the tipping hall and from opening and closing roller doors. The tipping hall will be operated under negative pressure to minimise possible odour emissions. Further the tipping hall air will be used as combustion air in the process. If the unlikely situation occurs where waste is still present in the tipping hall during shutdowns the air will pass via the negative pressure flow and through filters. Sophisticated and proven flue gas treatment systems prevent stack odour emissions. Stack height will be determined by dispersion modelling.

It should be added that the intensity of odour is very low, in particular, the offensiveness of odours is minimal in waste incineration plants compared to other waste treatment plants or especially landfill. Additionally, odour does not occur during normal operations of waste incineration, when a sophisticated flue gas treatment system is utilised.

Although, modern WTE plants have distinct advantages over other waste treatment processes in terms of odour emissions, cumulative impacts in relation to odour in the context of the existing SREWMF need to be carefully considered throughout the design and assessment phase of the proposal. Taking into account the location of the Project in an established Industrial Precinct, local climatic conditions and distance/buffer from the Project to nearby sensitive land uses, it is considered that the potential impacts associated with odour can be mitigated.

6.3 Social and economic impact

Social and Economic Impacts have been discussed here as these extend across the entire life of project. The economic and social impacts during the construction phase, which will attract a peak work force estimated at 200 persons to the Ipswich region over the construction phase, are significantly different from the operational impacts of a workforce likely to be sourced from personnel permanently settled to service the needs of this project.

A rigorous social impact assessment process will analyse potential social impacts in detail, with input from the community through ongoing consultation. This will identify how positive social impacts can be enhanced and negative impacts mitigated and/ or managed.

The REMONDIS SREWMF has a proven operational track record within the Swanbank locality for best practice waste management since commencement of site operations in 1998 which should provide comfort to nearby residents that the highest standards to mitigate impacts will be incorporated into the design and operation of the WtE facility.

REMONDIS know the local community well through their 20 year operations on site and has a good working relationship with nearby businesses within the Swanbank Regional Business and Industrial Precinct and residents of adjoining suburbs. REMONDIS will continue to consult with key stakeholders to ensure any community concerns are promptly addressed.

As a major industrial and waste management project, the Project is forecast to deliver a range of positive socio-economic impacts targeting the Ipswich LGA but extending to the wider South East Queensland population.

6.4 Built environment

The design of the facility with respect to building form and heights has largely evolved in response to operational nature of the technology.

Figure 21: Artist's impression of the Waste to Energy Facility at Swanbank, Ipswich

The building design has a graduated form and scale with the heights of various elements stepping up in height as they move into the site. This design approach overcomes the potential for adverse impacts associated with bulk and scale at the street and provides a site responsive design.

The assessment of the Project's visual aesthetics and suitable mitigation measures will be outlined in the Project IAR.

6.5 MNES under the EPBC Act

An EPBC Act Protected Matters search has been undertaken for the Project site (**Appendix B).** The search report indicates that MNES are likely to occur in the Project area and may be affected by the proposed works.

Matters of National Environmental Significance	Comment
World Heritage Property	None
National Heritage Places	None
Ramsar Wetlands of International Significance	None
Nuclear actions.	None
Commonwealth Marine Area	None
Listed Threatened ecological communities	3
Listed Threatened species	31
Listed Migratory Species	16

Table 2: EPBC Matters of National Environmental Significance

Based on the above, the proposed development is not considered to be a 'controlled action' pursuant to the *EPBC Act* however the construction and operational impacts will need to be assessed in greater detail by a suitably qualified ecologist as part of the IAR to confirm this position.

Should the potential for Project impacts warrant an EPBC Act referral to address legislative requirements in relation to MNES, REMONDIS will submit an EPBC referral for the project shortly after submission of the coordinated project application. Should the Project be declared a 'controlled action', REMONDIS requests the use of a bilateral assessment process.

7.0 Environmental management and mitigation measures

7.1 Natural environment

7.1.1 Land

Earthworks related to the Project will require an erosion and sediment control plan (ESCP) which will be a sub-plan of the CEMP.

The ESCP will be consistent with current practice for construction projects and align with International Erosion Control Association (IECA) guidance. Impacts on environmental values of land (soils and geology) are not expected to be a material issue during construction. Any impact mitigation measures are expected to be relatively typical of a construction project and conform to industry best practice.

7.1.2 Water

Focused assessment will be required to confirm the Project impacts on water values and appropriate mitigation measures, such as:

- Implementation of groundwater drainage system around the entirety of the proposed waste bunkers to assist groundwater re-entering the strata;
- Monitoring of groundwater surrounding the waste bunkers, by incorporation of inspection manhole to enable periodic inspection of groundwater levels surrounding the waste bunkers;
- A surface water quality monitoring program;
- The process will use demineralised water for steam production for the turbine. This water will be reused through the process and will incur minimal losses;
- Cooling water may be used for the plant. The options between using air cooling and water cooling will be considered for the project.

7.1.3 Air Quality

The primary emissions from the WtE facility, as defined by emission limits for waste incineration set by the European Union (EU) Industrial Emissions Directive (IED; Directive 2010/75/EU), are anticipated to be as follows:

- Particulate matter (PM), assumed to be emitted as PM10 and PM2.5a;
- Hydrogen Chloride (HCl);
- Hydrogen Fluoride (HF);
- Carbon Monoxide (CO);
- Sulfur Dioxide (SO_2);
- Oxides of nitrogen (NOx) (expressed as Nitrogen Dioxide (NO2);
- Heavy metals (including Mercury (Hg), Cadmium (Cd), Arsenic (As) and Chromium (Cr);
- Gaseous and vaporous organic substances (expressed as total organic carbon (TOC));
- Dioxins and furans.

In addition to the atmospheric emissions identified in the EU IED, other potential emissions that have been addressed include:

- Hydrogen sulfide (H_2S);
- Chlorine (Cl_2);
- Ammonia (NH_3);
- Polycyclic -aromatic hydrocarbons (PAHs).

A summary of the EU IED limits are listed in Table 3:

EU Industrial Emissions Directive 2010/75 - Emission Limits for Waste Incinerators				
Substance	**Unit**	**30 min Average**	**24 hour average**	**Periodic limit**
Total dust	mg/Nm3	30	10	none
Gaseous and vaporous organic substances, expressed as total organic carbon (TOC)	mg/Nm^3	20	10	none
Hydrogen chloride (HCl)	mg/Nm3	60	10	none
Hydrogen fluoride (HF)	mg/Nm3	4	1	none
Sulphur dioxide (SO2)	mg/Nm3	200	50	none
Nitrogen monoxide (NO) and nitrogen dioxide (NO2), expressed as NO2	mg/Nm^3	400	200	none
Carbon Monoxide	mg/Nm^3	100	50	none
Cadmium and its compounds (Cd)	mg/Nm^3	None	none	0.05
Thallium and its compounds (Tl)	mg/Nm^3	None	none	0.05
Mercury and its compounds (Hg)	mg/Nm^3	None	none	0.05
Arsenic and its compounds (As)	mg/Nm^3	None	none	0.5
Lead and its compounds (Pb)	mg/Nm^3	None	none	0.5
Chromium and its compounds (Cr)	mg/Nm^3	None	none	0.5
Cobalt and its compounds (Co)	mg/Nm^3	None	none	0.5
Copper and its compounds (Cu)	mg/Nm^3	None	none	0.5
Manganese and its compounds (Mn)	mg/Nm^3	None	none	0.5
Nickel and its compounds (Ni)	mg/Nm^3	None	none	0.5
Vanadium and its compounds (V)	mg/Nm^3	None	none	0.5
Dioxins & Furans	ng/Nm^3	None	none	0.1

Table 3: EU Industrial Emissions Directive 2010/75/EU (Annex VI – Technical provisions relating to waste incineration plants and waste co-incinerations plants)

Emissions from WtE facilities are primarily controlled by the flue gas treatment process. The flue gas treatment proposed is designed to safely meet the in-stack concentrations limits for waste incineration set by the European Union Industrial Emissions Directive.

Stack emissions will be continuously monitored by a computer controlled system for the following compounds:

- Carbon monoxide;
- Hydrogen chloride;
- Hydrogen fluoride;
- Nitrogen oxides;
- Ammonia;
- Volatile organic compounds (VOC's);
- Particulates;
- Sulphur dioxides.

Spot testing will take place at regulated frequencies for metals and dioxins/furans.

The proposed WtE Project is based on existing facilities in Europe and will incorporate best available technology for flue gas treatment, designed to meet the stringent in-stack concentrations limits for waste incineration set by the EU IED. REMONDIS operate numerous such facilities in Europe.

To manage air quality the following mitigations measures are proposed:

- Implement best practice monitoring processes;
- Implement an appropriate maintenance schedule to ensure that FGT systems operate appropriately;
- The facility shall be managed by a duly qualified specialist and trained personnel;
- Implement continuous monitoring system to ensure facility operates within optimal parameters;
- Management of incoming waste fuels received from external sources.

In addition, it is expected that human health risk studies will be conducted during the IAR process that will incorporate various relevant analyses based on normal and upset conditions scenarios on recognised sensitive receptors.

7.2 Flora and Fauna

Despite the identified impacts, the cumulative effect is considered acceptable in the context of the broader site that is used as an active industrial premises and is appropriately zoned for the intended development. In this circumstance, it is not possible to avoid the impact therefore measures such as the following will be developed to mitigate and offset impacts:

- Appointment of a project ecologist to undertake and oversee all flora and fauna pre-clearing, management and revegetation works;
- Preparation of a vegetation management plan;
- Measures to prevent tree impacts during construction and prevent clearing where possible;
- Revegetation where required.

7.3 Built environment

It is not envisaged, with the availability of existing infrastructure within the Swanbank Industrial Precinct and the existing SREWMF that the Project will have a significant effect on the built environment.

The existing Council and State Controlled Road network will continue to be the main mode of transporting machinery and infrastructure during construction and the vehicular movements associated with the operation and comparable to the current levels associated with the operation of the existing SREWMF.

7.4 Cultural heritage management plan (Indigenous)

The project will be assessed under the Cultural Heritage Duty of Care Guidelines (Queensland Aboriginal Cultural Heritage Act 2003).

It is not anticipated that a cultural heritage management plan (CHMP) will be required however will be undertaken should the findings of the assessment warrant its inclusion.

7.5 Non-Indigenous cultural heritage management

A non-indigenous cultural heritage survey of the Project site will be undertaken as part of the IAR process. No heritage listed sites are located in proximity to the site and due to the relatively modern age of the existing dam and water treatment structures, the heritage values of the site are expected to be negligible. However, any finds will be handled in accordance with the legislative requirements.

7.6 Greenhouse gas management plan

A greenhouse gas management plan will be developed as part of the proposal to ensure best practice standards are achieved in relation to GHG emissions.

- Use of Best Available Technology in flue gas treatment;
- Continuous emissions monitoring to ensure they are within acceptable limits;

- Reporting of emissions to Regulators.

The associated CO_2 emissions is reduced when generating power from WTE plants in comparison to using fossil fuels. Additionally, studies have shown that emissions of sulfur dioxide, particulate matter and nitrogen oxides were lower from WtE facilities than from coal-fired plants[12].

7.7 Hazard and risk, and health and safety

Hazard and risk and health and safety assessments and management plans will be developed as required for the construction and operation phase of the Project.

7.8 Environmental management

Several management plans will be developed as part of the Project's environmental assessment and approvals phase.

These management plans will reflect REMONDIS's ongoing commitment to environmental management during construction and will incorporate management measures identified during the assessment process.

As part of the construction phase of the Project, and as referred to throughout section 8, a Construction Environmental Management Plan (CEMP) will be developed and will form an important management tool for the Project's impacts and mitigation measures.

The CEMP will incorporate environmental and social mitigation measures from the IAR as a framework for the ongoing management, monitoring, reporting and improvement during construction. Its primary purpose will be to identify the environmental values potentially affected by the Project and detail measures to manage the risk of potential adverse impacts to these environmental values. For each component, the CEMP will outline the following:

- environmental values;
- potential impacts;
- environmental protection objectives;
- management controls;
- monitoring programs.

7.9 Public Concerns

It is acknowledged that stakeholders hold concerns regarding the proposed Project, in particular, the issues raised in a petition titled "*Rejection of incinerator to be built within city limits*". REMONDIS is committed to undertaking a thorough stakeholder engagement process as part of the approval process (refer to Section 10.0).

The following section provides an initial response to the concerns raised to date. Further information and management practices will be provided by REMONDIS as the approval process continues and as detailed reporting is undertaken as part of the IAR:

Issue/Concern	Initial Response
• Pollution control technologies have not proven capable of appropriately managing emissions • Uncertainty in relation to air quality and impacts of air quality and water quality • Uncertainty in relation to the human health risks and site suitability • Such a facility in urban areas contravene efforts of environmental regulations regarding air quality • Incinerators are primary sources of persistent organic pollutants, which contaminate food chains, building up dangerous levels in humans, and sources of lead, mercury, dioxins and furans.	REMONDIS has extensive experience in managing emissions from similar WtE plants. REMONDIS has in place technologies and processes which meet the EU IED. REMONDIS proposes to implement similar technologies and processes for the Project, resulting in positive and controlled emission and air quality outcomes. Further details on the process are available in section 7.1.3.
• The project is not in the public interests, 500,000 tonnes of waste per year is required to feed an incinerator for 24 hours operation, which means more trucks, more traffic and more pollution	REMONDIS currently operates the SREWMF at Swanbank. This facility is expected and approved to continue operating for many decades. It is proposed that the waste volumes that are currently received into the facility will be redirected for recycling and material that cannot be recycled will be used as a fuel source for the Project.
• Every four tonnes of waste create one tonne of toxic ash	Fly ash represents around 3% of the input fuel source. Please refer to section 3.6 for further details.
• Undermines genuine clean, safe renewable energy solutions; is not in line with a circular economy	The European Commission confirms that WtE has a role to play in a circular economy (refer to "*The role of Waste to Energy in a circular economy*").

Table 4: Public Concerns

8.0 Approvals required for the project

As per Section 34G (2) of the SDPWO Act, a draft IAR must contain a statement about whether or not any of the following approvals (each of which is notifiable approval) is required for the Project:

- a development approval if the development application for the approval would, under the Planning Act, require impact assessment;
- an environmental authority if the application for the authority would, under the Environmental Protection Act 1994, chapter 5, part 4, require public notification;
- another approval under an Act if—
  - the application for the approval requires, other than under the Planning Act or the Environmental Protection Act, chapter 5, an EIS or a similar statement to address the environmental effects of the approval; and
  - the application for, or the granting of, the approval requires public notification under the relevant Act.

The table at **Appendix A** provides a summary of approvals applicable to the project in accordance with these requirements. This will continuously be reviewed as the project is development and in consultation with the relevant State departments.

REMONDIS seeks declaration of the Project as a coordinated project pursuant to the SDPWO Act (Qld). As part of this declaration, REMONDIS seeks to utilise the IAR process. **Section 7.6** outlines the Acts and policies that were assessed as relevant to the Project.

Once the Project description has been sufficiently completed, following concept design optimisation and commencement of detailed design, a finalised list of required approvals will be presented as part of the IAR. As a result, further approvals may be identified, while others that were identified at the preliminary stage (**Appendix A**) may not be required.

The approvals that REMONDIS intends to be coordinated during the IAR process are identified in **Appendix A**. Note that these are based on the assessment of required approvals at the concept design stage of the Project. The required approvals are subject to change during detailed design development, as described above.

9.0 Cost and benefits summary

9.1 Local, state and national economies

An Economic Impact Assessment (EIA) will be submitted with the IAR. An EIA will assess benefits, values and potential impact areas resulting from the construction and operational phases of the Project.

The Project will bring some additional short term economic benefits to the regional economy during construction through the provision of construction and engineering services, along with long term cost benefits for Queensland households and businesses through the generation of up to 50MW of baseload renewable electricity.

9.2 Natural and social environments

The primary Project benefit is to provide an alternative waste management solution to landfilling. It is widely recognised that if Queensland maintains a "business as usual" approach to waste management, most of South East Queensland's landfills will have no capacity by 2040. The project provides a direct solution to this key State issue and an opportunity to divert thousands of tonnes of suitable waste (non-recyclable wastes) away from landfill and into a best-practice WtE facility that will extend the life of south east Queensland's constrained landfills.

The SREWMF is an integrated waste facility, comprising landfill, recycling and, in the future, the proposed WtE facility. Adopting WtE technology will ensure that wastes with recoverable value are not sent to landfill and, instead, are put to beneficial use. The world leader in waste management policy, the European Union, encourages construction of "state-of-the-art energy-efficient" WtE plants to "create new capacity for the treatment of residual waste" in member states.

It is the intention of the IAR process to investigate the possible impacts and define suitable environmental mitigation strategies to be incorporated into management protocols and plans in support of anticipated approvals.

REMONDIS will implement mitigation strategies as part of the construction and operation of the Project. Where impacts are unavoidable, the intent will be to offset such impacts to land-based and ecological values.

An assessment of the existing social environment and possible impacts associated with the Project will be submitted in the IAR. Most of the potential social impacts are anticipated to be positive for the area including economic diversification and increased economic, employment and training opportunities. The proponent believes that this will in turn raise the level of confidence in the region.

The social environments will benefit from increased local expenditure in Ipswich and the broader region due to additional expenditure. Strategies will be developed through the Social Impact Assessment conducted as part of the IAR process to avoid or mitigate against social impacts.

10.0 Community and stakeholder consultation

REMONDIS has commissioned specialist consultants, Three Plus, to draft a Community and Stakeholder Engagement Plan in preparation for an IAR process. The draft Plan will be reviewed and amended, as required, if the Project achieves Coordinated Project status.

As part of its early engagement activities, REMONDIS has activated a website to provide information on the proposed project and to provide opportunities for interested parties to review the proposal, register for updates and provide initial feedback.

Plan Structure

The Community and Stakeholder Engagement (C&SE) Plan is based on a four-stage approach:

- Stage 1: Active support for the draft TOR advertising phase (if required)
- Stage 2: IAR research and preparation, including technical investigations and community consultation
- Stage 3: Active support for the IAR public comment phase, and finalisation of the IAR
- Stage 4: Post-IAR stakeholder follow-up

The purpose of the consultation will be to engage stakeholders in informed discussion about what the project may mean to the local area and the region. This will require the provision of information about the project design and potential impacts, and the establishment of a number of opportunities and avenues for stakeholders to participate in consultation.

Objectives

The community and stakeholder engagement objectives for the IAR will be to:

- Add value to the study's decision-making process
- Inform stakeholders about the study objectives, drivers, processes and consultation opportunities
- Provide easy and accessible ways for stakeholders to participate in the consultation process, and
- Inform the IAR project team.

Principles

The following strategic principles will guide the IAR community and stakeholder engagement:

- Positioning: The IAR will be positioned in the context of investigating the environmental impacts (including social, cultural and economic) of the Project.
- Open and transparent: IAR stakeholder engagement will be in accordance with the International Association for Public Participation (IAP2) spectrum.
- Responsiveness: Stakeholders' ideas, issues and comments will be identified through consultation activities. To demonstrate an open, two-way process is being undertaken, the IAR team will close the loop with stakeholders to inform them how their views have been considered. The IAR team will also manage stakeholder expectations about what the IAR can deliver by effectively communicating the study negotiables and non-negotiables.
- Integration with related activities: The IAR team will recognise stakeholders' previous contributions by linking the IAR with submissions received during the public comment phase on the draft Terms of Reference.
- Issues management: The IAR team will identify as early as possible, and proactively manage, any issues that may influence the IAR.

Stage 1: Active support for the Office of Coordinator General draft Terms Of Reference advertising phase (if public input into TOR is required)

In addition to the community and stakeholder engagement activities planned for the IAR phase, REMONDIS has determined that it will support the public comment phase on the Coordinator General's draft Terms of Reference (TOR).

To help ensure comprehensive and well-supported Terms of Reference are developed, REMONDIS will undertake a dedicated round of stakeholder engagement to support the draft TOR public advertising period which will provide information about the project and encourage feedback on the draft TOR (to the Coordinator General).

Stage 2: Baseline Studies – IAR research and preparation, including technical investigations and community consultation

Should the project be declared a Coordinated Project, REMONDIS and its project team will commence the preparation of an IAR and documentation requirements nominated by the Office of Coordinator General.

During this stage, REMONDIS will continue with stakeholder engagement to update key stakeholders and provide additional information on the progress of the proposal. Potential issues and concerns raised during the engagement process will inform the detailed design and the documentation phase of the IAR.

Stage 3: Active support for the IAR public comment phase, and finalisation of the IAR

REMONDIS will support the IAR public comment phase by implementing a dedicated stakeholder engagement program to ensure stakeholders have an opportunity to inform themselves of the IAR outcomes and recommendations, and to provide comment via formal channels.

The specific methodologies for this phase will be determined during Stage 3 and provided to the Office of the Coordinator General for review prior to roll-out.

Stage 4: Post IAR stakeholder follow-up

Once the IAR has been finalised, REMONDIS will "close the loop" and inform stakeholders about final IAR, conditions of approval and project timelines. The appropriate methodologies will be determined, but may include briefings to summarise the IAR outcomes and to report on community and stakeholder engagement activities.

11.0 References and data sources

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12. "Emissions from Waste-to-Energy: A comparison with Coal-fire Power Plants" (DOI: 10.1115/IMECE2003-55295)
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Appendix A. Approvals required for the project

Legislation and Administering Authority	Approval Trigger	Approval	Relevance to the Project	Applicability
Commonwealth				
Environment Protection and Biodiversity Conservation Act 1999 (EPBC Act) **DEE**	Actions that have, or are likely to have, a significant impact on a MNES	EPBC Act Referral – controlled action or not a controlled action	Due to the presence of High Value Koala Habitat and the potential occurrence of threatened species, the Project *may* need to be referred to DEE to determine if the proposed works constitute a 'controlled action' under the EPBC Act.	Unlikely Applicable
Native Title Act 1993 **Native Title (Queensland) Act 1993** **National Native Title Tribunal**	Works to be undertaken on land subject to Native Title	An Indigenous Land Use Agreement (ILUA) is required if works are to be undertaken on land subject to Native Title	The site consists of freehold titles not subject to Native Title	No
State				
Non-Planning Act and Regulation Approvals				
State Development and Public Works Organisation Act 1971 **Coordinator General**	A project with one or more of the following characteristics may apply to have it declared a 'Coordinated Project' under the *State Development and Public Works Organisation Act 1971*(SDPWO Act): • complex approval	Coordinated Project Declaration	As outlined within this Initial Advice Statement (IAS), the project is considered of strategic significance to the Region for the economic and social benefits, capital investment and employment opportunities it would provide. By obtaining 'coordinated project'	Yes

Legislation and Administering Authority	Approval Trigger	Approval	Relevance to the Project	Applicability
	requirements, involving local, state and federal governments • significant environmental effects • strategic significance to the locality, region or state, including for the infrastructure, economic and social benefits, capital investment or employment opportunities it may provide • significant infrastructure requirements		declaration from the Coordinator General, the project would benefit from: • a clear approvals framework for the Project; • coordinated and targeted whole-of-government advice with respect to scoping technical investigations and/or environmental assessments necessary to facilitate Project approvals. The Proponent considers the IAR process as suitable for the Coordinator General to assess the project in the event that the project is declared a 'Coordinated Project'. As outlined within this IAS, the potential environmental impacts of the project are well defined and low-medium risk and do not warrant an EIS. Furthermore, the project would	

Legislation and Administering Authority	Approval Trigger	Approval	Relevance to the Project	Applicability
			previously have been subject to code assessment under the Planning Act 2016, recognising its acceptance in principle. The Proponent has resolved, in any event, to adopt best practice measures to minimise and mitigate any potential environmental impacts associated with the project.	
Land Act 1994 DNRME	Temporary or permit road closure Permit to occupy	Road closure permit or permit to occupy	An application for a temporary road closure may be required to facilitate the works. Requirements will be confirmed through detailed design.	Yes, if required
Nature Conservation Act 1992 **DES**	Clearing protected plants or tampering with animal breeding places	Clearing Permit – Protected plants Permit to tamper with animal breeding places	A clearing permit may be required for clearing within a high risk area on the Protected Plants Flora survey trigger map. Clearing requirements will be determined through detailed design. Additionally the removal or disturbance of native animal breeding places by earthwork activities, requires	Yes, if required.

Legislation and Administering Authority	Approval Trigger	Approval	Relevance to the Project	Applicability
			a permit with approved species management programme.	
Aboriginal Cultural Heritage Act 2003 **Torres Strait Islander Cultural Heritage Act 2003** **DATSIP**	Duty of care to not harm cultural heritage sites or items of significance	Cultural Heritage Management Plan	All persons must take all reasonable and practicable measures to ensure their activities do not harm Aboriginal cultural heritage. The duty of care applies regardless of the tenure of the land and regardless of whether it has been identified or recorded in a database. Development may require assessment against the Duty of Care Guidelines. Additionally, if an EIS is required, an approved Cultural Heritage Management Plan (CHMP) is mandatory.	Unlikely applicable
Water Act 2000 **DNRME**	Taking of water	Licence to take water	Development may require a licence to take water. Requirements will be confirmed through detailed design.	Yes, if required
Waste Reduction and Recycling Act 2011 **Waste Reduction and**	Using a resource for an industrial activity	End of waste approval	A waste can be approved as a resource if it meets specified quality criteria for its specific use. As the project	Yes

Legislation and Administering Authority	Approval Trigger	Approval	Relevance to the Project	Applicability
Recycling Regulation 2011 **DNRME**			involves the use of waste as a resource for generating electricity it is considered that an end of waste approval is required.	
Electricity Act 1994 **Electricity Regulation 2006** **DNRME**	If the WtE plant exceeds 30MW in capacity a General Authority is required. If less than 30MW a Special Approval is required. A transmission authority is also required to connect the proposed plan to a transmitting grid	A General Authority Or A Special Approval permit (s130) And A Transmission Authority	The type of permit is contingent upon the capacity of the proposed WtE plant. A transmission authority is required irrespective of the capacity in order to connect to the grid.	Yes
Planning Act and Planning Regulation and associated Legislative Approvals				
Planning Act 2016 **DSDMIP**	Development Assessment (DA) Rules under Section 68(1) of the Planning Act		The assessment process in the DA Rules involves the following parts: • Part 1 – Application • Part 2 – Referral • Part 3 – Information Request • Part 4 – Public notification (if required) • Part 5 – Decision An Applicant is required to identify the development	Yes

Legislation and Administering Authority	Approval Trigger	Approval	Relevance to the Project	Applicability
			type, applicable assessment manager and relevant referral agencies as prescribed under the Planning Regulation.	
Planning Regulation 2017, Schedule 10, Part 3 **Vegetation Management Act 1999** **DNRME**	Clearing native vegetation	Development Permit – Operational Works for clearing native vegetation	A development permit for operational works may be required for clearing certain vegetation. Clearing requirements will be confirmed through detailed design.	Yes, if required
Planning Regulation 2017, Schedule 10, Part 4 **Environmental Protection Act 1994** **DES**	Material change of use on contaminated land	Development Permit – Material Change of Use on contaminated land	A development permit for material change of use may be required for the proposed use as the premises are listed on the contaminated land register/environmental management register and may involve an accessible underground facility. This will be confirmed through detailed design.	Yes, if required
Planning Regulation 2017, Schedule 10, Part 5 **Environmental Protection Act**	Material change of use for an environmentally relevant activity	Development Permit – Material Change of Use for an environmentally relevant activity	A development permit for a material change of use may be required for certain environmentally	Yes

Legislation and Administering Authority	Approval Trigger	Approval	Relevance to the Project	Applicability
1994 **DES**			relevant activities, including ERA 14 (electricity generation), ERA 15 (Fuel Burning), ERA 55 (regulated waste recycling or reprocessing), ERA 56 (regulated waste storage) and ERA 57 (regulated waste transport). The full list of applicable ERAs will be confirmed through detailed design.	
Planning Regulation 2017, Schedule 10, Part 19 **Water Act 2000** **DNRME**	Taking or interfering with water	Development Permit – Operational Works that involves taking or interfering with water	A development permit for operational works may be required for the project if it involves taking or interfering with a watercourse, lake or spring; or a dam ; underground water or taking overland flow water. The extent of taking or interfering with water will be confirmed through detailed design.	Yes, if required
Ipswich Planning Scheme 2006 **Ipswich City Council**	Material change of use assessable against the planning scheme	Development Permit – Material Change of Use	A development approval is required for a material change of use for Special Industry and Major Utility (full extent of land use definitions to be confirmed).	Yes

Appendix B. Desktop searches and mapping